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MONTHLY CURRENT AFFAIRS ANALYSIS

JANUARY 2024

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Current Affairs





CLOCK IS TICKING!



UPSC Civil Services Preliminary Examination 2024 on
26th May 2024 is approaching very fast.

How is your Preparation ?



COMMON PROBLEMS DURING PREPARATION

- Lack of balance in the revision of General Studies subjects, CSAT, and Current Affairs
- Lack of Study Plan
- Lack of proper sequence in reading, revision, and test practice
- Lack of daily, weekly, and monthly timetable
- Lack of time management
- Difficulty in concentration
- Lack of motivation etc.

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for the Month of

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WEEK 1	01 - 07 JANUARY 2024
WEEK 2	08 - 14 JANUARY 2024
WEEK 3	15 - 21 JANUARY 2024
WEEK 4	22 - 28 JANUARY 2024
WEEK 5	29 - 31 JANUARY 2024

NOTE FOR STUDENTS

With respect to the **Civil Services Examinations**, **reading, understanding and usage of current affairs form an extremely important part of the preparation**. Current affairs impact all the **three stages**: Preliminary, Main, and the Personality Test.

How to solve newspaper puzzle?

All the aspirants are suggested to read newspapers. But reading newspaper on daily basis becomes a difficult task. On certain days, aspirants miss reading newspaper, and many times irregular reading of newspaper leads to pile on of unread newspapers. This leads to losing track of current affairs and the confidence depletes while dealing with current affairs.

Challenges: The following challenges remain while reading the newspapers: - **What to read? How much to read? How to apply? How to finish unread newspapers? How to feel satisfied in terms of current affairs coverage?**

If you face the challenge in reading newspaper on daily basis then do not worry at all.

Solution for you: **SHIELD Monthly Current Affairs Analysis**

This magazine is the **most unique presentation of most important current affairs, concepts, locations and editorials** of the month which provides a right **flavour in approaching UPSC exam related current issues**.

The **three major sections** are:

✓ Current Affairs and Concepts of the month
✓ Important locations of the month
✓ Important editorials of the month

Highlights of this magazine:

✓ Curation of most relevant and usable current affairs
✓ Sense of satisfaction of newspaper reading.
✓ One stop solution for standard current affairs news.
✓ Covers finer reading and revision points.
✓ Easy to understand and easy to revise.
✓ Optimum coverage within minimum pages.
✓ Builds confidence for handling all the stages of the examination.

Hence, this magazine takes care of **basic knowledge, facts**, along with **sound mix of relational understanding**. The overall emphasis is on making students confident and mentally relaxed.

Read and Relish!

From

Ritesh Kumar Singh (Academic Director, Shield IAS)

Ex- Civil Servant

Ex-Sr. Faculty & Head Content and Quality Management, Rau's IAS Study Circle

The Quality is Here Now!

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 - ✓ College students not having regular studies
- ✓ Working professionals having lack of time for regular studies

BASED ON: DAILY, WEEKLY AND MONTHLY TIMETABLE

Covers all stages- *Preliminary, Main Examination and Interview*

1.	Daily guided revision by UPSC expert: Monday to Friday revision classes (2 hours/day).
2.	Revision Material: Daily Class Handouts and Monthly 'ACHIEVE' Revision Books
3.	Preliminary Examination: Revision classes comprise of - General Studies and CSAT.
4.	Main Examination: Revision classes comprise of - Essay Paper, General Studies Papers- 1,2,3 and 4.
5.	Planned Completion: Monthly timetable based coverage of subjects
6.	Multiple Choice Questions (MCQs): Weekly with Answer Keys and explanations; Monthly Full Length Tests (FLT)
7.	General Studies Main Answers: Writing practice with discussions in class and Tests
8.	Essay Paper: Writing Practice with discussions in class and Tests
9.	Case studies: Writing Practice with discussions in class and Tests
10.	Current Affairs: Monthly Current Affairs Magazine; ; Monthly Current Affairs Quiz; Current affairs revision classes
11.	Performance Improvement: One to one discussion; performance tracker- daily, weekly and monthly.
12.	Prelims build up: 'Thematic' and complete 'General Studies' FLT
13.	Main examination build up: Fast revision classes, Topic tests, 'General Studies' FLT, Essay Paper Test.
14.	Sessions by Officers
15.	Interview Guidance

To know more about: ACHIEVE Program 2025, Detailed Timetable, and the UPSC Expert (visit the website: www.shieldias.in; Contact: 7037272363)

CURRENT AFFAIRS & CONCEPTS

SECTION- ECONOMY

CRITICAL MINERALS

(# Economy)

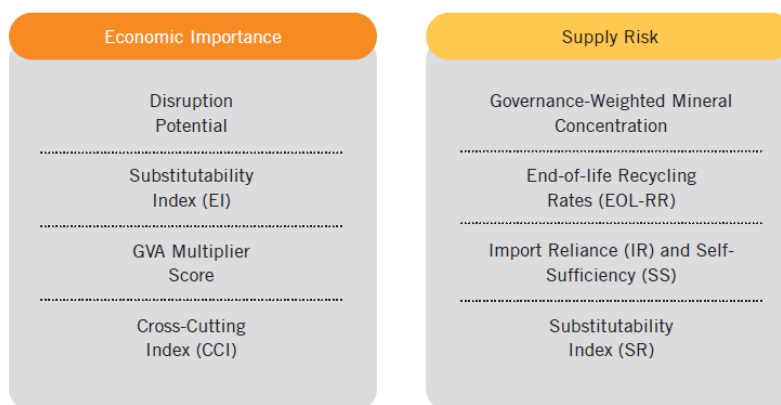
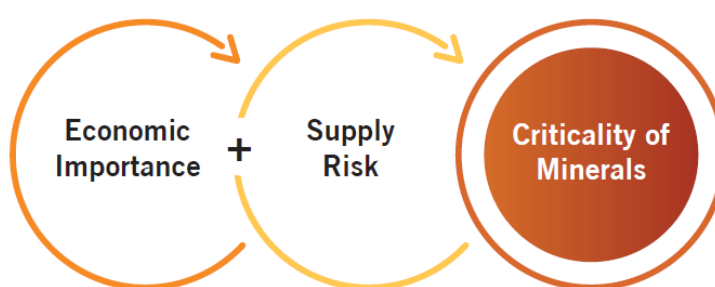
The Government of India has made a significant move in the Mining Sector by launching the first-ever auction of critical minerals, offering 20 blocks for sale to Private Sectors.

The mineral blocks are spread across eight states, with Tamil Nadu having the most blocks (seven).

Licenses

- Rights for these blocks vary; **four blocks** are auctioned for **Mining Licenses (ML)**, enabling immediate mining operations,

- While the remaining **16 blocks** are auctioned for **Composite Licenses (CL)**, allowing geological exploration before mining.



Critical Minerals

- Critical minerals are those minerals that are **essential for economic development** and **national security**, the lack of availability of these minerals or concentration of extraction or processing in a few geographical locations may lead to supply chain vulnerabilities and even disruption of supplies.

Declaration of Critical Minerals:

- It is a **dynamic process**, and it can evolve over time as new technologies, market dynamics, and geopolitical considerations emerge.
- Different countries may have their own unique lists of critical minerals based on their specific circumstances and priorities.
- The US has declared 50 minerals critical in light of their role in national security or economic development.

- Japan has identified a set of 31 minerals as critical for their economy.
- The UK considers 18 minerals critical, EU (34) and Canada (31).

India

- In **July 2023**, the government identified **30 minerals as Critical Minerals** by amending the **Mines and Minerals (Development and Regulation) Act, 1957**, through the **MMDR Amendment Act, 2023**, empowering the Central Government to auction blocks of these minerals.
- The **30 critical minerals** are Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

Sl. No.	Critical Mineral	Percentage (2020)	Major Import Sources (2020)
1.	Lithium	100%	Chile, Russia, China, Ireland, Belgium
2.	Cobalt	100%	China, Belgium, Netherlands, US, Japan
3.	Nickel	100%	Sweden, China, Indonesia, Japan, Philippines
4.	Vanadium	100%	Kuwait, Germany, South Africa, Brazil, Thailand
5.	Niobium	100%	Brazil, Australia, Canada, South Africa, Indonesia
6.	Germanium	100%	China, South Africa, Australia, France, US
7.	Rhenium	100%	Russia, UK, Netherlands, South Africa, China
8.	Beryllium	100%	Russia, UK, Netherlands, South Africa, China
9.	Tantalum	100%	Australia, Indonesia, South Africa, Malaysia, US
10.	Strontium	100%	China, US, Russia, Estonia, Slovenia
11.	Zirconium(zircon)	80%	Australia, Indonesia, South Africa, Malaysia, US
12.	Graphite(natural)	60%	China, Madagascar, Mozambique, Vietnam, Tanzania
13.	Manganese	50%	South Africa, Gabon, Australia, Brazil, China
14.	Chromium	2.5%	South Africa, Mozambique, Oman, Switzerland, Turkey
15.	Silicon	<1%	China, Malaysia, Norway, Bhutan, Netherlands

Table.1 The net import reliance for critical minerals of India (2020) (Source: A report on 'Unlocking Australia-India Critical Minerals Partnership Potential' by Australian Trade and Investment Commission, July 2021)

Significance of Critical Minerals

Economic Development:

- **Industries** such as high-tech electronics, telecommunications, transport, and defense heavily rely on these minerals.
- Additionally, critical minerals are essential for **green technologies** like solar panels, wind turbines, batteries, and electric vehicles.

	<ul style="list-style-type: none"> Given India's significant domestic demand and potential in these sectors, their growth can lead to job creation, income generation, and innovation.
National Security:	<ul style="list-style-type: none"> These minerals are vital for defense, aerospace, nuclear, and space applications, necessitating the use of high-quality and reliable materials capable of withstanding extreme conditions and performing complex functions.
Environmental Sustainability:	<ul style="list-style-type: none"> They are integral to the transition toward clean energy and a low-carbon economy, enabling the reduction of India's reliance on fossil fuels and greenhouse gas emissions. With a commitment to attaining 450 GW of renewable energy capacity by 2030, these minerals are essential for achieving India's green objectives.

MONETARY POLICY DECISIONS

(# Economy)

The Reserve Bank of India (RBI) in its bimonthly Monetary Policy Committee (MPC) Meeting has retained benchmark interest rates unchanged for the 5th time in a row.

Policy rates

Repo rate	6.5% <ul style="list-style-type: none"> Repo rate is the rate at which the central bank of a country (RBI) lends money to commercial banks in the event of any shortfall of funds. Here, the central bank purchases the security.
Standing Deposit Facility (SDF)	6.25 % <ul style="list-style-type: none"> The SDF is a liquidity window through which the RBI will give banks an option to park excess liquidity with it. It is different from the reverse repo facility in that it does not require banks to provide collateral while parking funds.
Marginal Standing Facility Rate	6.75% <ul style="list-style-type: none"> MSF is a window for scheduled banks to borrow overnight from the RBI in an emergency situation when interbank liquidity dries up completely. Under interbank lending, banks lend funds to one another for a specified term.
Cash Reserve Ratio (CRR)	4.50% <ul style="list-style-type: none"> Under CRR, the commercial banks have to hold a certain minimum amount of deposit (Net Demand and Time Liabilities) NDTL as reserves with the central bank.

	<ul style="list-style-type: none"> The amount of money available to the bank for providing loans is called its Net Demand and Time Liabilities (NDTL), which is basically, the sum of all the deposits made to the bank by people like you, less the amount that the bank has invested in other banks.
Statutory Liquidity Ratio (SLR)	18.00% <ul style="list-style-type: none"> SLR is the minimum percentage of deposits that a commercial bank has to maintain in the form of liquid cash, gold, or other securities.

CRYPTO ASSET INTERMEDIARIES (CAI)

(# Economy #Security)

The Financial Stability Board (FSB)'s report on crypto-asset intermediaries sought measures to enhance cross-border cooperation and information sharing among local authorities.

*This is to effectively regulate and address gaps in **Multi-function Crypto-asset Intermediaries (MCIs)** operating globally.*

Financial Stability Board (FSB)

- The FSB is an **international body** that **monitors and makes recommendations about the global financial system**.
- FSB was **established in 2009** under the aegis of G20.
- India is an active Member** of the FSB having three seats in its Plenary represented by Secretary of Economic Affairs, Ministry of Finance, Deputy Governor of Reserve Bank of India (RBI), Chairperson of Securities and Exchange Board of India (SEBI).

Crypto Assets

- Crypto assets are a **digital representation of value** that can **transfer, store, or trade electronically**. This also **includes non-fungible tokens (NFTs)**.

• **NFTs are blockchain-based tokens** that **each represent a unique asset** like a piece of art, digital content, or media.

• An NFT can be thought of as an **irrevocable digital certificate of ownership and authenticity** for a given asset, whether digital or physical.

- Crypto assets are a subset of digital assets** that use cryptography to protect digital data and distributed ledger technology to record transactions.

Multi-function Crypto-asset Intermediaries (MCIs)

MCIs is an **individual firm, or groups of affiliated firms** that offer a range of crypto-based services, products and functions which primarily revolve around operating the trading platform. Examples include **Binance, Bitfinex** and **Coinbase**.

- The **primary source of revenue** for these platforms are the **transaction fees generated** from trading-related activities.

- These MCIs may also **derive revenue from operating a blockchain infrastructure** for which they may collect transaction validation fees.

LEADS

(# Economy)

The Ministry of Commerce & Industry has released the 5th edition of “Logistics Ease Across Different State (LEADS) 2023” report, which serves as a guide for stakeholders in the Logistics Sector by providing strategic insights.

Logistics Ease Across Different States (LEADS)

- The LEADS is an **indigenous data-driven index** to **assess logistics infrastructure, services, and human resources** across all 36 States and UTs.
- LEADS continues to **act as a guiding & bridging mechanism** for the identification of interventions enhancing logistics efficiency at State/UTs. It reflects positively on international indices, like the Logistics Performance Index.
- **LEADS aims to guide stakeholders** in the logistics sector **by offering strategic insights and fostering healthy competition** among states and union territories to improve their logistics performance.
- LEADS was **conceived on the lines of the Logistics Performance Index of World Bank** in 2018 and has evolved over time.

Evaluation Criteria: The report evaluates logistics performance based on three key pillars:

- | |
|--|
| • Logistics Infrastructure |
| • Logistics Services |
| • Operating and Regulatory Environment |

Key Highlights of the LEADS 2023

Achievers

- Thirteen states and Union Territories, including Andhra Pradesh, Karnataka, Tamil Nadu, Chandigarh, and Gujarat, are categorized as achievers in the **logistics index chart 2023**.
- These regions have shown efficient logistical services that contribute to export promotion and economic growth.

Fast Movers

- Kerala, Maharashtra, Madhya Pradesh, Rajasthan, Uttarakhand, Arunachal Pradesh, and Nagaland are recognized as fast movers in the logistics index.
- These areas have shown significant progress and improvements in their logistical services.

Aspirers

- States and UTs in the aspirers category, such as Goa, Odisha, West Bengal, Bihar, Chhattisgarh, Himachal Pradesh, and Jharkhand, are identified as regions with potential for growth in their logistics ecosystem. These areas are striving to enhance their logistical capabilities.

Policy Reforms: The report emphasizes the significance of policy reforms such as-

- | |
|---|
| • Industry status for logistics, |
| • digital initiatives (PM GatiShakti), |
| • Logistics Data Bank, |
| • Unified Logistics Interface Platform (ULIP), and |
| • the alignment of State Logistics Policies with the National Logistics Policy. |

Initiatives Related to Logistics

- | |
|---|
| ✓ Multimodal Transportation of Goods Act, 1993. |
| ✓ PM Gati Shakti Scheme |
| ✓ Multi Modal Logistics Parks |
| ✓ LEADS Report |
| ✓ Dedicated Freight Corridor |
| ✓ Sagarmala Projects |
| ✓ Bharatmala Project |

Related information: Logistics Performance Index

- The Logistics Performance Index (LPI), developed by **the World Bank Group**, is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance.
- LPI is the weighted average of the country's scores on the six key dimensions:

- | |
|-------------------------------------|
| 1. Customs performance |
| 2. Infrastructure quality |
| 3. Ease of arranging shipments |
| 4. Logistics services quality |
| 5. Consignment tracking and tracing |
| 6. Timeliness of shipments |

- India ranked **38th out of 139 countries in LPI 2023**.

NICDP

(# Economy)

The Government of India and Asian Development Bank (ADB) signed a USD 250 million policy-based loan that will continue support to industrial corridor development to make manufacturing more competitive, strengthen national supply chains and links with regional and global value chains.

This will help to strengthen policy frameworks for the Government of India's National Industrial Corridor Development Programme (NICDP) and develop 11 industrial corridors.

National Industrial Corridor Development Programme

- National Industrial Corridor Development Programme is India's most ambitious infrastructure programme **aiming to develop new industrial cities as "Smart Cities"** and converging next generation technologies across infrastructure sectors.
- India is **developing various industrial corridor projects** as part of the **National Industrial Corridor Programme** which is aimed at development of futuristic industrial cities in India which can compete with the **best manufacturing and investment destinations** in the world.
- The same will create employment opportunities and economic growth leading to overall socio-economic development.



11 industrial Corridors

Delhi Mumbai Industrial Corridor (DMIC)

- It is the first industrial corridor which is being implemented in the country wherein substantial progress has been made.

Others:

• Chennai Bengaluru Industrial Corridor (CBIC)
• Amritsar Kolkata Industrial Corridor (AKIC)
• East Coast Industrial Corridor (ECIC) with Vizag Chennai Industrial Corridor (VCIC) as Phase 1
• Bengaluru Mumbai Industrial Corridor (BMIC)
• Extension of CBIC to Kochi via Coimbatore
• Hyderabad Nagpur Industrial Corridor (HNIC)
• Hyderabad Warangal Industrial Corridor (HWIC)
• Hyderabad Bengaluru Industrial Corridor (HBIC)
• Odisha Economic Corridor (OEC)
• Delhi Nagpur Industrial Corridor (DNIC)

Monitoring and Review Mechanism

- The **National Industrial Corridor Development and Implementation Trust (NICDIT)**.
- In 2016, the government approved the expansion of the scope of existing DMIC-Project Implementation Trust Fund (PITF) and re-designated it as NICDIT.

• NICDIT comes under the administrative control of the Department of Promotion of Industry and Internal Trade (DPIIT) , Ministry of Commerce and Industry.
• An Apex Monitoring Authority under the chairmanship of the Finance Minister periodically reviews the activities of NICDIT and progress of the projects.

UNNATI on SSE

(# Economy #Society)

*SGBS Unnati Foundation (SUF) became the first entity to list on the social stock exchange (SSE). The Unnati program of the foundation provides **vocational training** for the underprivileged and unemployed youth in the age group of 18 to 25 years.*

- SUF, a not-for-profit organization (NPO), was incorporated in 2011.
- A **Not-for-Profit organization** after registering with Social Stock Exchange may **raise funds** on SSE through **issuance of Zero Coupon Zero Principal Instruments**.

Social Stock Exchange (SSEs)

- The idea of the Social stock exchanges (SSEs) as a platform for listing social enterprise, voluntary and welfare organizations so that they can raise capital was mooted in the Union Budget 2019-20.
- **Social enterprise can be defined** as a **non-loss; non-dividend paying company** created and designed to address a social problem.
- It **works under** the market regulator **Security and Exchange Board of India (SEBI)**.
- The **aim of the initiative is to help** social and voluntary organizations which work for social causes to raise capital as equity or debt or a unit of mutual fund.
- It **provides new and cheaper sources of financing for social welfare projects**, while showcasing India's independence from foreign aid.
- SEBI had permitted social enterprises registered on SSEs to raise funds through Zero Coupon Zero Principal Bonds (ZCZP).

Zero Coupon Zero Principal (ZCZP)

- **ZCZP – Zero Coupon Zero Principle** are financial instrument that are **included in the list of securities under Securities Contracts (Regulation) Act, 1956**.
- They **do not give any interest**, and **investors will not get any money back on the maturity** of the bond.
- Eligibility criteria for issuance – **Only by NPO** that are registered with Social Stock Exchange (SSE).
- ZCZP can only be issued for a specific project with specific tenure.
- The project must fall under the list of eligible activities under SEBI (ICDR) Regulations, 2018.
- Issuance - They are issued through private placement or public issuance.

• Minimum issue size – Rs. 50 Lakh (originally Rs.1 crore)

• Minimum application size – Rs.10, 000 (originally Rs.2 lakh)

• Minimum subscription required - 75% of the funds proposed
--

• Trade – They shall be issued in dematerialized form only.
--

- They are **not available for trading** in the secondary market, but they can be transferred to legal heirs.
- **Maturity** – It will mature when the project for which they are raised terminate, or 12 months from the date of allotment.

Benefits

- **ZCZP is akin to a donation made to a charity**. There is greater transparency about the objective of the social enterprise.
- The **end use of the funds can also be monitored** since the enterprises have to disclose details of money utilised and balance amount remaining to exchanges.
- The **listing provides visibility to the social enterprises** and helps them to approach the public at regular intervals if they can show good outcomes.

PURCHASING MANAGERS INDEX

(# Economy)

- The purchasing managers' index (PMI) is an **economic indicator based on surveys of businesses in a given sector**. The most common PMI surveys are the **manufacturing PMI** and the **services PMI**.
- Understanding the PMI can provide insight into recent market conditions and identify potential economic slowdowns.

About PMI

- The purchasing managers' index **consists of several different surveys** of purchasing managers at businesses in manufacturing or services.
- These surveys are **compiled into a single numerical result** depending on one of several possible answers to each question.
- **The most common elements include:**

✓ New orders
✓ Factory output
✓ Employment
✓ Suppliers' delivery times
✓ Stocks of purchases

- **Investors use PMI surveys** as leading indicators of economic health, given their insight into sales, employment, inventory, and pricing.
- **Manufacturing sector purchases** tend to react to consumer demand and are often among the first visible signs of a slowdown.

How Does the PMI Work?

- The PMI is a **diffusion index**, meaning that it **measures change across multiple indicators**.
- A diffusion index is particularly useful for **identifying economic turning points**, such as unemployment reporting from the Bureau of Labour Statistics.
- The purchasing managers' index is a diffusion index that **indicates whether economic conditions are better or worse** at the companies surveyed.
- The formula used to calculate the PMI assigns weights to each common element and then multiplies them by **1 for improvement, 0.5 for no change, and 0 for deterioration**.
- **Here is how the formula appears:**

• $PMI = (P1 * 1) + (P2 * 0.5) + (P3 * 0)$
• P1 = Percentage of answers reporting improvement
• P2 = Percentage of answers reporting no change

- P3 = Percentage of answers reporting deterioration

- A **figure above 50 denotes an expansion** while **anything below 50 denotes a contraction** in activity. The higher the difference from this mid-point of 50, greater the expansion or contraction.
- Also, the **rate of expansion** can be judged by **comparing the PMI with that of the previous month reading**.
- If the latest figure is higher than previous month's, then manufacturing or services is expanding at a faster rate. If it is lower than previous month, then it is growing at lower rate.

Why is it important?

- The PMI is becoming **one of the most tracked indicators of business activity** across the world. It provides a reliable expectation of how an economy is doing as a whole — and manufacturing in particular.
- It is a **good gauge of boom and bust cycles** in the economy and closely watched by investors, business, traders and financial professionals besides economists.
- Also, the PMI, which is **usually released at the start of the month**, serves as a leading indicator of economic activity. It **comes before the official data** on industrial output, core sector manufacturing and GDP growth.
- Even **central banks use the PMI to take decisions on interest rates**. Besides influencing equity market movements, PMI releases also impact bond and currency markets.
- Since manufacturing sector is often where recessions begin and end, PMI manufacturing is always closely watched. A good reading of PMI enhances the attractiveness of an economy vis-à-vis other competing economies. Suppliers can decide on prices depending on PMI movements.

INFLATION

(# Economy)

- It refers to the **sustained increase in the general price level of goods and services** in an economy over a period of time, **leading to a decrease in the purchasing power of money**.

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| • Headline Inflation: It is the total inflation for the period , comprising a basket of commodities. |
| • The food and fuel inflation form one of the components of headline inflation in India. |
| • Core Inflation: It excludes volatile goods from the basket of commodities tracking Headline Inflation . |
| • These volatile commodities mainly comprise food and beverages (including vegetables) and fuel and light (crude oil). |
| • Core inflation = Headline inflation – (Food and Fuel) inflation. |

- **Inflation Targeting:** It is a monetary policy framework aimed at maintaining a specific target range for inflation.

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| <ul style="list-style-type: none"> • The Urjit Patel Committee recommended CPI (Consumer Price Index) over WPI (Wholesale Price Index) as a measure for inflation targeting. |
| <ul style="list-style-type: none"> • The current inflation target also aligns with the committee's recommendation to establish a target inflation rate of 4%, accompanied by an acceptable range of deviation of +/- 2%. |
| <ul style="list-style-type: none"> • The central government, in consultation with the RBI, sets an inflation target, and an upper and lower tolerance level for retail inflation. |

ANARCHO-CAPITALISM

(# Economy #Governance)

The term "anarcho-capitalism" has gained attention, particularly with the recent electoral victory of Javier Milei, a self-proclaimed anarcho-capitalist, in the presidential race in Argentina.

This political philosophy advocates for the abolition of the state, proposing that private companies manage law and order in a free market.

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| <ul style="list-style-type: none"> • Anarcho-capitalism is political philosophy and political-economic theory that advocates the voluntary exchange of goods and services in a society broadly regulated by the market rather than by the state. |
| <ul style="list-style-type: none"> • The term anarcho-capitalism was coined by Murray Rothbard, a leading figure in the American libertarian movement from the 1950s. |
| <ul style="list-style-type: none"> • Anarcho-capitalists assert that private companies in a free market can efficiently provide policing and legal services. |
- The philosophy contends that similar to private sectors offering superior products and services, private policing and legal systems can outperform state-monopolized counterparts.
 - In an anarcho-capitalist society, individuals pay private police and courts for protection and dispute resolution.
 - Private companies, driven by customer patronage, are argued to be more accountable, as dissatisfied customers can switch to competing services.
 - Anarcho-capitalists advocate for competitive markets, asserting that they guarantee top-tier and cost-effective police and legal services. This contrasts with state-funded systems, providing customers the freedom to select services aligned with their preferences and needs.

Concerns

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| <ul style="list-style-type: none"> • Multiple private firms offering police and judiciary services in a single region may lead to armed conflicts and chaos. |
| <ul style="list-style-type: none"> • Skepticism arises about a market-based system favoring the wealthy, allowing them to escape justice by paying more to private firms. |
| <ul style="list-style-type: none"> • Apprehensions exist that a profit-driven system could marginalize the poor, limiting their access to justice. |

- Critics worry that **without a centralized authority, private firms may not be accountable** to the broader public, influencing justice based on financial interests, and potentially compromising the integrity of justice.
- The absence of a centralized authority **may increase the risk of vigilantism**, where individuals or groups take the law into their own hands.
- Anarcho-capitalism **could worsen societal inequalities**, providing better legal protection for those who can afford premium services.
- The **absence of a standardized legal framework may result in varying standards of justice**, creating uncertainty and inconsistency in legal outcomes.

COUNTERVAILING DUTY (CVD)

(# Economy)

- CVD are **tariffs levied on imported goods to offset subsidies made to producers** of these goods in the exporting country.
- CVDs are **meant to level the playing field between domestic producers of a product and foreign producers** of the same product who can afford to sell it at a lower price because of the subsidy they receive from their government.

- The **World Trade Organization (WTO) permits the imposition** of countervailing duty by its member countries.
- The **WTO's Agreement on Subsidies and Countervailing Measures (SCM Agreement)** addresses **two main aspects**: multilateral regulations regarding subsidies and the use of countervailing measures against injury from subsidized imports.
- **Multilateral disciplines set rules on subsidy provisions** and are enforced through the **WTO dispute settlement mechanism**.
- **Countervailing duties are imposed unilaterally by a member** after investigating and satisfying criteria under the SCM Agreement.

Defining Subsidies

- "Subsidy" is defined in the SCM Agreement as a **financial contribution by a government conferring a benefit**.
- **Specificity determines** whether a subsidy applies to a particular enterprise, industry, or region.
- Subsidies are **categorized as prohibited** (e.g., export subsidies, local content subsidies) and **actionable** (subject to challenge or countervailing measures).
- Actionable subsidies can cause injury, prejudice, or nullification of benefits.
- However, transition rules provide exemptions or extended periods for developing countries and those transitioning to market economies to phase out certain subsidies.

Countervailing Measures in India

- **Directorate General of Trade Remedies (DGTR)** under Ministry of Commerce & Industry, is the single national authority for administering all trade remedial measures.
- The **Directorate General of Anti-Dumping & Allied Duties (DGAD)** which was **formed in 1997 has been restructured as DGTR in May 2018** by restructuring and re-designing DGAD into DGTR by incorporating all the trade remedial functions i.e. Anti-Dumping Duty (ADD), Countervailing Duty, Safeguards Duty (SGD), Safeguards Measures (QRs) under a single window framework.
- It is a **quasi-judicial body** that independently undertakes investigations before making its recommendations to the Central Government.

LAB GROWN DIAMONDS (LGD)

(# Economy)


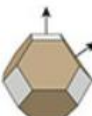

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| <ul style="list-style-type: none"> • Lab-grown diamonds (LGDs) are diamonds that are grown in a laboratory using advanced technology. |
| <ul style="list-style-type: none"> • They are also known as cultured, synthetic, man-made, or artisan-created diamonds. |
- Natural diamonds form deep within the Earth over an extensive period, often up to three billion years, under extreme pressure and high temperatures.
 - **LGDs have essentially the same chemical, optical and physical properties and crystal structure** as natural diamonds.

Benefits

- Unlike mined diamonds, lab-grown diamonds **do not involve the social and environmental ramifications** associated with mining activities.
- Consequently, all LGDs are considered **eco-friendly** and contribute positively to environmental preservation.

Production Methods

- LGDs are synthesized in laboratories via two primary methods: **chemical vapor deposition (CVD)** or **high pressure, high temperature (HPHT)**.
- Both HPHT and CVD methods of growing diamonds artificially begin with a seed, a slice of another diamond.

Growth Process	Typical Growth Morphology
Natural	 Shape: Octahedron Growth: 8 directions
High Pressure, High Temperature (HPHT)	 Shape: Cuboctahedron Growth: 14 directions
Chemical Vapor Deposition (CVD)	 Shape: Cube Growth: 1 direction

CVD

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| <ul style="list-style-type: none"> • CVD is a process where a solid material is deposited from a vapor by a chemical reaction occurring on or in the vicinity of a normally heated substrate surface. |
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- The **resulting solid material** is in the form of a **thin film, powder, or single crystal**.

HPHT Process

- The HPHT diamond formation process begins with a small diamond seed that is placed into pure carbon.
- The diamond seed is exposed to intense pressure and heat.
- The carbon melts and a diamond begins to form around the seed.
- The substance is carefully cooled to form a diamond.
- The rough diamond is then ready to be cut, polished, and set into jewelry like a naturally grown rough diamond.

VALUE INVESTING

(# Economy)

- Value investing **entails purchasing assets below their intrinsic value**, anticipating future appreciation.
- It was **pioneered by Benjamin Graham** and **popularized by Warren Buffet** on the belief that an asset's price will eventually match its intrinsic value.

- It focuses on **exploiting the gap between an asset's price and intrinsic value** for profitable returns, taking advantage of market fluctuations **by buying during crises and selling during booms**.
- For example, if a company's stock has an intrinsic value of 100 rupees per share, but the market price is only 60 rupees. A value investor seizes the opportunity, buying the undervalued stock.
- As the stock price rises **toward its intrinsic value**. The value investor then sells the stock at a profit, having taken advantage of the initial undervaluation.
- This contrasts with efficient market theory, **as value investors capitalize on disparities between market prices and intrinsic worth**, leveraging undervalued assets.

ALTERNATIVE INVESTMENT FUNDS

(# Economy)

- AIFs are any **privately pooled investment fund** (whether from Indian or foreign sources) in the form of a trust, a company, a body corporate, or a Limited Liability Partnership, as defined by the Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012.
- As a result, **venture capital funds, hedge funds, private equity funds, commodity funds, debt funds, infrastructure funds**, and **other AIFs** are included in the definition.
- It is an investment option for high rollers, including domestic and foreign investors in India.
- Generally, **institutions and high net worth individuals invest in AIF** as it needs a high investment amount.

Categories Of AIF

Category I AIFs

- They **can invest in start-ups, early stage ventures, social ventures, SMEs** and sectors which the government or regulators consider as socially or economically desirable.
- They **include venture capital funds like angel funds, SME Funds, social venture funds, infrastructure funds** and such other AIFs as may be specified.

Category II AIFs

- They are those which are not classified under Category I or Category III.
- They **do not undertake leverage or borrowing** other than to **meet day-to-day operational requirements** and as permitted in the regulations.
- Various types of funds such as **real estate funds, debt funds, private equity funds, funds for distressed assets**, etc. are registered as Category II AIFs.

Category III AIFs

- They are funds which **employ complex or diverse trading strategies** and may employ leverage including through investment in listed or unlisted derivatives **hedge funds, Private investment in public equity (PIPE) Funds, etc.** are registered as Category III AIFs.
- Category I and II AIFs are required to be close ended and have a minimum tenure of three years. Category III AIFs may be open ended or close ended.

SPECIAL PURPOSE VEHICLE (SPV)

(# Economy)

- A special purpose vehicle is a **separate legal entity** which **has all the attributes of a corporation** such as owning assets, capacity to and get sued etc.
- A SPV, also known as a special purpose entity (SPE), is like a **separate company created by a main company to protect against financial risks**.
- Even if the main company faces bankruptcy, the SPV's independent legal status ensures that its obligations remain secure.
- This is why a SPV is often referred to as a **bankruptcy-remote entity**.
- A SPV **can be employed to take on a risky project**, lessening any potential financial harm to the main company and its investors.
- **Venture capitalists use SPVs** to gather funds and invest in a startup.

SHG BANK LINKAGE

(# Economy)

- The **SHG BL Project** was launched by NABARD in 1992 and has blossomed into the world's largest microfinance project.
- Under this programme, **banks were allowed to open savings accounts** for SHGs.

Components

• Training and sensitization of Bank Branch Managers
• Training and positioning of Bank Sakhis at Rural Bank Branches
• Initiate Community Based Repayment Mechanism (CBRM) at Rural Bank Branches
• Credit Linkage of SHGs

Key Factors for SHG-BL's Success

- Annual issuance of a Master Circular by RBI and NABARD.

• Specification of minimum loan amounts for each Self-Help Group (SHG) with provisions being modified as needed to meet the scheme's requirements.
• Regular training of staff and community cadres under State Rural Livelihoods Missions (SRLMs) to enhance their capacity.
• Financial education for Self Help Group (SHG) members through trained Financial Literacy Community Resource Persons (FLCRPs) at the village level.
• Bank Sakhis, trained members from SHGs who act as intermediaries , aiding SHG members in transactions and application processes.
• A web portal was created to overcome information asymmetry in SHG-Bank Linkage, incorporating data directly from Banks' Core Banking Solution (CBS) database.

Status of Bank Loans:

- The Bank loans to the tune of Rs. 7.68 lakh Crore have been accessed by SHGs since FY 2013-14.

SECTION- SCIENCE & TECHNOLOGY

XpoSat

(# Science # Space)

The Indian Space Research Organisation (ISRO) has launched its first X-ray Polarimeter Satellite (XpoSat) to study X-ray polarisation and its cosmic sources, like Black holes, Neutron stars, and Magnetars.

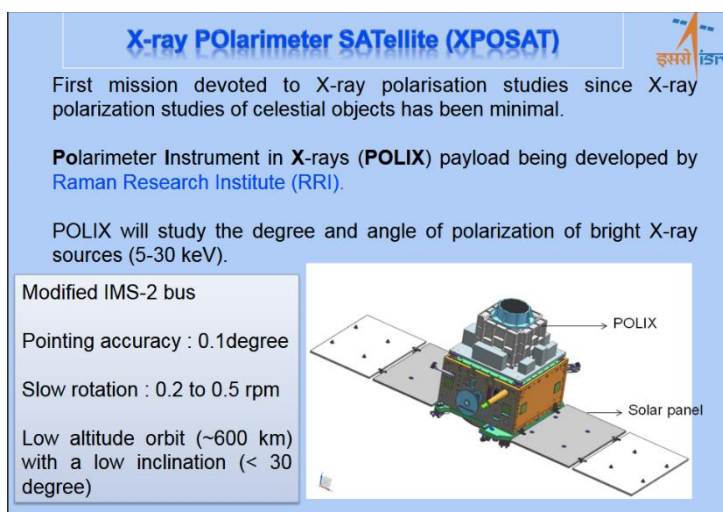
*The mission is propelled by the **PSLV-C58 rocket in Low Earth Orbit.***

Purpose

- XpoSat is designed to **study X-ray polarization in the medium X-ray band**, offering insights into **celestial sources' radiation** mechanisms and geometry.
- This study is crucial for understanding the physics behind these celestial bodies.

Payloads

- The satellite carries two main payloads, **POLIX (Polarimeter Instrument in X-rays)** and **XSPECT (X-ray Spectroscopy and Timing)**.
- POLIX will observe about 40 bright astronomical sources, while XSPECT will study the electromagnetic spectrum generated by different matter.



Development

- Entirely built by two Bengaluru-based institutes—ISRO's UR Rao Satellite Centre and Raman Research Institute—XpoSat's development began in 2008, with a formal agreement signed with ISRO in 2015.

X-Ray and the study of celestial objects

- X-rays are **electromagnetic radiation** whose wavelength is **0.01-10 nanometres**.
- Electromagnetic radiation is **characterised by an electric field** and a **magnetic field vibrating perpendicular to each other**.
- The **polarisation of electromagnetic radiation** refers to the orientation of these two fields as the radiation moves through space.
- X-rays can be polarized when they get scattered. Polarised X-rays are also produced when the path of a fast-moving charged particle is bent by a magnetic field.
- Measuring the **polarization of X-rays using instruments like POLIX enables** astronomers to **understand the orientation and strength of magnetic fields** in

celestial objects. This, in turn, provides crucial insights into the nature and behavior of pulsars, regions around black holes, and other cosmic phenomena emitting X-rays.

EU AI FRAMEWORK

(# Global # AI)

The European Union (EU) has set the stage for the world's first comprehensive legislation aimed at regulating the use of Artificial intelligence (AI).

The EU's proposed framework will undergo a parliamentary vote in early 2024, potentially becoming enforceable by 2025.

Safeguards in Legislation

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| <ul style="list-style-type: none"> • Empowerment of Consumers: Ability for individuals to launch complaints against perceived AI violations. |
| <ul style="list-style-type: none"> • Restrictions on Law Enforcement Adoption: Clear boundaries on AI usage by law enforcement agencies. |
| <ul style="list-style-type: none"> • Strict Limitations on AI: Strong restrictions on facial recognition technology and AI manipulation of human behaviour. |
| <ul style="list-style-type: none"> • Penalties for Violations: Provision for tough penalties for companies found breaking the rules. |
| <ul style="list-style-type: none"> • Limited Biometric Surveillance: Governments permitted to use real-time biometric surveillance in public areas only in cases of serious threats like terrorist attacks. |

Categorization of AI Applications

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| <ul style="list-style-type: none"> • Four Risk Classes: AI applications classified into four risk categories based on their level of risk and invasiveness. |
| <ul style="list-style-type: none"> • Banned Applications: Mass-scale facial recognition and behavioral control AI applications are largely banned, with some exemptions for law enforcement. |
| <ul style="list-style-type: none"> • High-Risk Applications: Allowed with certification and provision for backend technique transparency, such as AI tools for self-driving cars. |
| <ul style="list-style-type: none"> • Medium-Risk Applications: Deployable without restrictions, like generative AI chatbots, with explicit disclosure to users about AI interaction, transparency obligations, and detailed tech documentation. |

Other EU's Regulatory Achievements

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| <ul style="list-style-type: none"> • General Data Protection Regulation (GDPR) Implementation: Enforced since May 2018, focusing on privacy and explicit consent for data processing. |
| <ul style="list-style-type: none"> • Digital Services Act (DSA): Focus on regulating hate speech, counterfeit goods, etc. |
| <ul style="list-style-type: none"> • Digital Markets Act (DMA): Identifying "dominant gatekeeper" platforms and addressing non-competitive practices and dominance abuse. |

GPAI SUMMIT

(# Technology # AI)

India inaugurated the Global Partnership on Artificial Intelligence (GPAI) Summit.

India is the lead chair of GPAI in 2024. The GPAI is an alliance of 28 countries; the European Union adopted the 'New Delhi Declaration' of the GPAI.

Key Highlights of the GPAI Summit

- The Prime Minister of India discussed the national AI portal, highlighting the **AIRAWAT initiative** and raising concerns over the potential misuse of deep fake technology.
- **YUVAi** was prominently featured at the GPAI Summit, and the winners of the YUVAi initiative and start-ups showcased their AI models and solutions.
- The Prime Minister suggested **using AI to make digital services available in local languages** to increase digital inclusion.
- **Responsible AI, data governance, future of work, and innovation and commercialization** are the four different themes of four sessions organized in the GPAI.
- The summit also included various side events showcasing AI progress and engaging in discussions, such as industry panel discussions, workshops, research symposiums, hackathons, and the Global AI Expo.

AIRAWAT

- NITI Aayog circulated the cabinet note to establish a **cloud computing platform called AIRAWAT** (Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform in 2019).
- The move to create a cloud computing platform is part of the government's goal of making India a pioneer amongst emerging economies with regard to AI and transforming sectors like education, health, agriculture, urbanization, and mobility.

YUVA Ai initiative

- The National e-Governance Division (NeGD) partnered with Intel India to launch 'YUVAi-Youth for Unnati and Vikas with AI' program.

Aims

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| <ul style="list-style-type: none"> • To foster a deeper understanding of AI, equip school students from classes 8 to 12 across the nation with relevant mindset and skill sets, and empower them to become human-centric designers and users of AI. |
| <ul style="list-style-type: none"> • The program offers an applied learning experience for students to understand and identify how AI technology can be used to tackle critical problems and lead to inclusive development of the nation. |
| <ul style="list-style-type: none"> • The program will be ongoing throughout the year to give a maximum number of students a chance to empower themselves to be future-ready. |

Delhi Declaration of the GPAI

- It acknowledges the **need to harness new opportunities and mitigate the risks** arising from the development, deployment, and use of Artificial Intelligence (AI).
- Affirms the **commitment to uphold human dignity, human rights, and democratic values.**
- Emphasizes the **importance of fostering trust, transparency, accountability, and inclusiveness** in AI.
- Recognizes the **potential of AI to contribute to the United Nations Sustainable Development Goals** and address global challenges.
- **Encourages international cooperation and coordination** on AI research, innovation, and policy.
- Supports the development of a comprehensive framework that encompasses shared principles for safe and trusted AI.
- Endorses **India's proposal to establish and maintain a Global Digital Public Infrastructure Repository (GDPIR)** to share digital public goods.
- GDPIR was established under the Ministry of Electronics and Information Technology (MeitY), to serve as an **extensive repository, consolidating crucial insights and knowledge from both G20 members and guest nations.**
- Calls for further dialogue on AI governance and ethics among stakeholders.

AMRIT TECHNOLOGY (# Environment #Science)

- The technology was developed by the Indian Institute of Technology (IIT) - Madras.
- It is designed for the **removal of arsenic and metal ions from water, addressing water quality issues.**
- The technology utilizes **nano-scale iron oxy-hydroxide**, which selectively removes arsenic when water passes through it.
- AMRIT is **applicable for both domestic and community-level water purification.**
- The technology **aligns with the broader goals of the Jal Jeevan Mission**, which aims to provide safe and potable tap water to rural households in India.
- The technology has been recommended by **the 'Standing Committee'** of the Department of Drinking Water and Sanitation for consideration in addressing water and sanitation challenges.

Arsenic

- Arsenic is a **natural component** of the earth's crust and is widely distributed throughout the environment in the air, water, and land.
- It is **highly toxic in its inorganic form.**
- Long-term exposure to arsenic from drinking water and food can cause **cancer and skin lesions.**

- Chronic poisoning of arsenic can cause **Blackfoot disease (BFD)**, which **affects the blood vessels in the lower limbs**.

WEB BROWSERS

(#Science)

- The web browser is an **application software to explore www (World Wide Web)**.
- It **provides an interface between the server and the client** and requests to the server for web documents and services.
- It works as a **compiler to render HTML (Hypertext Markup Language)** which is used to design a webpage.
- Whenever we search for anything on the internet, the browser loads a web page written in HTML, including text, links, images, and other items such as stylesheet and JavaScript functions.
- **Google Chrome, Microsoft Edge, Mozilla Firefox, and Safari** are examples of web browsers.

Origin

- In the nascent days of the internet, browsing was a text-based venture until **Tim Berners-Lee introduced the World Wide Web** in 1990, alongside the inaugural web browser, 'WorldWideWeb'.
- The transformative **Mosaic browser in 1993 brought images** into the web landscape, revolutionizing user interaction.
- **Netscape Navigator's** advent further enhanced browsing by introducing bookmarks and user-friendly features, sparking the 'Browser Wars' between it and Internet Explorer.

The Evolutionary Leaps

- The monotony of **Internet Explorer's dominance was broken by Mozilla Firefox** in 2004-2005, propelling innovation with tabbed browsing and add-ons, setting new standards.
- **Google's Chrome**, with its speed and minimalism, **emerged in 2008**, triggering a revitalization of the browser market.
- Other contenders such as **Apple's Safari and Microsoft Edge (a successor to Internet Explorer)** evolved, providing diverse options tailored to user preferences.

Anatomy of Web Browsers

- **Request and Response:** Initiating a website visit triggers a sequence of digital communication, akin to dispatching and receiving messages via a network of servers.
- **Deconstructing the Response:** Webpage information arrives in files encoded in **HTML, CSS (Cascading Style Sheets), and JavaScript**, each playing a pivotal role in constructing the final web page.

- **HTML provides the architectural blueprint** of a webpage. Similar to the skeletal framework of a building, made with iron bars, bricks, and cement, HTML defines the structure of the page, outlining elements like headings, paragraphs, images, and links.
 - **CSS is considered to be the interior designer** of the digital world. This information imparts style and aesthetics to the HTML structure by controlling attributes like colour schemes, fonts, spacing, and positioning.
 - **JavaScript is the dynamic engine, making web pages interactive and responsive.** Analogous to the electrical system in a building, JavaScript breathes life into static content. It allows interactive elements like pop-ups, forms, animations, and real-time updates, creating an engaging user experience.
- **Rendering:** The browser assembles the webpage by decoding HTML structure, applying CSS for aesthetics, and executing JavaScript for interactivity, all within seconds.
 - **Data Management: Cookies store browsing data** for seamless navigation, while the cache retains frequently accessed files, accelerating page loading times.
 - **Security Measures:** Browsers employ encryption protocols like HTTPS and warning systems to shield and alert users against potential threats.

SO₂ REDUCTION TECHNOLOGY

(#Science)

Flue Gas Desulfurization (FGD)

- FGD is the process of **removing sulphur compounds from the exhaust emissions** of fossil-fueled power stations.
- This is **done through the addition of absorbents**, which can remove up to 95% of the sulphur dioxide from the flue gas.
- **Flue gas** is the material emitted when **fossil fuels such as coal, oil, natural gas, or wood are burned for heat or power.**

Circulating Fluidized Bed Combustion (CFBC)

- CFBC Boiler is an environment-friendly power facility to reduce the discharge of pollutants such as nitrogen oxide and sulphur oxide **by injecting air and lime at the same time for burning.**
- A **bed of solid particles is said to be fluidized** when the pressurised fluid (liquid or gas) is passed through the medium and causes the solid particles to behave like a fluid under certain conditions.
- Fluidization causes the transformation of the state of solid particles from static to dynamic.

MENTAL HEALTH INITIATIVES

(#Science #Health)

National Mental Health Programme (NMHP)

- The NMHP, initiated in 1982 and restructured in 2003, **aims to modernize mental health facilities and upgrade psychiatric wings** in medical institutions.
- Additionally, the **District Mental Health Programme (DMHP)** since 1996 has focused on community mental health services at the primary healthcare level, spanning 716 districts.
- DMHP **provides outpatient services, counselling, psycho-social interventions**, and support for severe mental disorders at community health and primary health centres.
- Together, they constitute a **comprehensive strategy for mental health care** in India.

National Tele Mental Health Programme

- NTMHP was launched in October 2022, to further **improve access to quality mental health counselling and care services** in the country.
- National Institute of Mental Health and Neuro Sciences (NIMHANS)**, Bengaluru is the National Apex Centre, coordinated activities of Tele MANAS across India.
- 25 States/UTs have established 36 Tele Mental Health and Normalcy Augmentation Systems (MANAS) Cells for extending mental health services.

NIMHANS and iGOT-Diksha Collaboration:

- NIMHANS provides psychosocial support and training through the **(iGOT)-Diksha platform**.
- Online training for health workers** conducted by NIMHANS on the (iGOT)-Diksha platform.

Ayushman Bharat – HWC Scheme

- The Ayushman Bharat - Health and Wellness Centres (AB-HWCs) are part of the Ayushman Bharat Programme.
- The program **aims to provide a wider range of services**, including preventive, promotive, curative, rehabilitative, and palliative care (*a specialized medical approach that aims to improve the quality of life for people with serious illnesses*).
- Operational guidelines on **Mental, Neurological, and substance use disorders (MNS)** at Health and Wellness Centres (HWC) have been released under the ambit of Ayushman Bharat.

AI and ML in SPACE APPLICATION

(#Science #Space)

The Government of India highlighted the substantial strides made by the Indian Space Research Organisation (ISRO) in integrating Artificial Intelligence (AI) and Machine Learning (ML) within the realm of space exploration.

ISRO's ongoing projects, including the Gaganyaan Program have integrated AI solutions.

AI and ML Assist in Diverse Space Applications

Space Exploration and Robotics

- **AI-driven robots and rovers** can navigate, make decisions, and explore distant planets or asteroids without constant human intervention.
- **ML helps in identifying celestial objects**, terrain, and hazards in images captured by space probes or satellites.

Satellite Operations

- **ML algorithms analyze satellite images** to monitor changes in Earth's surface, weather patterns, and environmental changes.
- **AI helps anticipate satellite component failures** by analyzing telemetry data, enhancing maintenance scheduling, and reducing downtime.

Spacecraft Systems

- **AI systems monitor the health of spacecraft components**, predicting potential failures and allowing proactive maintenance.
- **ML algorithms optimize power, fuel, and other resources** for spacecraft operations during missions.

Data Analysis and Pattern Recognition

- **AI analyzes vast amounts of astronomical data** to discover new celestial bodies, understand cosmic phenomena and identify space debris in space.
- **ML helps in processing signals from deep space**, distinguishing between noise and potential communication or scientific data.

Mission Planning and Decision Making

- **AI models assess mission risks**, aiding in decision-making processes by considering various factors and scenarios.
- **ML enables spacecraft to adapt to changing environments** or unexpected situations in real-time.

- **Optical Communications Optimization:** AI and ML models refine optical communication systems, adapting to changing space conditions and maximizing data transmission rates, crucial for interplanetary missions.
- **Quantum Computing for Space Challenges:** AI has the potential to harness quantum computing's potential to tackle complex calculations and cryptography, enhancing security and computational capabilities for space missions requiring high-level encryption or intricate simulations.

KAKRAPAR ATOMIC POWER PROJECT

(#Science #Nuclear Power)

*The **fourth unit of Kakrapar Atomic Power Station (KAPS)**, Gujarat has achieved its **first Criticality** — the beginning of the regulated fission reaction — paving the way for its eventual transition to generating power for commercial use.*

Criticality

- Criticality is the **first step towards power production**. A nuclear reactor is said to be critical when the **nuclear fuel inside a reactor sustains a fission chain reaction**.
- **Each fission reaction releases a sufficient number of neutrons** to sustain a series of reactions.
- **Heat is produced in the event**, which is **used to generate steam that spins a turbine** to create electricity.
- **Fission is a process in which the nucleus of an atom splits** into two or more smaller nuclei, and some byproducts.
- When the nucleus splits, the **kinetic energy of the fission fragments (primary nuclei) is transferred to other atoms** in the fuel as heat energy, which is eventually used to produce steam to drive the turbines.

Significance of Achieving First Criticality

Milestone for Power Generation

- This stage demonstrates that the **reactor can produce a controlled and continuous chain reaction**, essential for sustained power generation.
- It's a precursor to full operation and power generation for commercial use.

Technology Advancements

- The Kakrapar reactors, particularly Units 3 and 4, boast advanced safety features inspired by lessons from past nuclear incidents like the Fukushima Daiichi disaster.
- These include **steel-lined containment systems** and **passive decay heat removal systems**, enhancing safety and reliability.

Energy Sustainability and Climate Goals

- Nuclear energy, as a low-carbon source, aligns with India's climate goals to increase its renewable energy share.
- **India aims to generate 50% of its electricity from non-fossil fuel sources by 2030**, as pledged at international forums like the United Nations Convention of Parties (COP26).

GENOME SEQUENCING

(#Science #Health)

- Genome sequencing is **figuring out the order of DNA nucleotides, or bases, in a genome**—the order of As, Cs, Gs, and Ts that make up an organism's DNA. The human genome is made up of over 3 billion of these genetic letters.
- Today, DNA sequencing on a large scale—the scale necessary for ambitious projects such as sequencing an entire genome—is mostly done by high-tech machines. Much as your eye scans a sequence of letters to read a sentence, these machines "read" a sequence of DNA bases.
- A DNA sequence that has been translated from life's chemical alphabet into our alphabet of written letters might look like this:

AGTCCGCGAATACAGGCTCGGT

- That is, in this particular piece of DNA, an **adenine (A)** is followed by a **guanine (G)**, which is followed by a **thymine (T)**, which in turn is followed by a **cytosine (C)**, another **cytosine (C)**, and so on.

More about genome sequencing

- Genome sequencing is often compared to **"decoding,"** but a sequence is still very much in code. In a sense, a genome sequence is simply a **very long string of letters in a mysterious language**.
- When you read a sentence, the meaning is not just in the sequence of the letters. It is also in the words those letters make and in the grammar of the language. Similarly, the human genome is more than just its sequence.
- **Imagine the genome as a book written without capitalization or punctuation**, without breaks between words, sentences, or paragraphs, and with strings of nonsense letters scattered between and even within sentences.
- So sequencing the genome **doesn't immediately lay open the genetic secrets of an entire species**. Even with a rough draft of the human genome sequence in hand, much work remains to be done.
- Scientists still have to translate those strings of letters into an understanding of how the genome works: what the various genes that make up the genome do, how different genes are related, and how the various parts of the genome are coordinated. That is, they have to figure out what those letters of the genome sequence mean.

Importance

- **Sequencing the genome** is an important step towards understanding it.
- At the very least, the genome sequence will represent a valuable shortcut, helping scientists **find genes much more easily and quickly**. A genome sequence does contain some clues about where genes are, even though scientists are just learning to interpret these clues.
- Scientists also hope that being able to study the entire genome sequence will help them understand **how the genome as a whole works**—how genes work together to direct the growth, development and maintenance of an entire organism.

- Finally, **genes account for less than 25 percent of the DNA in the genome**, and so knowing the entire genome sequence will help scientists study the parts of the genome outside the genes.
- This includes the regulatory regions that control **how genes are turned on an off, as well as long stretches of "nonsense" or "junk" DNA**—so called because we don't yet know what, if anything, it does.

WHOLE GENOME SEQUENCING

(#Science #Health)

- Whole-genome sequencing (WGS) is a **comprehensive method for analyzing entire genomes**.
- Genomic information has been instrumental in **identifying inherited disorders, characterizing the mutations** that drive cancer progression, and tracking disease outbreaks.
- Rapidly dropping sequencing costs and the ability to produce large volumes of data with today's sequencers make whole-genome sequencing a powerful tool for genomics research.
- While this method is commonly associated with sequencing human genomes, the scalable, **flexible nature of next-generation sequencing (NGS) technology** makes it equally useful for sequencing any species, such as agriculturally important livestock, plants, or disease-related microbes.



Advantages

- Provides a high-resolution, base-by-base view of the genome.
- Captures both large and small variants that might be missed with targeted approaches.

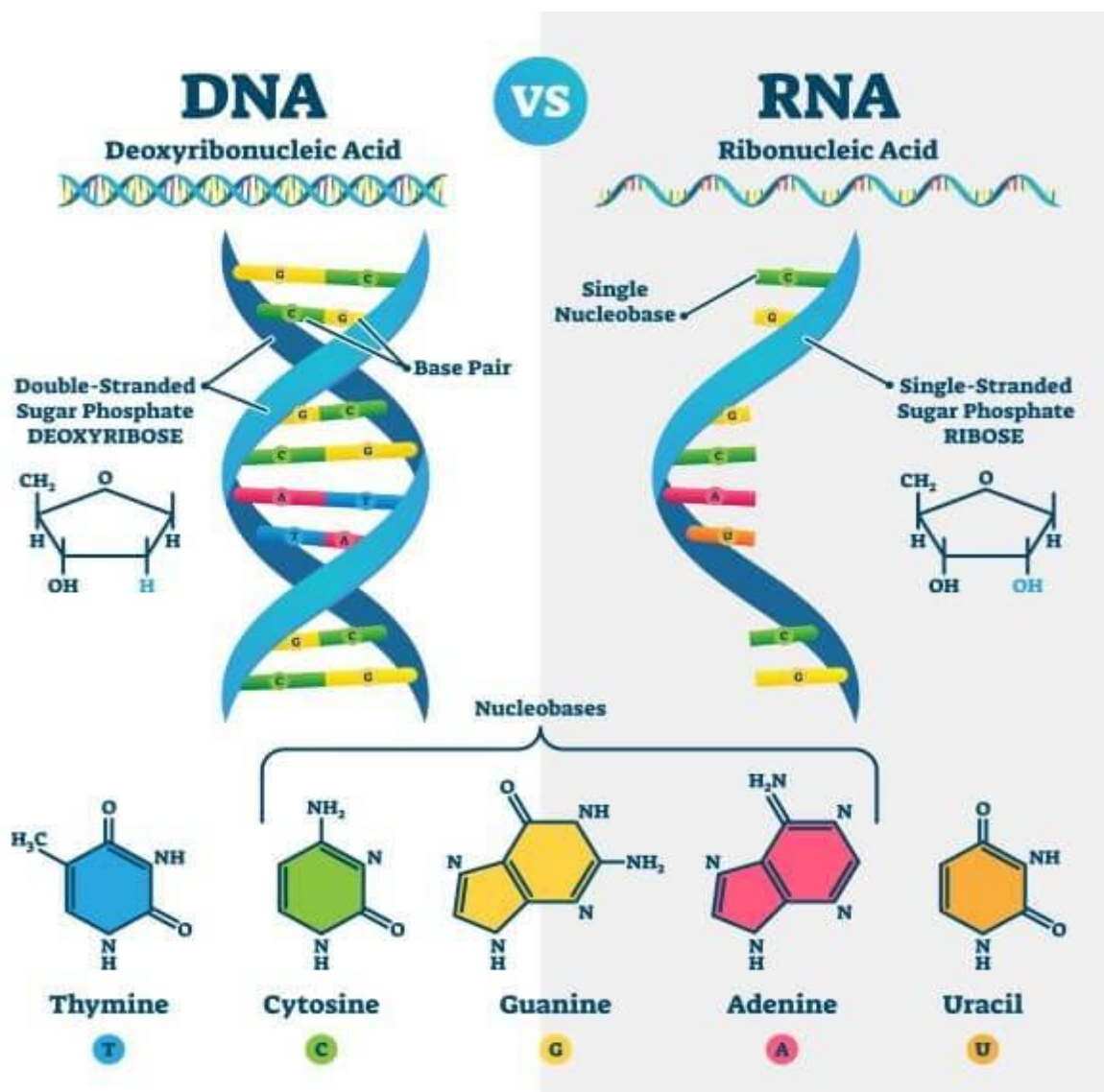
- Identifies potential causative variants for further follow-up studies of gene expression and regulation mechanisms.
- Delivers large volumes of data in a short amount

DNA and RNA

(#Science #Health)

Parameter	DNA	RNA
Structure	DNA is a double-stranded molecule consisting of a long chain of nucleotides. B type of helix.	It is a single-stranded helix consisting of a short chain of nucleotides. A type of helix.
Function	Transmits genetic information to make other cells and new organisms. Long-term storage of genetic information	It transfers the genetic code from the nucleus to the ribosomes to make proteins.
Propagation	DNA is self-replicating.	Synthesized from DNA.
Composition	Deoxyribose sugar phosphate backbone adenine, guanine, cytosine, thymine bases.	Ribose sugar phosphate backbone adenine, guanine, cytosine, uracil bases.
Location	In the nucleus of a cell and in the mitochondria.	Located in the cytoplasm, nucleus, and in the ribosome.
Nitrogenous Bases and Pairing	GC (Guanine pairs with Cytosine) A-T (Adenine pairs with Thymine).	GC (Guanine pairs with Cytosine) A-U (Adenine pairs with Uracil)
Molecular Weight	2 to 6 million	25,000 to 2 million
Stability	DNA is a more stable molecule than RNA. DNA is stable under alkaline conditions.	Much more reactive than DNA and is not stable in alkaline conditions.

Ultraviolet (UV) Sensitivity	DNA is vulnerable to damage by ultraviolet light.	Much more resistant to damage from UV light than DNA.
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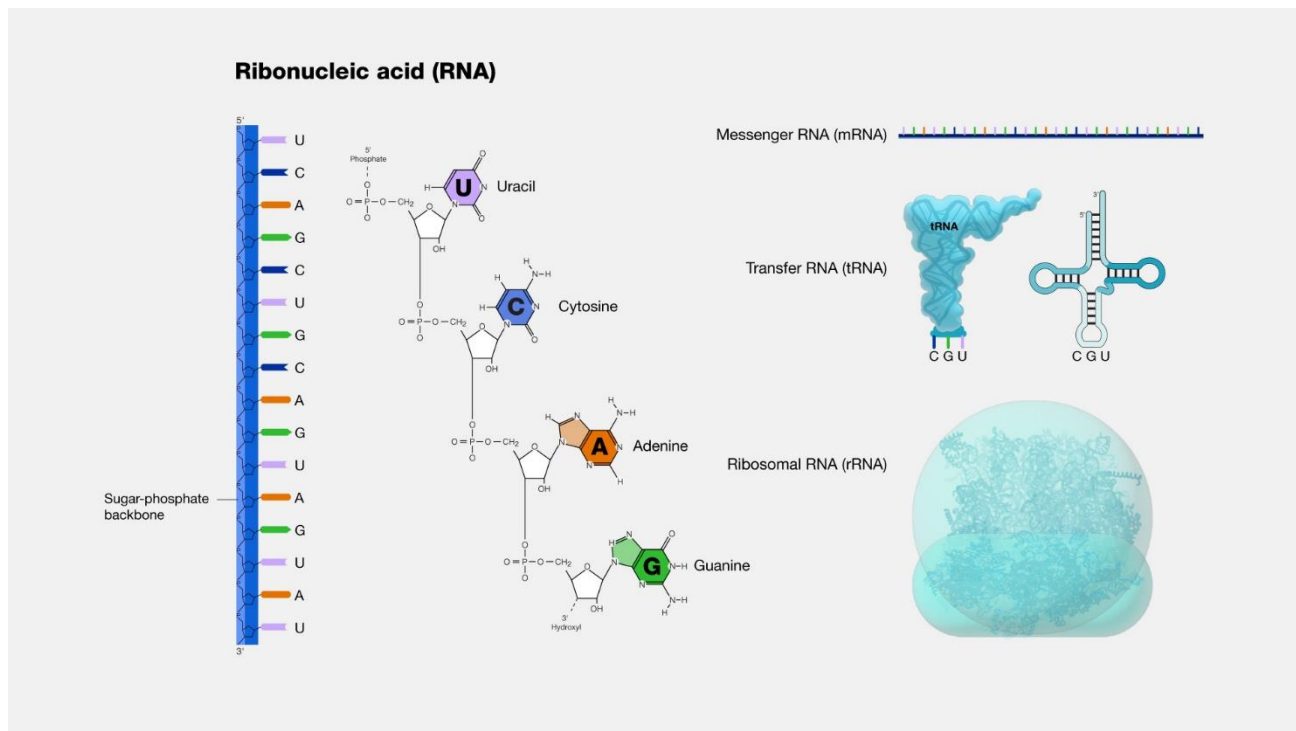


RNA

(#Science #Health)

- Ribonucleic acid (abbreviated RNA) is a **nucleic acid present in all living cells** that has structural similarities to DNA.
- Unlike DNA, however, **RNA is most often single-stranded**. An RNA molecule has a backbone made of alternating phosphate groups and the sugar ribose, rather than the deoxyribose found in DNA.

- Attached to each sugar is one of four bases: **adenine (A)**, **uracil (U)**, **cytosine (C)** or **guanine (G)**.
- Different types of RNA exist in cells: messenger RNA (mRNA), ribosomal RNA (rRNA) and transfer RNA (tRNA). In addition, some RNAs are involved in regulating gene expression. Certain viruses use RNA as their genomic material.



Types of RNA

RIBOSOMAL RNA (rRNA)

- rRNAs are found in the **ribosomes** and **account for 80% of the total RNA present** in the cell.
- Ribosomes are composed of a large subunit called the 50S** and a **small subunit called the 30S**, each of which is made up of its own specific rRNA molecules.
- Different rRNAs present in the ribosomes include small rRNAs and large rRNAs, which belong to the small and large subunits of the ribosome, respectively.
- rRNAs combine with proteins and enzymes in the cytoplasm to form ribosomes**, which act as the site of protein synthesis.
- These complex structures travel along the **mRNA molecule during translation and facilitate the assembly of amino acids** to form a polypeptide chain. They interact with tRNAs and other molecules that are crucial to protein synthesis.
- In bacteria, the small and large rRNAs contain about 1500 and 3000 nucleotides, respectively, whereas in humans, they have about 1800 and 5000 nucleotides, respectively.

- However, **the structure and function of ribosomes is largely similar across all species.**

TRANSFER RNA (tRNA)

- **tRNA is the smallest of the 3 types of RNA**, possessing around 75-95 nucleotides.
- tRNAs are an **essential component of translation**, where their main function is the **transfer of amino acids during protein synthesis**. Therefore, they are called **transfer RNAs**.
- Each of the 20 amino acids has a specific tRNA that binds with it and transfers it to the growing polypeptide chain. tRNAs also act as adapters in the translation of the genetic sequence of mRNA into proteins. Thus, they are also called adapter molecules.
- **tRNAs have a cloverleaf structure** which is stabilized by **strong hydrogen bonds between the nucleotides**.
- They normally contain some unusual bases which are formed by **methylation of the usual bases**.
- **Methyl guanine and methylcytosine** are two examples of methylated bases.

mRNA

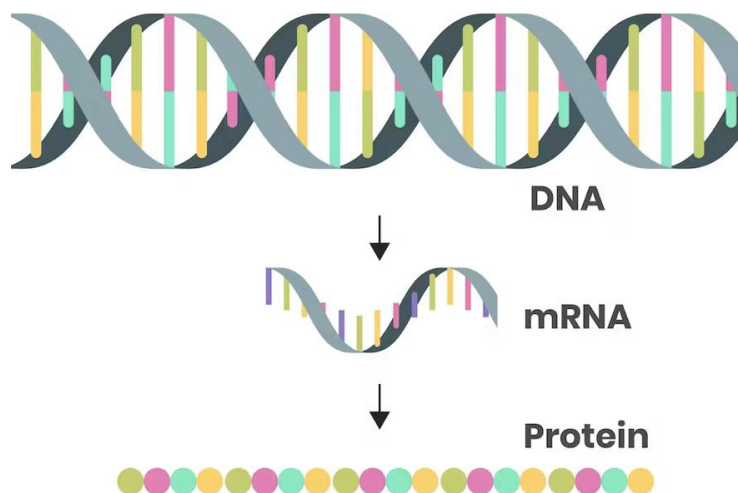
(#Science #Health)

- mRNA (Messenger RNA) **carries important messages from our DNA (Deoxyribonucleic acid) to the cell's machinery**, telling it how to make specific proteins.

- Our bodies need around **100,000 proteins to work properly**, helping with tasks like breaking down food and performing vital chemical reactions.

- When a **cell needs a specific protein**, it doesn't directly read the recipe from DNA. Instead, **it makes a copy called mRNA**.

- This **mRNA serves as a messenger, carrying the protein-making instructions**.
- It's **made up of four building blocks (A, U, C, G)**, forming words of only three letters.
- By reading this mRNA recipe, cells easily know how to create the required protein.
- **Cells are quite good at recognizing, using, and then getting rid of mRNA** once it's done its job.



- However, **changes or mistakes in the DNA's recipe book (mutations)** can mess up the mRNA instructions, leading to errors in making essential proteins, **which can cause diseases.**

Significance of mRNAs in Making Medicines

Precision and Customization

- **Scientists comprehend how mRNAs instruct cells to create proteins.** This knowledge allows them to **easily craft codes for various proteins**, modifying these codes to suit individual patient needs.
- Whether **it's designing entirely new mRNA codes** or adjusting existing ones, the flexibility allows for tailored treatments.

Scalability and Uniformity

- **Manufacturing mRNA treatments is scalable and consistent.** The process to create one mRNA is uniform across different mRNA types.
- Unlike traditional drugs, each having unique chemistry and manufacturing methods, **mRNA production follows a standardized process.**
- This uniformity streamlines production, akin to knowing a basic recipe and being able to create countless variations.

Easy Adaptability

- **Cells naturally eliminate mRNA once its task is complete.**
- Adjusting doses to accommodate changing patient requirements becomes effortless due to this **innate ability of cells to degrade unnecessary mRNA.**

Production Capacity

- Scientists can **generate substantial quantities of mRNA in laboratory settings.**
- This ability to produce large amounts facilitates the development and distribution of mRNA-based medicines on a broader scale.

Expanded Vaccine Development

- Clinical trials for mRNA-based vaccines extend to diseases like seasonal flu, herpes, respiratory syncytial virus, norovirus, Lyme disease, Zika, and shingles, **promising a wider array of preventive treatments.**
- mRNA therapies **show promise in cancer treatment by leveraging the body's immune response.**
- Cancer vaccines, tailored to target specific mutations in tumors, enhance antibody production to mark and attack cancer cells. This personalized approach seeks to minimize harm to healthy cells.

CRISPR-Cas9

(#Science #Health)

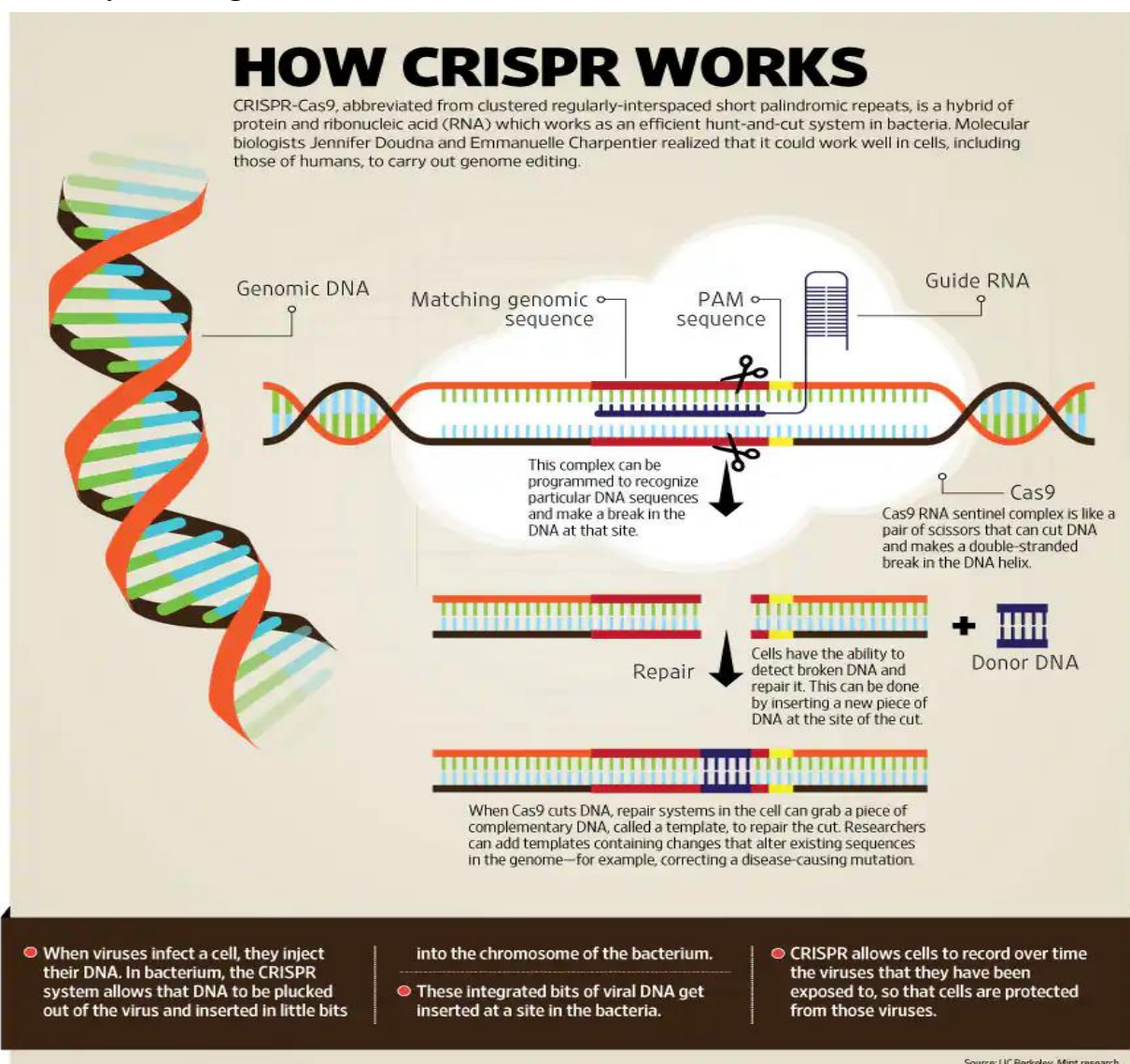
- CRISPR-Cas9 is the **most common, cheap and efficient system** used for genome editing.

• CRISPR stands for '**clustered regularly interspaced short palindromic repeats**'.

• CRISPR is the **DNA-targeting part of the system** which consists of an RNA molecule, or 'guide', designed to bind to specific DNA bases through complementary base-pairing.

• **Cas9 stands for CRISPR-associated protein 9**, and is the nuclease part that cuts the DNA.

- The CRISPR-Cas9 system was originally discovered in bacteria that use this system to destroy invading viruses.



Significance of crispr-based therapeutic solutions

- **Specific Treatment:** CRISPR aids in the disease treatment by **correcting the underlying genetic problem**. CRISPR-based therapeutic solutions are not in the form of a pill or drug. Instead, **some cells of every patient are extracted, the genes are edited** in the laboratory, and the **corrected genes** are then **re-injected into the patients**.
- **What is to be edited, and where, is different in different cases. Therefore, a specific solution needs to be devised for every disease or disorder** that is to be corrected.
- The solutions could be **specific to particular population or racial groups**, since these are also dependent on genes.
- The changes in genetic sequences remain with the individual and are not passed on to the offspring.
- **Permanent Cure of Genetic Diseases/Anomalies:** A vast number of diseases and disorders are genetic in nature i.e.; they are caused by unwanted changes or mutations in genes.

- | |
|---|
| ○ These include common blood disorders like sickle cell anaemia, eye diseases including colour blindness, several types of cancer, diabetes, HIV, and liver and heart diseases . Many of these are hereditary as well. |
| ○ CRISPR opens up the possibility of finding a permanent cure for many of these diseases . |
| ○ Deformities like stunted or slow growth, speech disorders, or inability to stand or walk arise out of abnormalities in gene sequences. |
| • CRISPR presents a potential treatment for the cure of such abnormalities as well. |

SECTION- ENVIRONMENT

COP 28 OUTCOMES

LOSS AND DAMAGE FUND

(# Environment # Conservation)

At the 28th Conference of Parties (COP28) held in Dubai, countries have agreed to operationalise the Loss and Damage(L&D) Fund.

About

- The 'Loss and Damage' (L&D) fund is a **financial mechanism designed to address the irreversible consequences of climate change** that cannot be avoided or mitigated through adaptation efforts.
- This fund **recognizes and aims** to compensate for the real losses incurred by communities, countries, and ecosystems due to the impacts of climate change.
- These losses extend beyond monetary value and cut to the core of human rights, well-being, and environmental sustainability.

Genesis and Evolution of the L&D Fund

COP 19 (2013)	<ul style="list-style-type: none"> • The formal agreement at the COP 19 to the UNFCCC in Warsaw, Poland, in 2013, led to the establishment of the L&D fund. • This fund was specifically created to provide financial and technical assistance to economically developing nations that were incurring Loss and Damage due to climate change.
COP 25 (2019)	<ul style="list-style-type: none"> • Following COP 19, the Santiago Network for L&D was established at COP 25. • The vision of the Santiago Network is to catalyze the technical assistance of relevant organizations, bodies, networks, and experts, for the implementation of relevant approaches for averting, minimize and addressing L&D at the local, national and regional level, in developing countries that are particularly vulnerable to the adverse effects of climate change. • However, at this point, countries did not commit any funds to support the initiative.
COP 26 (2021)	<ul style="list-style-type: none"> • COP26 climate summit in Glasgow, aimed to continue discussions over the next three years regarding the operationalization of the fund.
COP 27 (2022)	<ul style="list-style-type: none"> • COP-27 in Sharm El-Sheikh, Egypt. • After intense negotiations at COP 27, representatives of the UNFCCC's member states agreed to set up the L&D fund. • Additionally, a Transitional Committee (TC) was established to figure out how the new funding mechanisms under the fund would operate. • The TC was tasked with preparing recommendations for countries to consider, deliberate on, and potentially adopt by COP 28.

L&D Fund

- It will be **based at the World Bank** but managed by an independent secretariat. The World Bank will be the “interim host” of the fund for a period of four years.
- **Payments are voluntary** and a certain percentage has been set apart for a category of countries called Least Developed Countries and Small island developing states.
- Commitments worth **atleast \$450 million** have already been made by countries.
- **Contributors include:** European Union, United Arab Emirates, Germany, the United States, the United Kingdom, and Japan.

LeadIT

(# Environment # Conservation)

The Leadership Group for Industry Transition (LeadIT) Summit 2023 hosted by India and Sweden at the Conference of Parties (COP 28) in the United Arab Emirates, the Ministry of Environment, Forest, and Climate Change announced the three pillars of the second phase of LeadIT (2.0).

LeadIT

- It is a global initiative that **aims to accelerate the transition of challenging sectors** such as steel, cement, chemicals, aviation, and shipping **to low-carbon pathways**.
- The LeadIT **gathers countries and companies that are committed to action** to achieve the Paris Agreement.
- It was **launched by the governments of Sweden and India** at the United Nations Climate Action Summit in 2019 and is supported by the World Economic Forum.
- The **LeadIT Secretariat** is responsible for managing the work of the **Leadership Group**.

Members

- LeadIT, boasting 38 members, encompasses countries and companies. Notably, **India is an active participant**.
- LeadIT members subscribe to the notion that energy-intensive industries can and must progress on low-carbon pathways, aiming to achieve net-zero carbon emissions by 2050.

Key Highlights of the Second Phase of LeadIT

Mission

- **Facilitate the creation of policies and regulations** backing an inclusive industry transition through public-private partnerships.
- **Mobilise resources, support knowledge-sharing, and accelerate pathways** to achieve net-zero industry emissions by 2050.

LeadIT Pillars

Global Forum for a Just and Equitable Industry Transition:

- Ensuring **continuous dialogue and engagement** between governments and industry.

- This pillar is **dedicated to sustaining LeadIT's engagement with multilateral groups** (e.g., UN Climate Action, United Nations Framework Convention on Climate Change (UNFCCC) COP presidencies), facilitating knowledge sharing among members, and vigilantly monitoring the transition's pace.

Technology Transfer and Co-development:

- This pillar is **dedicated to facilitating business-to-business technology transfer** and building **national institutional capacity** for innovation.

Industry Transition Partnerships:

- The LeadIT Secretariat **aids members in creating industry transition partnerships, supporting emerging markets and developing economies** in their pursuit of green industrial transitions.
- These partnerships involve **mapping, coordinating, and strengthening technical and financial international assistance** to enhance effectiveness.
- The ultimate goal is to **establish enabling conditions** for a pipeline of **bankable low-carbon industrial projects**.

GLOBAL RIVER CITIES ALLIANCE (GRCA)

(# Environment # Conservation)

The National Mission for Clean Ganga (NMCG) has launched the Global River Cities Alliance (GRCA) at COP28 in Dubai, United Arab Emirates.

*During the event the NMCG also signed a Memorandum of Common Purpose (MoCP) with the **Mississippi River Cities and Towns Initiative (MRCTI)**, representing 124 cities/towns situated along the banks of the Mississippi River, the United States.*

*The NMCG has signed the MoCP on behalf of the **River Cities Alliance (RCA)**.*

- The GRCA is an **international coalition of cities and countries** dedicated to the **conservation, sustainable management, and protection of river systems worldwide**.
- The alliance encompasses a diverse array of countries and river cities, fostering partnerships among key nations like India, Egypt, Netherlands, Denmark, Ghana, Australia, Bhutan, Cambodia, Japan, and others.
- GRCA's membership extends to cover 275+ river-cities across 11 countries, demonstrating a substantial global reach and influence.

Objective

- It will serve as a platform for collaboration, knowledge exchange, and concerted efforts among various stakeholders, including governments, cities, financial institutions, and environmental organizations.

River Cities Alliance (RCA)

- The RCA is a **joint initiative of the Ministry of Jal Shakti (MoJS) & the Ministry of Housing and Urban Affairs (MoHUA)**, with a vision to connect river cities and focus on sustainable river centric development.
- The Alliance focuses on **three broad themes**- Networking, Capacity Building and Technical Support.
- Beginning with 30 member cities in November 2021, the Alliance has expanded to 110 river cities across India and one international member city from Denmark.

Objective

- The RCA intends to **facilitate knowledge exchange (online) for Indian cities** to learn new practices and approaches for urban river management.
- It will also be an **opportunity for international cities** to learn about experiences in Indian cities, which may be relevant to their contexts.

Mississippi River Cities and Towns Initiative (MRCTI)

- The MRCTI was created in **2012** to provide an influential voice for the **Mississippi River**, dramatically increasing demand for effective river protection, restoration, and management.
- It addresses matters of mutual concern, including river water quality and habitat restoration, flooding and floodplain issues, river-focused recreation, sustainable economies, and celebration of the River culture and history.

GLOBAL STOCKTAKE TEXT

- The Global Stocktake (GST) is a **periodic review mechanism established** under the Paris Agreement in 2015.
- The **fifth iteration of the Global Stocktake (GST) text** was released at COP28 and adopted with no objection.
- The text **proposes eight steps** to keep the global temperature rise within the ambit of 1.5 degrees Celsius:

1. Tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030;
2. Accelerating efforts towards the phase-down of unabated coal power;
3. Accelerating efforts globally towards net zero emissions energy systems , utilizing zero and low carbon fuels well before or by around mid-century;
4. Accelerating zero and low emissions technologies , including, inter alia, renewables, nuclear, abatement and removal technologies, including such as carbon capture and utilization and storage, and low carbon hydrogen production, to enhance efforts towards substitution of unabated fossil fuels in energy systems.
5. Transitioning away from fossil fuels in energy systems, in a just, orderly, and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science;

6. Accelerating and substantially reducing non-CO2 emissions, including, in particular, methane emissions globally by 2030;

7. Accelerating emissions reductions from road transport through a range of pathways, including development of infrastructure and rapid deployment of zero and low emission vehicles;

8. Phasing out of inefficient fossil fuel subsidies that encourage wasteful consumption and do not address energy poverty or just transitions, as soon as possible.

- Nearly 200 countries agreed to **"transition away from fossil fuels in energy systems"** at the COP28.
- The **agreement is the first time countries** have made this pledge. The deal aims to signal to policymakers and investors that the world is committed to breaking away from fossil fuels.

• Cutting methane emissions could involve tweaking agricultural patterns which could be extremely sensitive in a country like India.

• Possibly in deference to the concerns of such countries, the agreement does not mention any targets for methane emission cuts for the year 2030, although a group of about 100 countries had made a voluntary commitment, in Glasgow in 2021, to reduce their methane emissions by 30% by 2030.

• This pledge is known as the **Global Methane Pledge**. However, **India is not a part of the Global Methane Pledge**.

Global Renewables and Energy Efficiency Pledge:

- The Pledge stipulates that signatories commit to **work together to triple the world's installed renewable energy generation** capacity to at least **11,000 GW by 2030** and to collectively double the global average annual rate of energy efficiency improvements from around 2% to over 4% every year until 2030.

The Global Cooling Pledge for COP 28:

- It includes 66 national government signatories committed to working together to **reduce cooling-related emissions** across all sectors by at least 68% globally relative to 2022 levels by 2050.

OTHER COUTCOMES AT COP-28

CLIMATE FINANCE

- The United Nations Conference on Trade and Development (UNCTAD) estimates that wealthy nations **owe developing countries USD 500 billion in 2025** under the **New Collective Quantified Goal (NCQG)** for climate finance.

• The NCQG was confirmed by developed countries under the **Paris Agreement in 2015**.

• The goal is to set a new collective quantified goal before 2025. The goal will **start from a floor of USD 100 billion per year**.

- This includes **USD 250 billion for mitigation, USD 100 billion for adaptation, and USD 150 billion for loss and damage.**
- The figure is expected to increase to USD 1.55 trillion by 2030.
- The current climate finance goal of USD 100 billion per year has not been met, and developing countries are facing debt distress.
- Experts call for reform of the global financial architecture to address structural issues and promote sustainable development.

GLOBAL GOAL ON ADAPTATION (GGA)

- The **draft text** on the Global Goal on Adaptation (GGA) **was introduced.**
- It was established under the Paris Agreement to enhance climate change adaptation by increasing awareness of and funding towards countries' adaptation needs in the context of the 1.5/2°C goal of the Paris Agreement.
- The draft text addresses critical issues:

- Climate-Induced **Water Scarcity Reduction.**
- Climate-**resilient food and Agriculture Production.**
- Strengthening Resilience Against **Climate-Related Health Impacts.**

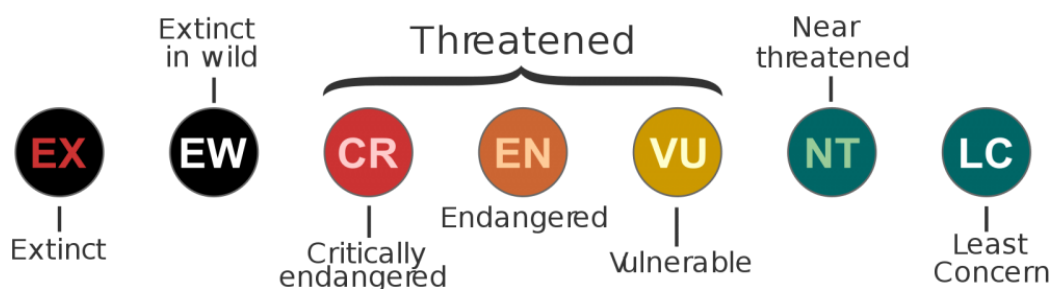
DECLARATION TO TRIPLE NUCLEAR ENERGY	<ul style="list-style-type: none"> • The declaration launched at COP28 aims to triple global nuclear energy capacity by 2050. • Endorsed by 22 national governments, the declaration calls for support from shareholders of international financial institutions. • It encourages shareholders to advocate for the incorporation of nuclear energy in energy policies.
POWERING PAST COAL ALLIANCE (PPCA)	<ul style="list-style-type: none"> • PPCA is a coalition of national and sub-national governments, businesses and organizations working to advance the transition from unabated coal power generation to clean energy. • PPCA at COP28 welcomed new national and subnational governments and called for cleaner energy alternatives.
COAL TRANSITION ACCELERATOR	<ul style="list-style-type: none"> • France, in collaboration with various countries and organizations, introduced the Coal Transition Accelerator. • Objectives include knowledge-sharing, policy design, and financial support to facilitate just transitions from coal to clean energy. • The initiative aims to leverage best practices and lessons learned for effective coal transition policies.
COALITION FOR HIGH AMBITION MULTILEVEL PARTNERSHIP (CHAMP)	<ul style="list-style-type: none"> • A total of 65 national governments signed CHAMP commitments to enhance cooperation, where applicable and appropriate, with subnational governments in the planning, financing, implementation, and monitoring of climate strategies.

IUCN RED LIST UPDATE

(# Environment #Conservation)

The International Union for the Conservation of Nature (IUCN) Red List underwent an update, featuring thousands of new species assessments and reassessments.

This information was presented at the 28th Conference of Parties, shedding light on the escalating impacts of climate change on a diverse range of species.



• Extinct – When there is no reasonable doubt that the last individual of a taxon has died.
• Extinct in the Wild – Only present in captive or naturalised populations outside its original range.
• Critically Endangered – Extremely high risk of extinction in the wild.
• Endangered – Very high risk of extinction in the wild.
• Vulnerable – High risk of extinction in the wild.
• Near Threatened – Close to qualifying for a threatened category or is likely to qualify in the near future.
• Least Concern – Low risk of extinction in the wild. Includes widespread and abundant species.
• Data Deficient – Inadequate information for extinction risk assessment.

Key Highlights

Climate Change Threatens Diverse Species	<ul style="list-style-type: none"> Species ranging from Atlantic salmon to green turtles face growing threats due to climate change. IUCN Director General emphasised the urgency of ambitious climate action to combat species decline. The IUCN Red List update underscores the interlinked nature of climate and biodiversity crises, urging joint efforts for sustainable solutions.
Freshwater Fish Assessment	<ul style="list-style-type: none"> The first comprehensive assessment of global freshwater fish species is revealed. 25% of assessed freshwater fish species are at risk of extinction.

	<ul style="list-style-type: none"> Climate change, pollution, overfishing, and invasive species contribute to the decline.
Impact on Atlantic Salmon	<ul style="list-style-type: none"> Atlantic salmon (<i>Salmo salar</i>) are ray-finned fish that can grow up to a meter long, found in the North Atlantic Ocean basin. They are anadromous, meaning they live in both fresh and saltwater. Atlantic salmon population declined by 23% (2006-2020), moving them from Least Concern to Near Threatened.
Green Turtles Facing Extinction	<ul style="list-style-type: none"> Central South Pacific and East Pacific green turtle populations are respectively Endangered and Vulnerable. Climate change poses threats throughout their life cycle, impacting hatching success and food sources.
Mahogany Trees Facing Endangerment	<ul style="list-style-type: none"> The big-leaf mahogany (<i>Swietenia macrophylla</i>), a sought-after timber tree, shifts from Vulnerable to Endangered. Unsustainable harvest, urban encroachment, and illegal logging contribute to a 60% reduction over 180 years.
Conservation Success Stories	<ul style="list-style-type: none"> Scimitar-horned oryx, a desert antelope moves from Extinct in the Wild to Endangered, showcasing successful reintroduction efforts in the Republic of Chad. Saiga antelope improves from Critically Endangered to Near Threatened due to conservation measures.

GREEN VOYAGE2050 PROJECT

(# Environment # Conservation)

India has been recognized as the pioneer lead country for the International Maritime Organization (IMO) Green Voyage2050 Project, a significant stride toward mitigating Green House Gas (GHG) emissions from ships.

- The GreenVoyage2050 Project is a partnership project between the **Government of Norway and IMO** launched in 2019 **aiming to transform the shipping industry** towards a lower carbon future.
- The Initial IMO Strategy sets out a **clear vision to cut total annual GHG emissions by a minimum of 50% by 2050**, relative to 2008 levels.
- The GreenVoyage2050 Project is working with 12 countries: Azerbaijan, Belize, China, Cook Islands, Ecuador, Georgia, India, Kenya, Malaysia, Solomon Islands, South Africa, and Sri Lanka.
- The participating countries can be broadly categorised into “**New Pilot Countries**” and “**Pioneer Pilot Countries**”.

SAIGA ANTELOPE

(# Environment # Conservation #Fauna)

The International Union for Conservation of Nature (IUCN) Red List has recently reclassified the status of the Saiga Antelope (Saiga tatarica) from Critically Endangered to Near Threatened.

- The saiga antelope is a **large, nomadic, migratory herbivore** that lives across the **Eurasian Steppe**.

- It's found in **Kazakhstan, Mongolia, the Russian Federation, Turkmenistan, and Uzbekistan**.

- It belongs to the family of **Bovidae (order Artiodactyla)**.

- The Saiga has **two subspecies**: Saiga tatarica tatarica (found in most of the range) and Saiga tatarica mongolica (found only in Mongolia).



- Typical habitat consists of flat open areas covered with low-growing vegetation, allowing animals to run quickly.
- They have an **unusual hanging nose**, which makes them look like a camel, although they are **goat-sized**, and **male saigas have horns**.

Conservation

- Conservation efforts have led to a positive change in the global Red List status of the Saiga antelope.
- **Kazakhstan** has shown commendable leadership in species recovery, implementing anti-poaching initiatives, law enforcement measures, and establishing State Protected Areas.
- The **Convention on the Conservation of Migratory Species of Wild Animals (CMS)** has facilitated cooperation among governments and civil society organizations for the conservation of the Saiga antelope.
- The Saiga antelope population has soared to over 1.9 million, with the Mongolian subspecies witnessing a notable increase, reaching 15,540 individuals in the 2023 census.

GOLDFISH

(# Environment #Invasive species)

- Goldfish was one of the earliest fish to be domesticated and a relatively small member of the Carp family.
- **Releasing it into the wild** can lead to giant sizes, **making them invasive** and harmful to native marine life, damaging fragile ecosystems.
- It **can eat almost anything and everything**, including algae, aquatic plants, eggs, and invertebrates.



- They can tolerate a wide range of water temperatures, reach sexual maturity quickly, and reproduce several times in one season.
- **Feral goldfish are also destructive**, as they **help spawn harmful algal blooms** by consuming the algae and **expelling nutrients that promote its growth**.

ARCTIC REPORT CARD

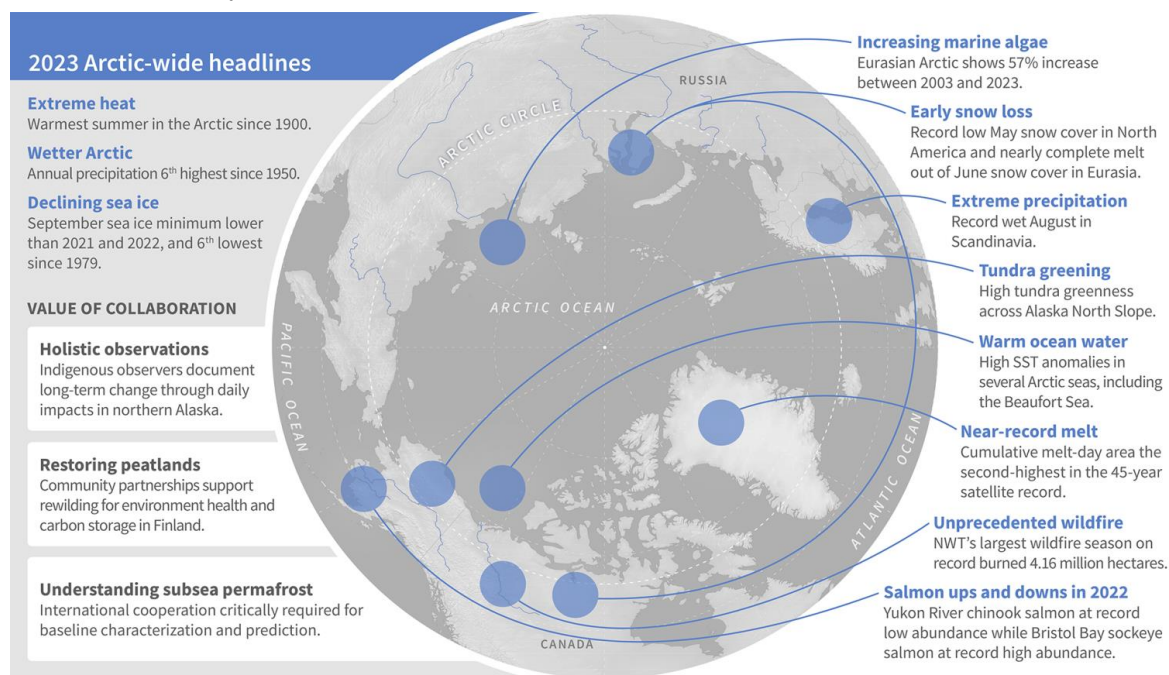
(# Environment # Conservation)

The National Oceanic and Atmospheric Administration (NOAA) has released its 18th Annual Arctic Report Card, highlighting the profound impact of extreme weather and Climate Events on the Arctic.

NOAA is a United States government agency that is responsible for providing accurate and timely information about weather forecasts, climate, oceans, coasts, and even the exploration of outer space.

Arctic Report Card

- It has been **issued annually since 2006**.
- The Arctic Report Card is a **timely and peer-reviewed source** for clear, reliable, and concise environmental information on the current state of different components of the Arctic environmental system relative to historical records.



Key Highlights of the Arctic Report Card

Record High Temperatures

- The **2023 summer was the warmest on record** in the Arctic, which, due to climate change, has **warmed nearly four times faster than the globe** since 1979.
- This year was noted as the **sixth warmest** in the Arctic since reliable records began in 1900.

Impact of Rising Temperatures

- The soaring temperatures led to **unprecedented wildfires, forcing community evacuations, a decline in sea ice extent, severe floods, food insecurity, and rising sea levels.**
- These impacts directly affect ecosystems, human health, and cultural practices.

Thawing of Subsea Permafrost

- Warmer ocean temperatures are accelerating the thawing of subsea Permafrost, **releasing methane and carbon dioxide.**
- This process **contributes to Global Warming and exacerbates ocean acidification.** There's concern about the unknown extent and impact of these released greenhouse gasses.

Food Insecurity Due to Salmon Decline

- **Western Alaska** experienced significantly **reduced populations of Chinook and chum salmon**, impacting Indigenous communities reliant on these fish for sustenance.
- This decline has cultural, food security, and economic implications.

Wildfires in Arctic Regions

- Canada witnessed its worst wildfire season on record, affecting 40% of its land mass considered Arctic and Northern.
- High temperatures and dry conditions facilitated the burning of over 10 million acres in the Northwest Territories, leading to evacuations and diminished air quality.

Glacier Thinning and Flooding

- Rising temperatures have led to dramatic thinning of the **Mendenhall Glacier**, located in Alaska, over the past 20 years
- As a result, over the years, the meltaway water has annually caused floods in the region.
- One such disaster took place in August 2023, when a **glacial lake on a tributary of the Mendenhall Glacier burst** through its ice dam and caused unprecedented flooding and severe property damage in Alaska's Juneau.

Greenland Ice Sheet Melting

- Greenland's ice sheet experienced melting for only the fifth time in the 34-year record. Not only this, the ice sheet continued to lose mass despite above-average winter snow accumulation — between August 2022 and September 2023, it lost roughly 350 trillion pounds of mass.
- Notably, **Greenland's ice sheet melting is the second-largest contributor to sea-level rise.**

WILD YAKS

(# Environment #Conservation #Fauna)

- The **wild yak, known as *Bos grunniens* or *Bos mutus***, thrives in remote areas within the Tibetan plateau, specifically inhabiting high-elevation alpine tundra, grasslands, and cold deserts.
- The **Convention on Migratory Species (CMS) reports** that native wild yak population, while previously also found in Bhutan and Nepal, is now presumed extinct in those regions, limiting their current habitat to China and India.

Major Threats to Wild Yaks

- Habitat loss, genetic hybridization with domestic yaks, and poaching** pose significant threats.
- Communities across the Himalayas and Tibetan Plateau use Dzo (Male hybrid) and Dzomo (Female hybrid), bred by crossing cattle and yaks.
- Disturbance from human activities and their livestock forces wild yaks to relocate to less favorable habitats, impacting their populations.



Conservation Status

- | |
|---|
| • IUCN Red list status: Vulnerable |
| • CITES: Appendix I of CITES |
| • The Wildlife (Protection) Amendment Act 2022: Schedule I |

EUROPEAN BISON

(# Environment #Conservation #Fauna)

The ongoing war in Ukraine has cast a shadow over conservation efforts aimed at preserving the wisent, also known as the European wood bison.

This majestic creature, once abundant across the European continent, faced near-extinction by 1927.

Despite successful conservation endeavors in Ukraine and Russia, the Russian invasion of Ukraine in February 2022 poses a significant threat to the revival and restoration of the wisent.

Wisent (European Wood Bison)

- The European wood bison (*Bison bonasus*) stands as the **largest and heaviest terrestrial mammal in Europe**.
- Once comprising three subspecies, only one, ***Bison bonasus bonasus*, remains extant**, with the other two having succumbed to extinction.

- **Habitat:** Thriving in grasslands, deciduous, and mixed forests,
- Noteworthy for its role as an ecosystem engineer, the wisent plays a **crucial part in restoring grassland habitats.**
- **Distribution:** Belarus; Lithuania; Poland; Russian Federation; Slovakia; Ukraine
- **IUCN Red list Status:** Near Threatened



- **Threats:** Rapid environmental change and hunting by humans were the main drivers of the wisent's extirpation across Europe.

BONNET MACAQUE

(# Environment #Conservation #Fauna)

The discovery of bonnet macaque monkey carcasses in a Karnataka village spotlights the escalating human-monkey conflict driven by habitat encroachment and diminishing wildlife spaces.

- Instances of monkey incursions for food in human territories have led to distressing events, like the suspected poisoning of macaques in Guthigaru village.
- The encroachment of farming into forest fringes, particularly coconut plantations and fruit orchards, draws monkeys when natural food sources diminish.
- The **bonnet macaque (Macaca radiata)** is a **species of Old World monkey.**
- They are **gray, brown in color**, have **large ears, wrinkly faces**, and a mop of hair on their heads that is parted in the middle.
- The bonnet macaque gets its name from the whorls of hair on the crown of its head that resemble a cap or bonnet.
- Bonnet macaques are endemic commensals: they are found only in peninsular India and live in close proximity with humans.
- **IUCN Status:** Vulnerable



CLIMATE CHANGE PERFORMANCE INDEX 2024

(# Environment #Conservation)

India's secured 7th position in recently released Climate Change Performance Index (CCPI) 2024 underscoring its notable role and contribution in the ongoing global efforts aimed at mitigating climate change.

CCPI

- It is **published annually since 2005**, is an **independent monitoring tool** for **tracking countries' climate protection performance**.
- It **increases transparency in national and international climate policy** and enables **comparison** of individual countries' climate protection efforts and progress.
- It is published by **Germanwatch, the NewClimate Institute, and Climate Action Network International**.
- It indicates the climate mitigation efforts of 63 countries and the EU, which collectively account for over 90% of global greenhouse gas (GHG) emissions.
- **Performance Metrics:** The CCPI evaluates countries across four key categories:

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| • Greenhouse Gas (GHG) Emissions (40%), |
| • Renewable Energy (20%), |
| • Energy Use (20%), and |
| • Climate Policy (20%). |

COAL REPORT 2023

(# Environment #Pollution)

The International Energy Agency's (IEA) annual coal market report predicts a significant shift in the trajectory of global coal demand, hinting at a structural decline by 2026.

*This anticipated transformation is influenced by various factors, including the **expansion of renewable energy** and a **rise in nuclear generation** in key regions.*

Key Highlights of the Report

Global Coal Demand Trends

- Global coal **demand reached a record high in 2022** amid the global energy crisis, rising by 4% year-on-year to 8.42 billion tonnes (Bt).
- **Asia remains the primary driver of coal demand** growth in both power and non-power sectors.

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| • China experienced a demand rise of 4.6%, equivalent to 200 million tonnes (Mt) of coal. |
| • India saw a substantial increase of 9% , amounting to 97 Mt. |
| • Indonesia witnessed a remarkable surge of 32%, reaching 49 Mt, driven by nickel smelters. |
| • The United States faced an 8% decline in coal demand, the most significant drop among major markets. |
| • Europe, despite a 4.3% increase in consumption, exhibited more restrained growth than anticipated. |

Future Projections and Uncertainties

- Overall, **global coal consumption in 2026 is projected to be 2.3% lower** than in 2023.

- Despite the expected decline, global coal consumption is projected to remain above 8 billion tonnes through 2026, highlighting its continued role as a significant source of carbon dioxide emissions.
- **China, India, and Indonesia** now account for more than 70% of the world's coal production.
- In China and India, in particular, rising coal consumption is driven by robust growth in demand for electricity and low hydropower output.

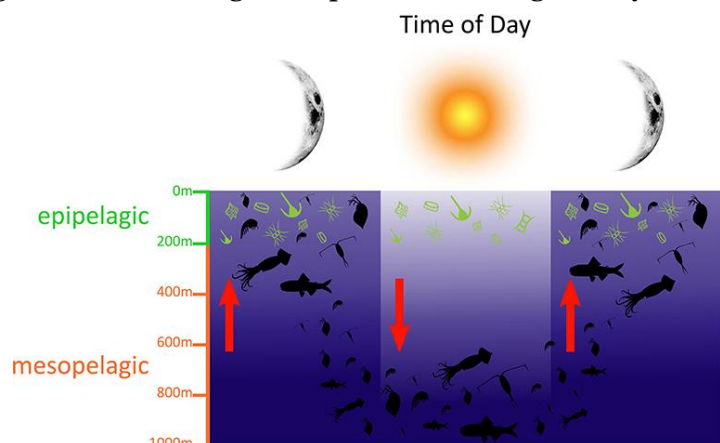
Factors Influencing Decline in Coal Demand

- The decline in coal demand is attributed to a **global shift towards renewable energy sources**.
- The IEA links the expected decline to changes in global climate, with El Nino conditions transitioning to La Nina, potentially leading to **increased hydropower output**.
- The report highlights a significant upward trend in **low-cost solar photovoltaic deployment**, contributing to the growth of renewable power generation.
- **Nuclear generation is expected to see moderate increases**, particularly in China, India, and the European Union, further influencing coal-fired generation.

DIEL VERTICAL MIGRATION (DVM)

(# Environment # Conservation)

- DVM is a **synchronised movement of marine organisms**, often seen in **deep-sea creatures like zooplankton**, as they **migrate vertically in the water column**, ascending towards the surface at night and descending to deeper levels during the day.
- This pattern **helps these organisms find food** while avoiding predators, showcasing a strategic survival tactic.



- At dusk, organisms from the **mesopelagic layer (Deeper Layer or Twilight Zone)** rise to the safety of the **epipelagic zone (Upper Layer)**, capitalising on darkness to feed on microscopic phytoplankton while evading diurnal predators.
- This synchronized migration, finely attuned to natural light cycles, stands as the planet's largest biomass migration, occurring daily across all oceans.
- Organisms inhabiting the **mesopelagic layer actively extract substantial carbon from upper ocean layers** while feeding on surface plankton, transporting it to deeper waters.
- Within the twilight zone, **migratory animals contribute to the food chain**, passing on consumed carbon to their predators.

- The resultant carbon-rich waste sinks to the ocean floor, becoming a **crucial carbon sink**, trapping carbon dioxide and aiding in atmospheric carbon concentration regulation.

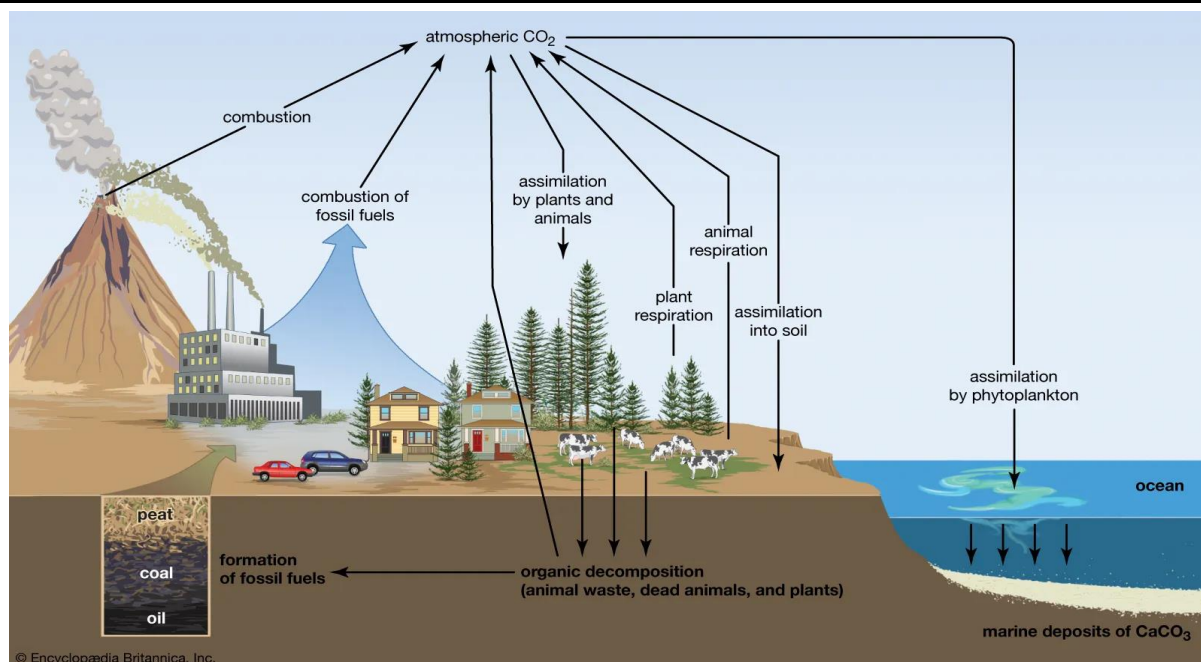
CARBON SEQUESTRATION

(# Environment)

- Carbon sequestration is the **long-term storage of carbon in plants, soils, geologic formations, and the ocean**.
- Carbon sequestration **occurs both naturally** and **as a result of anthropogenic activities** and typically refers to the storage of carbon.

Types

- Terrestrial Carbon Sequestration:** Terrestrial carbon sequestration is the process through which CO_2 from the atmosphere is absorbed by trees and plants through photosynthesis and stored as carbon in soils and biomass (tree trunks, branches, foliage, and roots)
- Geologic Carbon Sequestration:** CO_2 can be stored, in oil reservoirs, gas reservoirs, unmineable coal seams, saline formations and shale formations with high organic content.
- Ocean Carbon Sequestration:** Oceans absorb, release and store large amounts of CO_2 from the atmosphere.
- This can be done in two ways- **enhancing the productivity of ocean biological systems** through **Iron fertilization**, and **injecting CO_2** into the deep ocean.
- The **dumping of iron stimulates phytoplankton production**, which in turn **leads to enhanced photosynthesis** from these microorganisms, helping in CO_2 absorption.



CCS and CDR

(# Environment)

Carbon Capture and Storage (CCS)

- CCS refers to technologies that can **capture carbon dioxide (CO₂) at a source of emissions** before it is released into the atmosphere.
- These sources include the fossil fuel industry (where coal, oil and gas are combusted to generate power) and industrial processes like steel and cement production.

Carbon-Dioxide Removal (CDR)

- CDR takes the forms of both **natural means like afforestation or reforestation** and technologies like direct air capture, where machines mimic trees by absorbing CO₂ from their surroundings and storing it underground.
- There are also more complex **CDR technologies** like enhanced **rock weathering, where rocks are broken down chemically**; the resulting rock particles can **remove CO₂ from the atmosphere**.
- Other technologies like **bioenergy with carbon capture and storage (BECCS)** capture and store CO₂ from burning biomass, like wood.
- The **IPCC's Sixth Assessment Report (AR6)** heavily relies on these technologies for projections in achieving the goal of limiting global warming to 1.5 degrees Celsius.
- IPCC's assessed scenarios, with over a 50% chance of limiting warming to 1.5 degrees Celsius, rely on the assumption that the world can sequester 5 billion tonnes of CO₂ by 2040. This sequestration scale surpasses India's current annual CO₂ emissions.

Challenges of CCS and CDR

Rebound in Emissions Concerns	<ul style="list-style-type: none"> • There are concerns that the existence of CCS and CDR could inadvertently create more room for continued emissions. • This phenomenon might lead to increased emissions or prolonged reliance on fossil fuels instead of transitioning to renewable energy sources.
Fossil Fuel Dependency	<ul style="list-style-type: none"> • In some cases, CCS has been used to extract more oil by injecting captured CO₂ into oil fields, potentially prolonging reliance on fossil fuels rather than transitioning away from them.
Land Equity Concerns	<ul style="list-style-type: none"> • CDR methods like afforestation, reforestation, BECCS, and direct air capture are constrained by their need for land. • Land in the Global South is often considered to be 'viable' and/or 'cost-effective' for planting trees and deploying other large-scale CDR methods. • As a result, such CDR projects can adversely affect land rights of indigenous communities and biodiversity and compete with other forms of land-use, like agriculture that is crucial for ensuring food security.

Technological and Financial Hurdles

- The scale-up of CCS and CDR technologies poses significant technological challenges, including high costs, limited infrastructure, and the need for substantial innovation to make these technologies more effective and affordable.

WASTE MANAGEMENT INITIATIVES

(# Environment #Pollution)

Extended Producer Responsibility (EPR) Mechanism

- EPR is a **policy approach** in waste management that **makes producers responsible for the entire lifecycle of their products**, including their collection, recycling, and disposal.
- It **aims to reduce the environmental impact of products** by shifting the financial and physical burden of waste management from governments and taxpayers to producers.
- In 2022, EPR initiatives utilizing market mechanisms were **implemented for plastic packaging, E-waste, battery waste, and used oil**. This strategic move is anticipated to stimulate growth in the waste management sector.

Waste Processing Capacity according to government's statement

- Out of the approximately 1.5 lakh metric tons per day(MT/D) waste generated in urban areas, around 76% is processed.
- Since 2014, there has been a **notable increase in the capacity for processing various types** of waste, including solid waste, hazardous waste, bio-medical waste, E-waste, plastic waste, and construction and demolition waste.
- Solid waste processing capacity has seen an increase of around **1.05 lakh MT/D in the last eight years, particularly under the Swachh Bharat Mission (Urban)**.

Swachh Bharat Mission for Solid Waste Management

- Central assistance is provided under **Swachh Bharat Mission for solid waste management** including plastic waste management in urban and rural areas, as per scheme guidelines.
- The Central Government launched **Swachh Bharat Mission Urban 2.0 (SBM-U 2.0) in 2021** with the overall vision of **creating "Garbage Free Cities"**, which would involve achieving the target that all Urban Local Bodies will become at least 3-star certified (as per Star Rating Protocol for Garbage Free Cities) covering door to door collection, source segregation, and scientific processing of municipal solid waste.
- The **mission focuses on source segregation, reducing single-use plastic, managing waste from construction-and-demolition activities, and bio-remediation of legacy waste dump sites**.
- Under **Swachh Bharat Mission – Grameen Phase II**, the Department of Drinking Water and Sanitation has issued operational guidelines to the States and Union Territories which include solid waste management activities at the village level.

Waste Management Rules and Guidelines

- The Ministry, under the Environment (Protection) Act, 1986, has implemented various waste management rules and guidelines to ensure environmentally sound practices. These include:

• Solid Waste Management Rules, 2016.
• Plastic Waste Management Rules, 2016.
• Bio-medical Waste Management Rules, 2016.
• Construction and Demolition Waste Management Rules, 2016.
• Hazardous and other wastes (Management and Transboundary Movement) Rules, 2016.
• E-waste Management Rules, 2022.
• Battery Waste Management Rules, 2022.

- Guidelines have also been issued on environmentally sound waste management.
- Guidelines have been developed for the levy of environmental damages /environmental compensation charges based upon the polluter pays principle, for hazardous waste, E-waste, and plastic waste.

GREEN WASHING (# Environment #Pollution)

- The term greenwashing was **first used in 1986 by Jay Westerveld**, an American environmentalist and researcher.

• Greenwashing is a deceptive practice where companies or even governments exaggerate their actions and their impact on mitigating climate change , often providing misleading information or making unverifiable claims.
• It is an attempt to capitalize on the growing demand for environmentally sound products .

- It is fairly widespread, and entities often label various activities as climate-friendly without verifiable evidence, undermining genuine efforts against climate change.

Examples of Greenwashing

- The **Volkswagen scandal**, in which the German car company was found to have been cheating in emissions testing of its supposedly green diesel vehicles, was a case of greenwashing.
- Several other multinational corporations, including oil giants like **Shell and BP**, and **Coca Cola** have faced accusations of greenwashing.

Concerns

- It creates a **risk of diluting the authenticity of climate goals** by presenting misleading or exaggerated information about environmental initiatives.
- Entities engaged in greenwashing may receive **unwarranted recognition or benefits**, rewarding irresponsible behavior.

- Greenwashing **can distort markets** by creating an uneven playing field, where entities engaging in deceptive practices gain an unfair advantage over those adhering to genuine environmental standards.
- The **absence of comprehensive regulations and standards** for environmental claims allows greenwashing to persist without adequate scrutiny.
- The practice of greenwashing **introduces challenges to the integrity of carbon credit systems**, particularly in informal markets, where the expansion of credit sources and certification by unofficial entities raises concerns about transparency and reliability.

- **One carbon credit is equivalent to one metric ton of carbon dioxide** or equivalent greenhouse gases removed from the atmosphere.
- The **Kyoto Protocol introduced the concept of carbon credits**. Countries or firms that exceed emission reduction mandates are rewarded with carbon credits.

Global Initiatives Related to Greenwashing

- At the **27th Conference of Parties (COP27)**, the United Nations Secretary-General has declared **zero tolerance for greenwashing**, urging private corporations to rectify their practices.

- The **European Union approved the world's first green bond standards** to combat greenwashing in October 2023.
- The **"European Green Bond" label mandates transparency, directing 85% of funds to EU sustainable activities**. The legislation aims to support the EU's climate neutrality transition.

Laws in India Related to Greenwashing

- Greenwashing is **designated as an unfair trade practice under the Consumer Protection Act, 2019 in India**. The Act prohibits such deceptive claims and outlines penalties and remedies for consumers adversely affected by these misleading practices.
- In 2023, the **Securities and Exchange Board of India (SEBI) issued guidelines** for issuers of green debt securities to ensure transparency and avoid greenwashing.
- The guidelines are **intended to protect investors, promote the development of the securities market, and regulate it**.

- The **Advertising Standards Council of India (ASCI)** plays a regulatory role in monitoring advertising practices and holds some jurisdiction over allegations of greenwashing.
- The ASCI, a voluntary self-regulatory organization in India, ensures ads are legal, honest, and fair, safeguarding consumer interests and promoting fair competition.

VOLCANO PRONE REGIONS

(# Geography)

- Volcanoes are distributed all around the world, mostly along the edges of Tectonic Plates, although there are intraplate volcanoes that form from mantle Hotspots .



Circum-Pacific Belt

- The **Pacific "Ring of Fire"** is a string of volcanoes and sites located on most of the Earth's subduction zones having high seismic activity, around the edges of the Pacific Ocean.
- The Pacific Ring of Fire has a total of 452 volcanoes.
- Most of the active volcanoes are found on its western edge**, from the Kamchatka Peninsula in Russia, through the islands of Japan and Southeast Asia, to New Zealand.

Mid-Continental Belt

- It includes the volcanoes of **the Alpine mountains and the Mediterranean Sea**.
- The volcanic eruptions are **caused due to the convergence and collision of the Eurasian Plates and the African and Indian Plates**.
- Some of the famous volcanoes of the Mediterranean Sea such as the **Stromboli, Vesuvius, Etna**, etc., are in this belt.
- This belt is not continuous and has several volcanic free zones such as the Alps and the Himalayas.
- The **important volcanoes in the fault zone** of eastern Africa are **Kilimanjaro, Meru, Elgon, Rungwe, etc.**

Mid Atlantic Ridge

- The **Mid-Atlantic Ridge separates the North and South American Plate** from the Eurasian and African Plate.
- Magma rises through the cracks and leaks out onto the ocean floor like a long, thin, undersea volcano. As magma meets the water, it cools and solidifies, adding to the edges of the sideways-moving plates.
- This process **along the divergent boundary has created the longest topographic feature** in the form of Mid oceanic ridges under the Oceans of the world.

Intraplate Volcanoes

- The 5% of known volcanoes in the world that are not closely related to plate margins are generally regarded as **intraplate, or “hot-spot,” volcanoes**.
- A **hot spot is believed to be related to the rising of a deep-mantle plume**, which is caused by very slow convection of highly viscous material in Earth’s mantle.
- It can be represented by a single oceanic volcano or lines of volcanoes such as the **Hawaiian-Emperor seamount chains**.

FLYING SQUIRREL

(# Environment #Conservation #Fauna)

*A Namdapha flying squirrel (Biswamoyopterus biswasi) has resurfaced in Arunachal Pradesh after going missing for 42 years. The Namdapha flying squirrel was last described in 1981 based on a single individual found in the **Namdapha Tiger Reserve** in Arunachal Pradesh’s Changlang district.*

About Namdapha Flying Squirrel

- It is a rare nocturnal flying squirrel species found in the Namdapha Tiger Reserve in Arunachal Pradesh, India.
- It is **distinct from the red giant flying squirrel** (*Petaurista petaurista*), another species in the same ecosystem, primarily due to the prominent tuft of hair on its ears.
- The difficulty in locating this species led to concerns that it might have been mistaken for the red giant flying squirrel or, worse, faced extinction.

Threats

- The Namdapha flying squirrel is presently threatened by habitat loss and degradation, caused by clear-felling for human settlements, shifting agriculture, and the extraction of non-timber forest products, particularly the leaves of a **rattan palm, *Zalacca secunda***, for use as a roofing material.



Protection Status

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| • IUCN Red List: Critically Endangered |
| • Wildlife (Protection) Amendment Act, 2022: Schedule I |

SECTION- POLITY & GOVERNANCE

JUDGEMENT ON ARTICLE 370

(# Constitution)

*A Constitution Bench of the Supreme Court **unanimously upheld the power of the President to abrogate Article 370** of the Constitution, which in August 2019 led to the reorganisation of the State of Jammu and Kashmir (J&K) into two Union Territories and denuded it of its special privileges.*

Finer observations of the Supreme Court

Article 370 a 'temporary provision'

- The court held that Article 370 was meant to be a 'temporary provision' for two primary reasons.

<ul style="list-style-type: none"> First, it served a transitional purpose which was to make an interim arrangement to establish a Constituent Assembly of J&K which would draft the State Constitution.

<ul style="list-style-type: none"> Second, it was meant to ease the integration of J&K into the Union of India in the light of the prevailing war-like situation in the State back in 1947.
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- The court pointed out that the provision is placed **in Part XXI of the Constitution**, titled **"Temporary, Transitional and Special Provisions"** which shows the intention of the Constitution framers.
- "The provisions were transitional so as to **facilitate the transfer of power from the institutions of governance** which were functioning under the Government of India Act 1935 to the duly constituted institutions which would take over after the commencement of the Constitution.
- J&K became an **integral part of the territory of India with the adoption of the Constitution** on January 26, 1950.
- Any interpretation of Article 370 cannot postulate that the integration of Jammu and Kashmir with India was temporary.

Did J&K retain any element of sovereignty after its accession?

<ul style="list-style-type: none"> There is a 'clear absence' in J&K's Constitution of a reference to sovereignty.
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<ul style="list-style-type: none"> The court highlighted that Article 370 was merely a 'feature of asymmetric federalism' similar to other provisions in the Constitution such as Articles 371A to 371J — examples of special arrangements for different States.

<ul style="list-style-type: none"> If the position that Jammu and Kashmir has sovereignty by virtue of Article 370 were to be accepted, it would follow that other States which had special arrangements with the Union also possessed sovereignty. This is clearly not the case.
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- J&K retained **an element of internal sovereignty** despite Maharaja Hari Singh signing the Instrument of Accession with India.
- This is evident from the fact that Article 370 **recognises the Constituent Assembly of J&K**.

- However, it was outlined that **this arrangement was temporary** and was meant to eventually **derecognize this internal sovereignty** and **apply the Constitution of India** in its entirety to J&K through the **mechanism under Article 370(3)**.

Can a State be converted into a Union Territory?

- Due to the assurance given by the Union government that J&K's statehood would be restored soon, the court did not go into the issue of whether the conversion of J&K into a Union Territory was valid.
- It, however, **upheld** the **Jammu and Kashmir Reorganisation Act, 2019** to the extent that it carved out the Union Territory of Ladakh out of the State of J&K.
- But the court **cautioned that the conversion of a State into a Union territory** has 'grave consequences' and denies the citizens of the State an elected government and impinges on federalism. Thus, such a conversion has to be justified by giving very strong and cogent grounds.
- While the court stated that **J&K's statehood should be restored as soon as possible**, it ordered that elections to the legislative assembly of J&K should be held by September 30, 2024.

Constitutional Validity of Proclamations Under President's Rule:

- SC's Bench concurred that the President has the power to make "irreversible changes, including the dissolution of the State Assembly," and that the President's powers are kept in check by "judicial and constitutional scrutiny."

Constitution of a 'Truth and Reconciliation Commission'

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| <ul style="list-style-type: none"> • Justice Kaul in his concurring opinion mooted the constitution of a Truth-and-Reconciliation Commission along the lines of the one set up in South Africa after apartheid to address human rights violations both by state and non-state actors in Jammu and Kashmir since the 1980s. |
| <ul style="list-style-type: none"> • This Commission should be set up expediently before memory escapes. |
| <ul style="list-style-type: none"> • The exercise should be time-bound. |
- There is already an entire generation of youth that has grown up with feelings of distrust and it is to them that we owe the greatest duty of reparation.

***Let bygones be bygones:** to forgive someone for something done or for a disagreement and to forget about it. I know we've had our fights over the years, but I think it's time we let bygones be bygones.*

GOVERNOR AND STATE BILLS

(# Governance # Bills # Ethics)

A three-judge Bench headed by Chief Justice of India said that the Governor, having withheld his assent to the Bills in the first instance and cannot now refer the Bills, re-passed by the Tamil Nadu legislature, to the President.

Observation of the Supreme Court

- It laid down the law that a Governor, in case he withholds assent, **should send back a Bill forwarded to him by a State Legislature “as soon as possible”** with a message to reconsider the proposed law.
- The expression “as soon as possible” conveyed a **“constitutional imperative of expedition”**.
- In case, the **State Assembly reiterates the Bill “with or without amendments”**, the **Governor has no choice or discretion**, and **has to give his assent to it**.
- **Message of the Governor does not bind the legislature** is evident from the use of the expression **“if the Bill is passed again ...with or without amendments”**.
- A Governor who **chooses to withhold a Bill without doing anything further** would be **acting in contravention of the Constitution**. Because such a course of action would be contrary to fundamental principles of a constitutional democracy.
- The verdict is also a significant boost to Tamil Nadu’s case. The Tamil Nadu Assembly had returned 10 crucial Bills to Governor R.N. Ravi without any amendments. The Governor had withheld assent to the Bills in the first instance.

ONLINE GAMING ETHICS

(# Governance # Ethics)

The online gaming industry has voluntarily entered into a code of ethics. This move signifies an attempt to self-regulate and create a more stable environment for the industry.

Responsibility for online gaming matters has been assigned to the Ministry of Electronics and Information Technology by the Government of India.

Online Gaming

- Online gaming involves **playing games through the internet, facilitating player connections and collaborative gameplay irrespective** of their physical locations.
- It is accessible on various devices, including computers, and mobile phones.

Difference between Gambling and Online Gaming

- **Gambling is the practice of placing bets** on events with uncertain outcomes, primarily aimed at winning money or material possessions.
- Various forms of gambling exist, such as casino games, sports betting, and lotteries.
- Unlike online gaming, gambling carries the risk of losing money or valuable items.
- **In India, games of chance fall under the category of gambling** and are generally prohibited, while games of skill, falling outside the ambit of gambling are usually exempted.
- In **RMD Chamarbaugawala v. Union of India**, the Supreme Court relied on the **‘skill test’** to decide whether an activity is gambling or not.
- The court held that **competitions that substantially involve skills are not gambling activities**.

Code of Ethics Adopted by the Gaming Industry

- To govern itself and address growing concerns, three prominent lobby groups Internet and Mobile Association of India (IAMAI), E-Gaming Federation (EGF), and All India Gaming Federation (AIGF) have voluntarily co-signed a code of ethics.
- The code of ethics is entirely voluntary, in nature. Despite its non-binding nature, the code aims to foster responsible practices within the industry and is viewed as a step towards self-regulation.
- The code endeavors to safeguard the interests of consumers by empowering them to make informed decisions regarding the online games they choose.
- According to the code, online gaming companies are required to undertake know-your-customer (KYC) procedures in accordance with applicable laws.
- Additionally, companies must disclose on their platforms the criteria for determining winners, fees charged, and ensure that deposits are solely utilized for playing games on the platform.
- It also strives to create a “healthy environment” for online games in India, focusing on aspects such as transparency, fairness, and responsible gaming.

ADVOCATES AMENDMENT BILL, 2023

(# Governance # Bill)

The Advocates Amendment Bill, 2023, was passed in the Lok Sabha and Rajya Sabha. Its purpose was to weed out 'touts' from the legal system.

Key Highlights

Touts

- The Bill provides that every High Court, district judge, sessions judge, district magistrate, and revenue officer **may frame and publish lists of touts**.
- Tout refers to a person who:

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| • Either proposes to procure or procures the employment of a legal practitioner in a legal business in return of any payment. |
| • Frequents places such as the precincts of civil or criminal courts, revenue-offices, or railway stations to procure such employment. |
| • The Court or judge may exclude from the premises of the Court any person whose name is included in the list of touts. |

Preparation of lists

- The authorities empowered to **frame and publish the list of touts** may order subordinate courts to hold an inquiry into the conduct of persons alleged or suspected to be touts.
- Once such a person is proven to be a tout, his name may be included by the authority in the list of touts.
- No person will be included in such lists without getting an opportunity of showing cause against his inclusion.

Penalty

- Any person who acts as a tout while his name is included in the list of touts will be punished with imprisonment up to three months, a fine up to Rs 500, or both.

HUMAN RIGHTS

(#Governance #Society)

- These are **rights inherent to all human beings**, regardless of race, sex, nationality, ethnicity, language, religion, or any other status.
- These include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many More.

- Nelson Mandela had stated** *‘To deny people their human rights is to challenge their very humanity’.*
- Article 1 of Universal Declaration of Human Rights (UDHR)** states that *“all human beings are born free and equal in dignity and rights.”*
- Article 2 says that everyone is entitled to all the rights and freedoms** the declaration sets out, “without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, or other status.
- Articles 12 to 35 of the Indian Constitution** provide for the Right to Equality, Right to Freedom, Right Against Exploitation, Right to Freedom of Religion, Cultural & Educational Rights, Saving of Certain Laws and Right to Constitutional Remedies.

Universal Declaration of Human Rights (UDHR), 1948

- The **30 rights and freedoms include** civil and political rights, like the right to life, liberty, free speech and privacy and economic, social, and cultural rights, like the right to social security, health and education, etc.
- India took an active part** in the drafting of the UDHR.

- The **UDHR is not a treaty**, so it **does not directly create legal obligations for countries**.
- This declaration, **established as a common standard of achievement for all peoples and nations**, played a foundational role in shaping the international order that emerged after the devastation of World War II.

International Bill of Human Rights

- The **UDHR, together with the International Covenant on Civil and Political Rights and its two Optional Protocols** (on the complaints procedure and on the death penalty) and the **International Covenant on Economic, Social and Cultural Rights and its Optional Protocol**, form the so-called International Bill of Human Rights.

Achievements

- The UDHR's significance **transcends its non-binding status**, having served as a catalyst for over 70 human rights treaties globally.

- Its **influence is evident in movements** such as decolonization, anti-apartheid, and various freedom struggles worldwide.
- Without the UDHR, a fragmented landscape with differing standards could have emerged, creating a potentially more challenging situation.
- Despite some criticisms asserting its inapplicability to specific religions, cultures, or regions, UNHR's arising from agreements building on the 1948 declaration, underscores its enduring relevance.
- The **Vienna Declaration and Program of Action in 1993**, for instance, further solidified the principles set forth in the UDHR.

HUMAN TRAFFICKING

(#Governance #Society)

- Human trafficking refers to the **illegal trade and exploitation of people**, typically for the purposes of **forced labour, sexual exploitation, or involuntary servitude**.
- It involves the recruitment, transportation, transfer, harbouring, or receipt of individuals through threat, force, coercion, abduction, fraud, or deception for the purpose of exploiting them.

Constitutional & Legislative Provisions related to Trafficking in India:

- **Constitutional Prohibition: Article 23** prohibits human trafficking and begar (forced labour without payment).
- **Immoral Traffic (Prevention) Act, 1956 (ITPA):** This legislation serves as the primary law aimed at preventing trafficking **specifically for commercial sexual exploitation**.
- **Protection of Children from Sexual Offences (POCSO) Act, 2012:** This act is dedicated to shielding children from sexual abuse and exploitation.
- It provides clear definitions for various forms of sexual abuse, encompassing penetrative and non-penetrative assaults, as well as sexual harassment.
- **Other Specific Legislations:** Various other laws target trafficking in women and children, including the Prohibition of Child Marriage Act, 2006, the Bonded Labour System (Abolition) Act, 1976, the Child Labour (Prohibition and Regulation) Act, 1986, the Transplantation of Human Organs Act, 1994 etc.
- **State-Specific Legislation:** States have also enacted specific laws to tackle trafficking. For instance, The Punjab Prevention of Human Smuggling Act, 2012, is one such state-level legislation aimed at addressing this issue.

International Convention

- **UN Convention (UNTOC):** India ratified the UN Convention on Transnational Organized Crime (UNTOC) which includes a Protocol specifically addressing the Prevention, Suppression, and Punishment of Trafficking in Persons, particularly Women and Children.
- **Legislative Action: The Criminal Law Amendment Act, 2013**, was enacted to align with the Protocol's provisions, offering a precise definition of human trafficking.

- **SAARC Convention on Trafficking:** India ratified the SAARC Convention on Preventing and Combating Trafficking in Women and Children for Prostitution.
- **Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW):** Also known as the International Bill of Rights for Women. It was adopted in 1979 by the United Nations General Assembly (UNGA). India ratified CEDAW in 1993.

ALTERNATIVE DISPUTE RESOLUTION (ADR) MECHANISM (#Governance)

Arbitration

- The dispute is **submitted to an arbitral tribunal** which makes a decision (an "award") on the dispute that is mostly binding on the parties.
- It is **less formal than a trial**, and the **rules of evidence are often relaxed**.
- **Generally, there is no right to appeal** an arbitrator's decision.
- Except for some interim measures, there is very little scope for judicial intervention in the arbitration process.
- The Indian arbitration is **governed and regulated by the Arbitration and Conciliation Act 1996 (which is amended in 2015, 2019 and 2021)**,
- The Arbitration and Conciliation (Amendment) Act, 2019 seeks to establish an **independent body called the Arbitration Council of India (ACI)**.

Conciliation

- A **non-binding procedure** in which an **impartial third party, the conciliator, assists** the parties to a dispute in reaching a mutually satisfactory agreed settlement of the dispute.
- Conciliation is a **less formal form of arbitration**.
- The parties are **free to accept or reject the recommendations** of the conciliator.
- However, **if both parties accept** the settlement document drawn by the conciliator, **it shall be final and binding on both**.

Mediation

- In mediation, an **impartial person called a "mediator" helps the parties** try to reach a mutually acceptable resolution of the dispute.
- The **mediator does not decide the dispute** but helps the parties communicate so they can try to settle the dispute themselves.
- Any person who **undergoes the required 40 hours training stipulated by the Mediation and Conciliation Project Committee** of the Supreme Court (SC) can be a mediator.
- He also needs to have at least 10 mediations resulting in a settlement and at least 20 mediations in all to be eligible to be accredited as a qualified mediator.
- Mediation leaves control of the outcome with the parties.

- **Mediation Act, 2023** seeks to promote mediation, particularly institutional mediation, and provide a mechanism for enforcing mediated settlement agreements.

Negotiation

- A **non-binding procedure** in which discussions between the parties **are initiated without the intervention of any third party** with the object of arriving at a negotiated settlement to the dispute.
- It is the **most common method of alternative dispute resolution**.
- Negotiation occurs in business, non-profit organizations, government branches, legal proceedings, among nations and in personal situations such as marriage, divorce, parenting, and everyday life.

Arbitration Council of India (ACI)

- **Article 51 of the Directive Principles of State Policy** deals with the Promotion of international peace and security. encourage settlement of international disputes by arbitration.
- **Objective:** ACI aims to promote arbitration, mediation, conciliation, and other alternative dispute redressal mechanisms.

Composition of the ACI: The ACI will consist of a Chairperson who is either:

- | |
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| • A Judge of the Supreme Court/ A Judge of a High Court/ Chief Justice of a High Court. |
| • An eminent person with expert knowledge in conduct of arbitration. |
| • Other members will include an eminent arbitration practitioner, an academician with experience in arbitration, and government appointees. |

CAG AUDITS

(#Governance)

In the calendar year 2023, only 18 audit reports on the Union government's accounts, prepared by the Comptroller and Auditor General (CAG), were tabled in Parliament.

A year-wise analysis shows that the number of audits on the Union Government tabled in Parliament has been decreasing.

On average, 22 reports were tabled each year between 2019 and 2023, compared to the 40 reports tabled between 2014 and 2018

Office of CAG

- Comptroller and Auditor General of India is a constitutional authority which **heads the Indian Audit and Accounts Department (IA&AD)**. The two entities are known as the Supreme Audit Institution of India (SAI).

Mandate

- As a “**Guardian of the Public Purse**”, CAG is vested with the responsibility of inspecting and auditing all the expenditure of both the Central and the State Governments as well as of those organizations or the bodies which the government significantly funds.

- This is the reason why **Dr. B.R. Ambedkar** said that the CAG shall be the most **important Officer** under the Constitution of India.

Constitutional Provisions

- **Article 148** provides for an independent office of the CAG.
- Other provisions related to CAG include

• Articles 149-151 (Duties & Powers, Form of Accounts of the Union and the States and Audit Reports),
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• Article 279 (calculation of net proceeds, etc.)
--

- **Appointment:** The CAG is **appointed by the President of India** by a warrant under his hand and seal.
- He is provided with the **security of tenure**. He can be removed by the president only in accordance with the procedure mentioned in the Constitution.
- **Tenure: Period of 6 years or until attaining the age of 65 years** whichever is earlier.

• Removal: Removal of the CAG from office requires a specific process: an order from the President after receiving an address from each House of Parliament.

• For removal to take effect, the address must be supported by a majority of the total membership of that house and by at least a two-thirds majority of the members present and voting in the same session.

• Grounds for removal include proved misbehavior or incapacity.

• Provisions of Independence: Major provisions include-
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• The CAG's salary and expenses are charged upon the Consolidated Fund of India.

• CAG is provided with the security of tenure and does not hold office till the pleasure of the president, though he is appointed by him.
--

• Upon relinquishing the office, the CAG is barred from holding any subsequent position within either the Government of India or any State Government, maintaining the independence and integrity of the office.
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SECTION- INTERNATIONAL RELATIONS

INDIA AND OMAN

(# India and the World)

India and Oman have adopted the **India Oman Joint Vision Partnership For the Future**, setting the stage for bilateral cooperation and charting pathways for future collaboration between the two countries.

This Vision Document focuses on building partnerships in **maritime cooperation and connectivity, energy security, space, digital payments, health, tourism, hospitality, agriculture, and food security.**



Key Highlights

Bilateral Agreements	<ul style="list-style-type: none"> Both countries have signed agreements on cooperation in the field of information technology, combating financial crimes, culture, and the establishment of a Hindi chair of the Indian Council of Cultural Relations (ICCR) in Oman.
Comprehensive Economic Partnership Agreement (CEPA)	<ul style="list-style-type: none"> Both nations are engaged in discussions to finalize a CEPA. It is a type of free trade pact that covers negotiation on the trade in services and investment, and other areas of economic partnership. CEPA also looks into the regulatory aspect of trade and encompasses an agreement covering the regulatory issues.
Oman-India investment Fund	<ul style="list-style-type: none"> The two sides announced the third tranche of Oman-India investment fund worth USD 300 million that would be used for channelising investment into the fastest growing sectors of the Indian economy. The fund was started as a 50:50 joint venture between the SBI and the Oman investment authority, with the first tranche of USD 100 million followed by USD 200 million.
Digital Payments and Trade	<ul style="list-style-type: none"> Discussions revolved around the possibility of using India's digital payment system, UPI (Unified Payments Interface), in collaboration with an Omani platform. Additionally, exploring the potential of conducting trade in Rupees was considered, although it's still in the exploratory stage.

Regional and International Issues

- Leaders **exchanged perspectives on regional and global matters**, including the ongoing conflict between Hamas and Israel.
- They discussed the **challenge of terrorism** and advocated for a two-state solution to address the Palestine issue.

UNCAC

(# International # United Nations)

The year 2023 marks the 20th anniversary of the United Nations Convention against Corruption (UNCAC).

UNCAC

- The UNCAC was signed on **December 9, 2003** in Mexico and **entered into force on 14th December 2005**.
- The **International Anti-Corruption Day was established on 9th December** as a result of proposals by the Brazilian delegation to the Convention.
- It is the **only legally binding multilateral international anti-corruption treaty**.

- The Convention covers **five main areas**:

- **Preventive Measures, Criminalization and Law Enforcement, International Cooperation, Asset Recovery, and Technical Assistance and Information Exchange.**

- The Convention covers **many different forms of corruption**, such as bribery, trading in influence, abuse of functions, and various acts of corruption in the private sector.

VENEZUELA AND GUYANA DISPUTE

(# International # Land Border)

*Guyana and Venezuela are in conflict over the resource-rich **Essequibo region**, historically claimed by both nations.*

- The dispute intensified **after Exxon Mobil's 2015 oil discovery**, leading to a **Venezuelan referendum in December 2023**, supporting Essequibo as a new province.
- Despite International Court of Justice (ICJ) warnings, Venezuela proceeded.
- Guyana responded by raising its flag, alerting defence forces, and seeking international support.
- **India, with diasporic ties, supports Guyana**; the US backs Guyana's sovereignty.

History

- The land boundary between Guyana and Venezuela has been **disputed since its colonial inception between British and Spanish powers** in South America.
- In the 1840s, the British government had the border unilaterally surveyed, but the proposed line encroached on Venezuelan territorial claims.
- Guyana's claim has been internationally accepted since the **1899 Paris Arbitral Award**.

- While the **British line, accepted by Guyana**, is the current de facto boundary, **Venezuela maintains a historic claim** to all territory currently administered by Guyana **west of the Essequibo River**.

- Venezuelan contents that the Arbitral Award of 1899 about the frontier between British Guiana and Venezuela is null and void.

Disputed Area

- Venezuela's claim along the **Essequibo River extends for 1,034 kilometers** before reaching Brazilian territory.
- At stake is approximately 142,795 square kilometers that is currently administered by Guyana.
- Offshore the disputed land territory is maritime space that was recently discovered to be rich in hydrocarbon resources, upping the stakes of the land boundary dispute.



Current Status

- Guyana submitted the dispute to the **International Court of Justice in 2018**.
- Despite Venezuela's withdrawal from the case, proceedings are currently ongoing.

SHIELD

MONTHLY CURRENT AFFAIRS ANALYSIS

NOTE FOR STUDENTS

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SECTION- SECURITY ISSUES

TEJAS JETS AND PRACHANDA HELICOPTERS

(# Defence # Security)

The Defence Acquisition Council (DAC) has sanctioned the procurement of 97 Tejas Light Combat Aircraft (Mark 1A) and 156 Prachand Light Combat Helicopters (LCH).

The procurement plan aims to source 98% of its total needs from domestic industries, providing a significant boost to the Indian defense industry in its pursuit of 'Aatmanirbharta' (self-reliance).

Light Combat Aircraft (LCA)

- The LCA programme was started by **the Government of India in 1984** when they established the **Aeronautical Development Agency (ADA)** to manage the LCA programme.

Features:

- Designed to carry a **range of air-to-air, air-to-surface, precision-guided, weapons.**
- **Air to air refueling capability.**

Variants of Tejas:

- | |
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| • Tejas Trainer: 2-seater operational conversion trainer for training air force pilots. |
| • LCA Navy: Twin- and single-seat carrier-capable for the Indian Navy. |
| • LCA Tejas Navy MK2: This is phase 2 of the LCA Navy variant. |
| • LCA Tejas Mk-1A: This is an improvement over the LCA Tejas Mk1 with a higher thrust engine. |

Light Combat Helicopter

- The LCH is the only attack helicopter in the world which can land and take off at an altitude of 5,000 meters with a considerable load of weapons and fuel.
- The helicopter uses **radar-absorbing material** to lower radar signature and has a significantly crash-proof structure and landing gear.
- A **pressurised cabin offers protection** from Nuclear, Biological and Chemical (NBC) contingencies.
- The LCH has the capabilities of combat roles such as destruction of enemy air defence, counter insurgency warfare, combat search and rescue, anti-tank, and counter surface force operations.
- The helicopter is equipped with a countermeasure dispensing system that protects it from enemy radars or infrared seekers of enemy missiles.
- LCH is powered by two **French-origin Shakti engines** manufactured by the HAL.

Genesis

- It was during the 1999 Kargil war that the need was first felt for a homegrown lightweight assault helicopter that could hold precision strikes in all Indian battlefield scenarios.
- This meant a craft that could operate in very hot deserts and also in very cold high altitudes, in counter-insurgency scenarios to full-scale battle conditions.
- India has been operating **sub 3 ton category** French-origin legacy helicopters, Chetak and Cheetah, made in India by the Hindustan Aeronautics Limited (HAL).
- These single engine machines were, primarily, utility helicopters. Indian forces also operate the Lancer, an armed version of Cheetah.
- In addition, the Indian Air Force currently operates the Russian origin Mi-17 and its variants Mi-17 IV and Mi-17 V5, with maximum take-off weight of 13 tonnes, which are to be phased out starting 2028.
- The **government sanctioned the LCH project in October 2006** and HAL was tasked to develop it.

ANTI-SUBMARINES WARFARE SHIPS

(# Defence # Security)

Cochin Shipyard Limited has launched three ships in the series of eight Mahe class Anti-Submarine Warfare Shallow Water Crafts(ASW SWC) for the Indian Navy.

*These three ships have been named as **INS Mahe**, **INS Malvan** and **INS Mangrol**.*

Mahe Class ships

- These are **Anti-Submarine Warfare Shallow Watercrafts** (ASW SWC).
- Purpose is to undertake anti-submarine operations in coastal waters, **Low Intensity Maritime Operations (LIMO)** and Mine Laying Operations.
- These ships are poised to **replace the Abhay class ASW corvettes** and excel in anti-submarine operations, coastal defense, mine laying, and sub-surface surveillance.
- They demonstrate a **high-speed capability of 25 knots**, an endurance of 1,800 nautical miles, and are designed to undertake coordinated ASW operations with aircraft while being adept at search and rescue missions.
- They are **built Cochin Shipyard Limited**
- These are named after ports of strategic importance along the coast of India.

AGNI 1

(# Defence # Security)

The training launch of Short-Range Ballistic Missile 'Agni-1' was carried out successfully from APJ Abdul Kalam Island, Odisha. The launch, carried out under the aegis of the Strategic Forces Command, successfully validated all operational and technical parameters.

Agni-1

- It is a **Short-Range Ballistic Missile (SRBM)** developed by India as part of its Agni series of missiles.

- It is the **first missile in the Agni series** and is designed to be a **strategic weapon capable of carrying a nuclear payload**.
- The Agni-1 is primarily intended for use as a deterrent against potential adversaries and is known for its quick response time.
- It is the first variant of the Agni series missiles under **Integrated Guided Missile Development Program (IGMDP)**.

Technical Specifications

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| <ul style="list-style-type: none"> • The Agni-1 is a single-stage, solid-fueled missile with a range of around 700 to around 1200 kilometers and can carry a payload of 1,000 kg, making it a short-range ballistic missile. It has the capability to carry both conventional and nuclear warheads. |
| <ul style="list-style-type: none"> • The solid-fuel propulsion system enhances its operational flexibility and reduces launch preparation time. |

Development and Testing

- The Agni-1 was developed by the Defence Research and Development Organisation (DRDO) in India. The missile has undergone several successful test launches to validate its performance and reliability.
- Agni-1 was **first tested at the Interim Test Range in Chandipur in 1989**.
- The Indian army **accepted Agni-1 in service in 2007**.

Other Agni Class of Missiles

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| <ul style="list-style-type: none"> • Agni II: Range more than 2000 km. |
| <ul style="list-style-type: none"> • Agni III: Range of more than 2,500 Km |
| <ul style="list-style-type: none"> • Agni IV: Range is more than 3,500 km and can fire from a road-mobile launcher. |
| <ul style="list-style-type: none"> • Agni-V: The longest of the Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km. |
| <ul style="list-style-type: none"> • Agni Prime: A two-stage canisterised missile (under development) has been successfully flight tested in June 2023. • The missile is capable of delivering a number of warheads at separate locations at a distance of 1,000 - 2,000 km. |

VINBAX-2023

(# Defence # Security)

The Indian Armed Forces participated in Vietnam in the fourth edition of Joint Military Exercise VINBAX-2023.

- **Exercise VINBAX was instituted in 2018** and the first edition was conducted at Jabalpur, Madhya Pradesh.
- It is an annual training event conducted alternatively in India and Vietnam.

Aim:

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| <ul style="list-style-type: none"> The exercise is to foster collaborative partnership, promote inter- operability and share best practices between the two sides under Chapter VII of United Nations Charter on Peacekeeping Operations. |
| <ul style="list-style-type: none"> The exercise will be conducted as a Command Post Exercise cum Field Training Exercise with focus on deployment and employment of an Engineer Company and a Medical Team. |
| <ul style="list-style-type: none"> Ideas will be exchanged on modern methods to construct roads, culverts, helipads, ammunition shelter and observation posts in operational areas. |

INS Tarmugli

(# Defence # Security)

The Indian Navy recently commissioned INS Tarmugli, a fast attack craft (FAC), showcasing maritime diplomacy and strength.

- The ship was commissioned in the Indian Navy as **INS Tillanchang, a Trinkat Class ship**, was in active service till 2006, and thereafter gifted to the Maldives National Defence Force (MNDF) government of India in 2006 as part of diplomatic outreach in the Indian Ocean Region (IOR).
- The ship was returned to the Indian Navy in May 2023, the **warship is fitted with MTU engines**, the latest communication equipment, and an advanced Radar system and will be extensively used for coastal surveillance and protection along the east coast of India.
- The ship is named after **Tarmugli Island, a small island in the Andaman group**.

PIRACY IN ARABIAN SEA

(# Defence # Security)

The Malta-flagged Vessel MV Ruen fell victim to pirates in the Arabian Sea. Responding swiftly, the Indian Navy, strategically based in the piracy-prone Gulf of Aden, intercepted the hijacked vessel, closely monitoring its trajectory toward the Somali coast.

The European Union Naval Force (EUNAVFOR) Operation Atalanta, a maritime security operation in the western Indian Ocean, joined the anti-piracy effort.

Maritime Piracy

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| <ul style="list-style-type: none"> Article 101 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) outlines acts constituting piracy. |
| <ul style="list-style-type: none"> These acts include violence, detention, or depredation committed for private ends on the high seas or outside the jurisdiction of any state. |
| <ul style="list-style-type: none"> These acts are carried out with the intent of personal gain and may include the seizure of another ship, its cargo, or the kidnapping of its passengers or crew. |
- It is considered a serious maritime crime and is subject to international laws and conventions.

Strongest Zones of Pirate Activity

- Northwest Africa, the Gulf of Guinea, Red Sea, Somalia, Horn of Africa, Gulf of Aden, Indian Ocean, Indian subcontinent, and Southeast Asia.

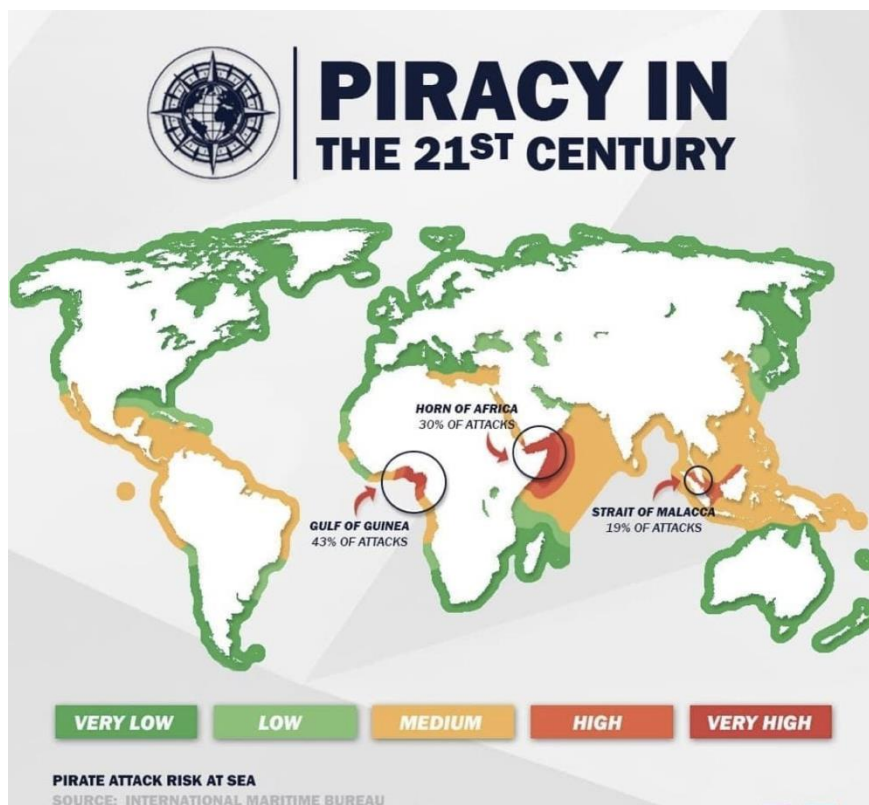
Global Initiatives Related to Maritime Piracy:

United Nations Convention on the Law of the Sea (UNCLOS):

- It **establishes the legal framework** for combating piracy.

The UN Security Council and General Assembly

have consistently emphasized the importance of international cooperation in addressing piracy and armed robbery at sea, stressing the applicability of UNCLOS in combating maritime threats.



Operation Prosperity Guardian

- The United States has initiated Operation Prosperity Guardian, a multinational security initiative to **ensure security in the Red Sea**.

Convention for the Suppression of Unlawful Acts against the safety of Maritime Navigation (1988)

- It is a **multilateral treaty**. The **main purpose of the treaty** is to ensure that appropriate action is taken against people who commit unlawful acts against ships.
- It was adopted in **1988 at the Suppression of Unlawful Acts(SUA) Convention in Rome**.

Combined Maritime Forces (CMF)

- The CMF is a **multinational naval partnership** with primary focus areas aimed at defeating terrorism, preventing piracy, fostering regional cooperation, and promoting a secure maritime environment.
- CMF has 39 member nations including India.**

SECTION- IMPORTANT SCHEMES

PM-JANMAN Scheme

(# Scheme # PVTG)

The Ministry of Tribal Affairs has brought to light the ambitious Pradhan Mantri-Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN) Scheme.

It is aimed at uplifting Particularly Vulnerable Tribal Groups (PVTGs), this initiative carries the potential to address their unique challenges and provide essential infrastructure for a brighter future.

Particularly Vulnerable Tribal Groups (PVTGs)

- In 1973, the **Dhebar Commission** established Primitive Tribal Groups (PTGs) as a distinct category, encompassing tribal communities characterized by a declining or stagnant population, the use of pre-agrarian technology, economic backwardness, and low literacy.
- These groups are **identified as less developed among the tribal communities**.
- In **2006**, the **Government of India renamed the PTGs as PVTGs**. They reside in remote and inaccessible areas, facing challenges due to poor infrastructure and administrative support.
- There are **75 PVTG communities** spread across **18 States and Union Territories in India**.
- Odisha has the highest number of PVTGs (15), followed by Andhra Pradesh (12), Bihar and Jharkhand (9), Madhya Pradesh and Chhattisgarh (7), Tamil Nadu (6), and Kerala and Gujarat (5 each).
- The rest of the communities are spread across Maharashtra, West Bengal, Karnataka, Uttarakhand, Rajasthan, Tripura, and Manipur.
- All four tribal groups (**Andamanese, Jarawas, Onges and the Sentinelese**) in the Andaman and one (**Shompen**) in the Nicobar Islands are recognized as PVTGs.

PM JANMAN

- It is a government scheme that **aims to bring tribal communities into the mainstream**.
- The scheme (comprising Central Sector and Centrally Sponsored Schemes) will be implemented by the Ministry of Tribal Affairs, in collaboration with the State governments and the PVTG communities.

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| <ul style="list-style-type: none"> • The scheme will concentrate on 11 critical interventions ensuring the implementation of existing schemes in villages inhabited by PVTGs. |
| <ul style="list-style-type: none"> • It encompasses various sectors, including safe housing under the PM-AWAS Scheme, access to clean drinking water, improved healthcare, education, nutrition, road and telecommunications connectivity, as well as opportunities for sustainable livelihoods. |
| <ul style="list-style-type: none"> • The plan also includes the establishment of Van Dhan Vikas Kendras for trading in forest produce, off-grid solar power systems for 1 lakh households, and solar streetlights. |
| <ul style="list-style-type: none"> • The scheme is expected to enhance the quality of life and well-being of the PVTGs, by addressing their multiple and intersecting forms of discrimination and exclusion, and by |

recognizing and valuing their unique and valuable contribution to national and global development.

GRAM MANCHITRA

(# e-Governance)

The Ministry of Panchayati Raj introduced "Gram Manchitra," a Geographic Information System (GIS) app.

- The primary goal of Gram Manchitra is to **encourage spatial planning initiatives by Gram Panchayats**, leveraging the capabilities of geo-spatial technology.
- The app supports the Gram Panchayat Development Plan (GPDP) by **aiding decision-making**.

Features

- **Unified GeoSpatial Platform:** Gram Manchitra provides a single and unified platform, facilitating the visualisation of developmental projects and activities at the Gram Panchayat level.
- **Sector-Wise Planning:** It enables Gram Panchayats to plan and execute developmental works across different sectors, fostering a holistic approach to rural development.
- **Development Plan Tools:** Tools include project site identification, asset tracking, cost estimation, and project impact assessment.

mActionSoft

(# e-Governance)

*The Ministry launched "mActionSoft," a mobile-based solution for **geo-tagging project assets**.*

- mActionSoft is a mobile-based solution, plays a crucial role in **capturing geo-tagged photos with GPS coordinates for works with asset outputs**.
- **Assets undergo geo-tagging at three stages:** before the commencement of work, during the work, and upon completion.
- This establishes a **comprehensive repository of information** on various works related to natural resource management, water harvesting, sanitation, agriculture, and more.

Features

- **Geo-Tagging:** Panchayats geotag assets created under finance commission funds with photographs, ensuring transparency and accountability.
- The assets geo-tagged **using mActionSoft seamlessly integrate with Gram Manchitra**, enriching the visualisation of developmental works in Gram Panchayats.

SUVAS

(# e-Governance #Judiciary)

The Supreme Court (SC) has introduced SUVAS, an AI-driven translation tool, to facilitate regional language usage in legal proceedings.

- This specialized tool, **developed with support from the Ministry of Electronics and Information Technology**, currently **translates English judicial documents into eleven Indian languages**.
- Additionally, the Chief Justice of India noted that the landmark Kesavananda Bharati verdict is accessible in 10 Indian languages on the SC website, marking 50 years since the ruling.
- The Constitutional Bench in the Kesavananda Bharati case ruled that **Parliament could amend any part of the Constitution so long as it did not alter or amend the basic structure** or essential features of the Constitution.

ARTHA GANGA

(# Project)

Arth Ganga is an initiative added to the Namami Ganga Program

- It is a **sustainable and viable economic development model** to **strengthen the river-people connection** through an economic bridge.
- It was decided that the Namami Ganga mission should lead the concept of Arth Ganga with the involvement of all stakeholders.
- It was **added as a vertical of the Namami Ganga Program**, in addition to 4 verticals: **Nirmal Ganga, Aviral Ganga, Jan Ganga and Gyan Ganga**.

Six pillars of Arth-Ganga identified are:

• Promotion of Natural Farming on the 5 km band on either side of River Ganga.
• Monetisation and reuse of Treated water and sludge from the STPs;
• Improvement of Livelihood opportunities , particularly for women;
• Promotion of Tourism and Cultural heritage
• People's Participation and Capacity Building
• Empowering local administration for improved water governance.

IFWCS Scheme

(# Scheme # Conservation)

The Ministry of Environment, Forests and Climate Change (MoEFCC) has launched the Indian Forest & Wood Certification Scheme (IFWCS), offering voluntary third-party certification designed to promote sustainable forest management and agroforestry in the country.

Indian Forest & Wood Certification Scheme (IFWCS)

- IFWCS **aims to offer an alternative to private foreign certification agencies** that have been operating in India.
- It seeks to **ensure greater integrity, transparency, and credibility in certifying** sustainable forest management and wood-based products.

Certification Scope

- The scheme covers **three main areas** for certification:

✓ Sustainable forest management.
✓ Sustainable management of trees outside forests (like plantations).
✓ Chain of custody, which guarantees the traceability of forest products throughout their supply chain, ensuring ethical sourcing and handling.

Nodal Agencies

• The scheme will be overseen by the Indian Forest and Wood Certification Council , which will act as a multistakeholder advisory body.
• Indian Institute of Forest Management, Bhopal will act as the scheme operating agency and will be responsible for overall management of the Scheme.
• The National Accreditation Board for Certification Bodies under the Quality Council of India will accredit the certification bodies which will carry out independent audits and assess adherence of various entities on the standards prescribed under the scheme.

Trees Outside Forests Standard

- A separate **Trees Outside Forests Standard** is now introduced as a part of the Scheme.
- **‘Trees outside Forests’ means trees growing outside recorded and notified forests**, in farmlands of an individual farmers or group of small farmers or plantation area on private land of institutions and industries, etc. and include all trees on the hedges and bunds, trees in different models of **agroforestry, silvo-pastoralism, urban and rural forestry** systems and **block plantations**.

Benefits

- The certification **is expected to enhance trust and transparency** in processes related to forest management and wood-based products.
- The **IFWCS can provide market incentives** to various entities that adhere to responsible forest management and agroforestry practices in their operations.
- This **includes state forest departments, individual farmers, or Farmer Producer Organizations** engaged in agroforestry and farm forestry, as well as other wood-based industries in the value chain.

Global Context

- The launch of IFWCS aligns with global efforts to address deforestation concerns.

- The scheme's objective resonates with the **pledge made by over 100 countries at the Glasgow climate change conference in 2021** to halt and reverse Deforestation by 2030.

NEW SCHMES for MSMEs

(# Scheme # Industry)

The Ministry of Micro, Small and Medium Enterprises (MoMSME) has launched three sub-schemes under the RAMP programme, aimed at bolstering the MSME sector in India.

MSME Green Investment and Financing for Transformation Scheme (MSME GIFT Scheme)

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| <ul style="list-style-type: none"> • This scheme intends to help MSMEs adopt green technology with interest subvention and credit guarantee support. |
| <ul style="list-style-type: none"> • Implementing agency is SIDBI. |

MSE Scheme for Promotion and Investment in Circular Economy (MSE SPICE Scheme)

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| <ul style="list-style-type: none"> • It is the first ever scheme in the Government to support circular economy projects which will be done through credit subsidy and will lead to realizing the dream of the MSME sector towards zero emissions by 2070. |
| <ul style="list-style-type: none"> • Implementing agency is SIDBI. |

MSE Scheme on Online Dispute Resolution for Delayed Payments

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| <ul style="list-style-type: none"> • It is a first-of-its-kind scheme to synergise legal support with modern IT tools and Artificial Intelligence to address the incidences of delayed payments for Micro and Small Enterprises. |
| <ul style="list-style-type: none"> • National Informatics Centre Services Inc. (NICSI) is the Implementing Agency. |

Other Initiatives under Existing Schemes

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| <ul style="list-style-type: none"> • The Support for Commercialisation of IP Programme (MSME – SCIP Programme) will enable the innovators in the MSME sector to commercialize their IPR. |
| <ul style="list-style-type: none"> • In addition, the Zero Defect and Zero Effect (ZED) Scheme of the Ministry has now been made completely free for women led MSMEs. The government guarantees payment of 100 percent financial support for the certification cost. |

RAMP

(# Scheme)

- **Raising and Accelerating MSME Performance (RAMP)** is a **World Bank assisted Central Sector Scheme**, supporting various Corona Virus Disease 2019 (Covid) Resilience

and Recovery Interventions of the Ministry of Micro, Small and Medium Enterprises (MoMSMEs).

Aimed at

• Improving access to market and credit
• Strengthening institutions and governance at the Centre and State
• Improving Centre-State linkages and partnerships
• Addressing issues of delayed payments and greening of MSMEs

Components

- Important component of RAMP is **preparation of Strategic Investment Plans (SIPs)**, in which all states/UTs will be invited.
- The SIPs would include an outreach plan for **identification and mobilisation of MSMEs under RAMP**, identify key constraints and gaps, set milestones and project the required budgets for interventions in priority sectors including renewable energy, rural & non-farm business, wholesale and retail trade, village and cottage industries, women enterprises etc.
- The overall **monitoring and policy overview of RAMP** would be done by an apex **National MSME Council**.
- The council will be **headed by the Minister for MSME**, including representation from various Ministries and supported by a secretariat.

DAY-NRLM (# Scheme)

Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM)

- It is a Centrally Sponsored Programme, launched by the Ministry of Rural Development in 2011.
- It aims to eliminate rural poverty through the promotion of multiple livelihoods and improved access to financial services for the rural poor households across the country.

Functioning

- It involves **working with community institutions through community professionals** in the spirit of self-help which is a unique proposition of DAY-NRLM.
- It impacts livelihoods by:

• Mobilizing rural households into SHGs.
• Organizing one-woman member from each rural poor household into SHGs
• Providing training and capacity building to SHG members
• Providing access to financial resources from their own institutions and banks.

Sub Programs

- **Mahila Kisan Sashaktikaran Pariyojana (MKSP):** It aims to promote agro-ecological practices that increase women farmers' income and reduce their input costs and risks.
- **Start-Up Village Entrepreneurship Programme (SVEP):** It aims to support entrepreneurs in rural areas to set up local enterprises.
- **Aajeevika Grameen Express Yojana (AGEY):** It was launched in August 2017, to provide safe, affordable and community monitored rural transport services to connect remote rural villages.
- **Deendayal Upadhyaya Grameen Kaushalya Yojana (DDUGKY):** It aims at building placement-linked skills of the rural youth and placing them in relatively higher wage employment sectors of the economy.
- **Rural Self Employment Institutes (RSETIs):** DAY-NRLM, in partnership with 31 Banks and State Governments, is supporting Rural Self Employment Institutes (RSETIs) for skilling rural youth to take up gainful self-employment.

PAAT-MITRO APP

(# app # economy)

The Ministry of Textiles launched "Paat-Mitro", a mobile application, developed by the Jute Corporation of India Limited (JCI) during the Jute Symposium.

- The application is **available in 6 languages** and all the functionalities are made available to the users free of cost.
- The **app also offers agronomic practices, Minimum Support Prices (MSP) details, Jute Gradation Parameters, 'Jute-ICARE' schemes, weather forecasts, Jute Corporation of India (JCI's) Purchase Centers' locations, and Procurement Policies.**
- It enables farmers to **track their jute payments** and uses a **Chatbot** for queries.

Production and trade

- **India is the largest producer** of jute followed by Bangladesh and China.
- However, **in terms of acreage and trade, Bangladesh takes the lead** accounting for three-fourth of the global jute exports in comparison to India's 7%.
- It is mainly concentrated in eastern India because of the rich alluvial soil of Ganga-Brahmaputra delta.
- **Major jute producing states** include West Bengal, Bihar, Odisha, Assam, Andhra Pradesh, Meghalaya, and Tripura.
- **Uses:** It is known as the **golden fibre**. It is used in making gunny bags, mats, ropes, yarn, carpets, and other artefacts.

Related Initiatives for the Jute Sector

- **Golden Fibre Revolution and Technology Mission** on Jute and Mesta are two of the government initiatives to boost jute production in India.

Jute Packaging Materials Act, 1987

- Through the Jute Packaging Materials (JPM) Act, the Government is protecting the interests of about 4 lakh workers and 40 lakh farm families.
- The Act **provides for the compulsory use of jute packaging material in the supply and distribution of certain commodities** in the interests of production of raw jute and jute packaging material, and of persons engaged in the production thereof, and for matters connected therewith.

Jute Geo-Textiles (JGT)

- The Cabinet Committee on Economic Affairs (CCEA) has approved a **Technical Textiles Mission** which includes **Jute Geo-Textiles**.
- JGT is one of the most important diversified jute products. It can be applied in many fields like civil engineering, soil erosion control, road pavement construction and protection of river banks.

Jute SMART

- It is an **e-government initiative** which was launched in December 2016 to promote transparency in the jute sector.
- It provides an **integrated platform for procurement** by Government agencies.

GIAN SCHEME

(# Scheme)

The Ministry of Education is preparing to resume the fourth phase of the Global Initiative of Academic Networks (GIAN). This initiative aims to bring in distinguished scholars worldwide to teach at Indian universities.

GIAN Scheme

- GIAN is a **flagship initiative by the Ministry of Education (MoE)**, Government of India designed to **foster collaboration and enhance the quality of education and research** in Indian academic institutions.
- **Launched in 2015**, the **objectives** are

• To improve the quality of higher education through international collaboration.
• To increase the touch of reputed international faculty to Indian academic institutes.
• To bring in International academic excellence in India's higher education institutions.
• To augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.

- The **eligibility criteria** for joining the GIAN scheme are as follows:

• Faculty members of Indian institutions of higher education.
• Scientists and entrepreneurs from abroad.
• The courses offered under the GIAN scheme should be relevant to the Indian context.
• The courses should be designed to provide exposure to the latest developments in the field.
• The courses should be designed to provide hands-on training to the participants.



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SECTION- MISCELLANEOUS

Kala-Azar

(# Society #Health)

*India stands on the brink of eliminating **visceral leishmaniasis**, commonly known as kala azar. With a marked decline in reported cases and deaths, the nation has come close to meeting the elimination target set by the World Health Organization (WHO).*

About Kala-Azar

- **Visceral leishmaniasis** commonly known as kala-azar, is a **slow-progressing indigenous disease** caused by a **protozoan parasite of genus Leishmania**.
- It is also known as **Black Fever or Dumdum Fever**.
- In India, **Leishmania donovani** is the only parasite causing this disease.

Transmission and Symptom

- It is **transmitted by sandflies**.
- Sandflies of the **genus Phlebotomus argentipes** are the only known vectors of kala-azar in India.
- It causes fever, weight loss, and spleen and liver enlargement. If left untreated, it can be fatal in 95% of cases.

Recorded Cases in India

- India documented 530 cases and four deaths in 2023, a decline from previous years.
- Additionally, there were 286 cases of **post-kala azar dermal leishmaniasis (PKDL)**.

Post Kala-azar Dermal Leishmaniasis (PKDL)

- This condition arises when *Leishmania donovani* **infiltrates and thrives within skin cells**, resulting in the formation of skin lesions.
- In **some instances of kala-azar, PKDL emerges after treatment**, but now it is believed that PKDL might occur without going through the visceral stage. However, more data is needed to understand how PKDL develops.
- The visceral stage refers to the initial phase of visceral leishmaniasis (kala-azar), where the parasite affects internal organs.

Treatment

- In India, the **primary treatment for kala-azar** involves administering **injectable liposomal amphotericin B**.
- For **PKDL**, the standard treatment consists of **12 weeks of oral miltefosine**, with the dosage adjusted based on the patient's age and weight.

Strategies for Elimination in India

- **Effective Spraying:** Rigorous monitoring of indoor residual spraying to curb sandfly breeding and disease spread.
- **Wall Plastering:** Using **Gerrard soil** for wall plastering to minimize sandfly breeding areas.
- **Treatment Compliance:** Ensuring completion of PKDL treatment through the ASHA (Accredited Social Health Activist) network.

DRESS SYNDROME

(# Society #Health)

The Indian Pharmacopoeia Commission (IPC) has issued a drug safety alert about Meftal, the common painkiller, saying its constituent, mefenamic acid, triggers severe allergic reactions like the DRESS syndrome, which affects internal organs.

Indian Pharmacopoeia Commission (IPC)

- IPC is an **autonomous Institution** of the Ministry of Health and Family Welfare.
- IPC was **created to set standards for drugs in India**. Its basic function is to regularly update the standards of drugs commonly required for the treatment of diseases prevailing in this region.
- It **publishes official documents for improving the Quality of Medicines** by way of adding new and updating existing monographs in the form of Indian Pharmacopoeia (IP).
- It further promotes the **rational use of generic medicines** by publishing the **National Formulary of India**.
- IPC also provides **IP Reference Substances (IPRS)** which act as a fingerprint for identification of an article under test and its purity as prescribed in IP.

DRESS syndrome

- DRESS (Drug Rash with Eosinophilia and Systemic Symptoms) is a **severe allergic reaction** affecting around 10% of individuals, potentially deadly and caused by certain medications.
- It is also known as **Drug-Induced Hypersensitivity Syndrome (DIHS)**.
- It is characterized by skin rash, high fever, swollen lymph nodes and complications in internal organs.

Use and Associated Side Effects of Meftal

- Meftal is commonly used as **non-steroidal anti-inflammatory drug (NSAID)**.
- It is widely used in India for multiple purposes, including relieving menstrual pains, headaches, muscle, and joint pain, and is even prevalent among children for high fever.

Associated Side Effects:

- Prolonged use of drugs like Meftal may increase the **risk of stomach ulcers, bleeding, and related complications**.

- Meftal has been associated with **potential adverse effects on the cardiovascular system**.
- Some experts have flagged renal complications as a potential side effect of Meftal.

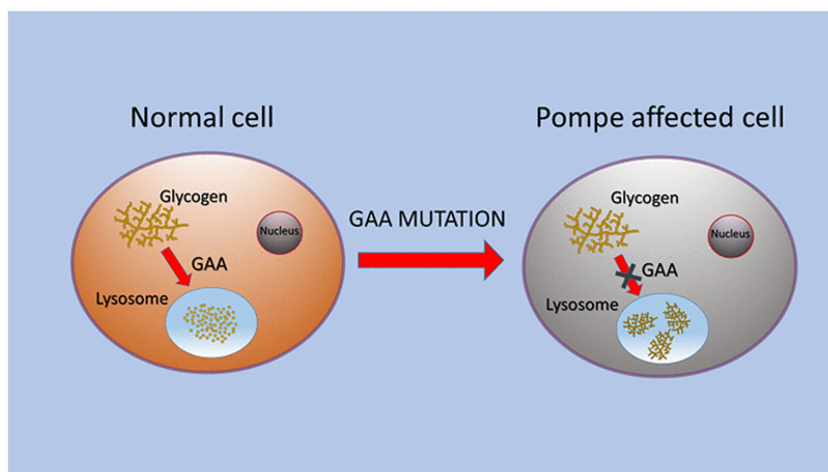
POMPE DISEASE

(# Society #Health)

India's first Pompe disease patient, passed away after battling the disease in a semi-comatose state.

About the disease

- Pompe Disease (also known as **Glycogen Storage Disease Type II**) is characterized by the **buildup of glycogen in the lysosomes** of the body's cells.
- This disease is a **rare genetic disorder** caused by a **deficiency of the enzyme acid alpha-glucosidase (GAA)**.
- This **enzyme is crucial** for breaking down glycogen into glucose within the lysosomes of cells.
- **Lysosomes are membrane-enclosed organelles** that **contain an array of enzymes** capable of breaking down all types of biological polymers—proteins, nucleic acids, carbohydrates, and lipids.
- Its prevalence estimates range from 1 in 40,000 to 1 in 300,000 births.



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| <ul style="list-style-type: none"> • Symptoms: Muscle weakness, Motor skill delay, Degenerative impact on bones, Respiratory complications, Cardiac involvement, Implications for daily living. |
| <ul style="list-style-type: none"> • Diagnosis: Genetic testing identifies mutations in the responsible GAA gene. Genetic analysis confirms the presence of specific mutations associated with Pompe Disease. |
| <ul style="list-style-type: none"> • Treatment: Enzyme Replacement Therapy (ERT) is a common treatment method that entails infusing the deficient enzyme to mitigate glycogen accumulation. |

INDIRA GANDHI PEACE PRIZE

(# Society #Award)

*The Indira Gandhi Prize for Peace, Disarmament and Development for 2023 has been jointly awarded to **Daniel Barenboim and Ali Abu Awwad** for their efforts in bringing together the youth and peoples of Israel and the Arab World for a non-violent resolution of the Israel-Palestine conflict.*

Barenboim is an Argentine-born distinguished classical pianist, and Awwad is an eminent Palestinian peace activist who has been working for a peaceful resolution of the ongoing conflict in the Middle East.

About the prize

- The Indira Gandhi Prize for Peace, Disarmament, and Development award has been conferred every year since 1986 by Indira Gandhi Memorial Trust in honor of Indira Gandhi, the former Prime Minister of India.
- The award **recognizes individuals or organizations** for their exceptional contributions to international peace, disarmament, and development.
- The prize is awarded annually and is considered one of the highest honors in the field of peace and development.
- It consists of a **monetary award of 25 lakh rupees along with a citation.**

Categories

- The award is bestowed in three categories: **peace, disarmament, and development.**

Criteria for Recognition

- The recipients are chosen based on their **exceptional and sustained efforts** to address critical global challenges related to peace, disarmament, and development.
- Their work should demonstrate a positive impact on the international community and contribute to the betterment of human welfare.

NOMA DISEASE

(# Society #Health)

World Health Organization (WHO) added NOMA to its list of neglected tropical diseases (NTDs) underscoring the urgent need to address this health challenge and allocate resources for prevention and treatment.

NOMA

- Noma, also known as **cancerum oris or gangrenous stomatitis**, is a **severe gangrenous disease affecting children** aged 3-10 in poor communities.
- **Gangrene is a dangerous and potentially fatal condition** that happens when the **blood flow to a large area of tissue is cut off.**
- Noma, derived from the Greek "**nomē**" meaning "**to devour**," manifests as severe gangrene of the mouth and face.
- Evidence indicates that **noma is caused by bacteria** found in the mouth.
- This **non-contagious disease**, exploits weakened defense with a mortality rate of around 90% and poses a significant threat to marginalized children in extreme poverty and malnutrition.
- **Risk factors** include poor oral hygiene, malnutrition, weakened immune systems, poverty.

Geographic Distribution and Historical Context

- Noma is prevalent in developing countries, especially **sub-Saharan Africa**, affecting poor children aged 3-10.
- Historical records show Noma was **reported in concentration camps during World War II** and disappeared in the Western world with economic progress, emphasizing its link to poverty.

Consequences and Treatment Challenges

- Survivors face **severe consequences** like facial disfigurement, jaw muscle spasms, oral incontinence, and speech problems.
- Early detection is crucial, with therapy most effective in the disease's initial stages.

KOLATTAM DANCE

(# Society #Culture)

Kolattam dance was performed during Balotsav, a children's festival, in Vijayawada, Andhra Pradesh.

- **Kolattam is a folk dance** from the **states of Andhra Pradesh and Tamil Nadu**.
- It is part of a religious offering, where **women dancers pay homage to the temple Goddess** in many regions of Andhra Pradesh.
- The Kolattam dance is **predominantly a dance of women, without involving men**.
- This form of dance is also called as **Kolkollannalu or Kollannalu**.
- This popular form of dance is usually performed together as a group where two artists each are grouped as a pair. Each dancer **holds two sticks** and moves these sticks in rhythm.
- The **Kolattam Kara is a solid wooden stick** made of wood and **lacquer is used in Kolattam**.
- Lacquer is a **type of transparent paint** that is put on wood, metal, etc. to give it a hard, shiny surface.

NICOTIN ADDICTION TREATMENT

(# Society #Health)

A recent study is set to redefine nicotine addiction treatment. researchers have unveiled a breakthrough method leveraging Vitamin C and cotinine, a nicotine metabolite. This approach goes beyond conventional Nicotine Replacement Therapy (NRT).

Note

- Nicotine is a **plant alkaloid that contains nitrogen**, which is found in several types of plants, including the tobacco plant and can also be produced synthetically.
- Nicotine is **both a sedative and a stimulant**. It is the main psychoactive ingredient in tobacco products.
- **Cotinine is formed as a major metabolite of nicotine** after tobacco smoking.

Key highlights of the study

Utilizing Cotinine

- Current NRT relies on providing **additional nicotine to the body** through patches or lozenges (medicinal tablets).
- Individuals find it challenging to quit smoking due to nicotine withdrawal, which manifests as cravings, irritability, anxiety, increased appetite, and difficulty concentrating.
- Researchers explore **cotinine, nicotine's oxidative metabolite, as an alternative approach.**

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| <ul style="list-style-type: none"> • In humans, generally, 80% of nicotine accumulates as cotinine in the body, while the remaining 20% is eliminated in urine. Cotinine can cause cancer. |
| <ul style="list-style-type: none"> • Researchers used Ascorbic acid (Vitamin C) as a reducing agent to convert cotinine back to nicotine which is recirculated in blood to prevent the nicotine urge. |
| <ul style="list-style-type: none"> • Researchers made a dissolvable film with Vitamin C for smokers to use when tempted to smoke. |
| <ul style="list-style-type: none"> • Ascorbic acid in the specified dose facilitates the conversion of cotinine to nicotine within the smokers' plasma (liquid portion of blood). |
| <ul style="list-style-type: none"> • Results: Vitamin C helps turn cotinine into nicotine without side effects. The body gets rid of toxins at the end without needing extra nicotine. |

Government Initiatives Related to Tobacco Consumption

Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act (COTPA), 2003:

- The Act **applies to all tobacco-containing products** outlined in the Act's Schedule.
- **Prohibits advertising and regulates** trade, commerce, production, supply, and distribution of cigarettes and other tobacco products in India.

National Tobacco Control Programme (NTCP)

- It was launched in the year **2007-08 during the 11th five-year plan**, to create awareness about the harmful effects of tobacco consumption, reduce the production and supply of tobacco products, ensure effective implementation of the provisions under COTPA 2003, help the people quit tobacco use, and facilitate implementation of strategies for prevention and control of tobacco advocated by WHO Framework Convention of Tobacco Control.

National Tobacco Quitline Services (NTQLS)

- The objective of NTQLS is to provide telephone-based information, advice, support, and referrals for tobacco cessation.

IMPORTANT LOCATIONS

CAMBODIA

(# Southeast Asia)

- Cambodia, country on the Indochinese mainland of Southeast Asia.
- Its capital is **Phnom Penh**.

- It is **bordered** to the west and northwest by **Thailand**, to the northeast by **Laos**, to the east and southeast by **Vietnam** and to the southwest by the **Gulf of Thailand**.

- The two dominant hydrological features of Cambodia are the **Mekong River** and the **Tonle Sap (Great Lake)**.

- **Topography:** The **Elephant Mountains** and **Cardamom Mountain** of the southwest and western regions; the **Dangrek Mountains** of the North adjoining of the Korat Plateau of Thailand and Rattanakiri Plateau and **Chhlong highlands** on the east merging with the Central Highlands of Viet Nam.
- Conservation and restoration of the ancient temples of Angkor Wat, Ta Prohm and Preah Vihar are being carried out under India's funding.



TONLE SAP LAKE

(# Cambodia)

- Tonle Sap Lake is the **largest freshwater lake** in Southeast Asia. Also called **Boeung Tonle Sap**.
- Belonging to the **Mekong River system**, Tonlé is the largest freshwater lake in Southeast Asia and one of the most diverse and productive ecosystems in the world.
- There are different species of wildlife in and around the lake, which helped to sustain and grow the ancient Khmer civilisation.
- It's also famous for its fascinating local communities and their floating villages.

Tonle Sap Biosphere Reserve

- It is located in Cambodia surrounding the great lake of Cambodia Tonle Sap.
- It is a **UNESCO Biosphere Reserve**.
- This biosphere reserve houses **Siamese crocodiles and saltwater crocodiles**.

- It is also a **Ramsar Wetland**. Illegal fishing and poaching are the major threats of this reserve.

SIERRA LEONE

(# West Africa)

*An **unsuccessful coup attempt** in Sierra Leone has led to political turmoil and economic crisis.*

- Sierra Leone is **located between Liberia and Guinea**, bordering the **North Atlantic Ocean**. The country is situated on the southwest coast of West Africa.

- Capital:** Freetown.

- Languages:** English, Krio.

- Mount Bintumani (also known as Loma Mansa)** is the highest peak in Sierra Leone.
- A tropical climate is found in Sierra Leone.
- Sierra Leone's terrain is characterized by mountains in the eastern region, an upland plateau, a wooded hill country, and a coastal belt of mangrove swamps.
- Sierra Leone is one of the members of the **International Solar Alliance**.
- India was among the first countries to contribute to the UN Mission in Sierra Leone (UNAMSIL) with the deployment of 4000 strong Indian Military contingent.



GULF OF ADEN

(# Middle East)

- The Gulf of Aden, an arm of the Indian Ocean is situated between **Yemen on the south coast of the Arabian Peninsula** and **Somalia in Africa**.
- It is bounded to the south by **Somalia and the Socotra Islands**, north by **Yemen**, east by the **Arabian Sea**, and west by **Djibouti**.
- The gulf – roughly 900 kilometers long and 500 kilometers wide is an **important waterway for transporting Persian Gulf oil**.
- The gulf **connects the Red Sea to the Arabian Sea** via the **Strait of Bab el Mandeb**. It forms an essential oil transport route between Europe and the Far East.



- Its marine life is rich in quantity and variety. Its coastline lacks large-scale fishing facilities but supports many fishing towns, as well as the **major ports Aden and Djibouti**.
- In recent years, the gulf has received a **lot of attention due to piracy, terrorism, and refugee smuggling**.

ICELAND

(# North Atlantic)

*The Government of Iceland has confirmed that the **Fagradalsfjall volcanic eruption** near the capital Reykjanes poses no threat to human life.*

*The eruption began between **Sýlingarfell and Hagafell**, just north of the fishing town of Grindavik which is located on the **Reykjanes Peninsula**.*

Iceland (Land of Fire and Ice)

- Iceland is located on the **Mid-Atlantic Ridge**, technically the longest mountain range in the world, but on the floor of the Atlantic Ocean.
- The **ridge separates the Eurasian and North American tectonic plates** making it a hotbed of seismic activity. It is mostly a submarine, running along the length of the Atlantic from north to south.
- However, in the North Atlantic, it rises over the ocean surface in the form of the island of Iceland. This feature of its geology has given rise to **Iceland's unique landscape made up of geysers (hot springs), glaciers, mountains, volcanoes, and lava fields**.
- Iceland is home to 33 active volcanoes, the highest in Europe. This unique landscape has given Iceland the epithet, '**Land of Fire and Ice**'.



- **Eyjafjallajökull**, one of Iceland's most famous volcanoes, erupted in 2010, causing a widespread ash cloud.
- Other notable volcanoes include Hekla, Grímsvötn, Hóluhraun, and Litli-Hrútur, part of the Fagradalsfjall system.

MARAPI VOLCANO

(# Indonesia)

The Marapi volcano in West Sumatra, Indonesia, erupted, ejecting ash up to 3,000 meters (9,840 feet) into the air and causing casualties.

- Mount Marapi, which means "**Mountain of Fire**", is the most active volcano on **Sumatra island** and its most deadly eruption was in April 1979.
- **Indonesia sits on the Pacific's "Ring of Fire"** and has 127 active volcanoes.

- Despite being one of the most dangerous volcanoes in the world, Mount Merapi is a famous tourist destination.
- Mount Merapi, along with other volcanoes like **Mount Semeru** and **Mount Bromo**, continues to be a popular adventure destination in Indonesia.



CUBA

(# Caribbean)

Cuba and Iran are strengthening their bilateral ties.

- Cuba is the **largest island in the Caribbean Sea**.
- Cuba and its neighbors **form the Greater Antilles**, a chain of islands created millions of years ago when two of Earth's tectonic plates collided.
- **Relief:** High mountains and rolling hills cover about one-third of Cuba. The other two-thirds of the island are lowland plains used mainly for farming.



- **Demography:** The **mixture of native, African, and European influences** in Cuba gives this island a lively culture that is known around the world. The introduction of communism to the country in 1959 has had a big impact on the people.

• Cuba's history is reflected in its **food, language, art, and, most of all, its music.**

• The **main musical form is called son**, which combines lively rhythms with classical guitar.

• Many interesting creatures live in Cuba's thick forests. Most famous is the **bee hummingbird**, the world's smallest bird.

• Adult bee hummingbirds grow to only two inches (five centimeters) long. The world's **smallest frog also lives in Cuba.**

- The United States had been hostile toward Cuba since the communists took power in 1959, but in **2015 the United States reopened its embassy in Cuba**—where American diplomats live to work with the Cuban government. Soon after, Cuba did the same in the United States.

SWEDEN

(# Scandinavia)

Sweden signs defence agreement with the US

- Sweden is in the geographical region known as Scandinavia in northern Europe.
- Sweden is bordered by **Norway on the west** and **Finland to the east**.
- **Three stretches of water separate Sweden from Denmark**—the Skagerrak, the Kattegat, and the Öresund straits.

• Sweden's Arctic north has been called the **"land of the midnight sun,"** because during the summer months the sun never sets.

• In the fall and spring, there are spectacular light shows in northern Sweden known as the **"aurora borealis,"** or **"northern lights."**

- **Welfare state:** During the 1930s, Sweden developed the welfare system, known as "the Swedish model." Under their system, all Swedes have access to publicly financed health care, help for the unemployed, child care, schools, elder care, and at least five weeks of paid vacation per year.
- Sweden is a member of the European Union, but **does not use the euro** as currency. They have kept their own currency, the **Swedish krona**, as a way to keep their identity.



EGYPT

(# North Africa)

President Abdel Fattah al-Sisi wins Egypt election with 89.6% of vote after facing no serious challengers. He wins third term as President.

- **Gift of Nile:** Without the Nile River, all of Egypt would be desert. Only about an inch (2.5 centimeters) of rain falls throughout Egypt each year.

- But each summer, the **river rises because of rains** at its source far **to the south in Ethiopia**. Floods cover the river's valleys, leaving sediments needed for trees, plants, and crops to grow.

- **Relief:** Southern Egypt's landscape contains low mountains and desert. Northern Egypt has wide valleys near the Nile and desert to the east and west. North of Cairo, the capital, is the sprawling, triangular Nile River Delta. This fertile land is completely covered with farms.



- **Bordering areas:** The country borders the **Mediterranean Sea to the north** and the **Gulf of Suez and the Red Sea to the east**.

- It is bordered by **Libya in the west**, the **Palestinian territory (Gaza Strip) and Israel** in the northeast, and **Sudan in the south**.

- Egypt shares **maritime borders with Cyprus, Turkey, and Greece** in the Mediterranean Sea, and with **Jordan and Saudi Arabia in the Red Sea**.

- Along with oil and gas exports, Egypt's tourism industry remains a key part of its economy. Visitors flock to the country to see ancient monuments like the Great Pyramids and the Sphinx. And to learn about Ancient Egyptian rulers like King Tutankhamun.

POLAND

(# Europe)

Poland's new Prime Minister Donald Tusk takes office, ending 8 years of conservative rule.

- Poland is located at the **heart of the European continent**.
- Poland's borders have changed many times over the centuries. Its present borders were set after World War II ended in 1945.

- Poland borders **Germany in the west**, the **Czech Republic (Czechia) in the southwest**, **Slovakia in the south**, **Ukraine in the southeast**, **Belarus in the east**, and **Lithuania and Russia in the northeast**.



- The country also shares **maritime borders** with **Denmark and Sweden**.
- **Relief:** Poland has a variety of striking landscapes, from the sandy beaches of the **Baltic Sea** coast in the north and the rolling central lowlands to the snowcapped peaks of the **Carpathian and Sudeten Mountains** in the south. Poland has more than 1,300 lakes throughout the country.
- Poland's large tracts of forested land provide refuge for many animals, including wild boar and the **European bison, called a wisent**.

YEMEN

(# Arabian Peninsula)

Yemen's Houthi rebels fired their largest-ever barrage of drones and missiles targeting shipping in the Red Sea

- Yemen is located on the **southwestern tip of the Arabian Peninsula**, an area of land in Southwest Asia.
- It **shares the peninsula with the countries** of Jordan, Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, the United Arab Emirates (UAE), and Oman.
- Yemen is **bordered by the Red Sea** to the west and the **Gulf of Aden to the south**.
- The interior of the country gives way to rugged mountains, including the **Sarawat Mountains**, a mountain range that runs through much of the western part of the Arabian Peninsula.
- Eastern Yemen is home to part of the fifth-largest desert in the world, the **Rub' al-Khali**.
- Nicknamed **"the Empty Quarter,"** the desert has the longest stretch of continuous sand in the world, covering much of the Arabian Peninsula.
- Yemen is so dry that it doesn't have any permanently flowing rivers—only dry river valleys known as **wadis**.



Houthis

- The **Houthi movement** originated in the early 1990s in Yemen as a **Zaydi revivalist group (a sect of Shia)**.
- Initially focused on religious and social networks, **it evolved into a powerful force**, leading insurgency against perceived corruption and external interventions.
- The **Houthi-Saleh alliance** captured Sana'a in 2015, triggering a civil war in Yemen.

- This alarmed Saudi Arabia, which feared that the Houthis would become allies to their rival, Iran.
- Saudi Arabia then led a coalition that included other Arab countries and sent troops to Yemen in 2015. However, they were unable to drive out Houthis from Sana'a as well as from the north of the country.

VIETNAM

(# South-East Asia)

Chinese President Xi Jinping paid a visit to Vietnam three months after Biden's visit, when the US-Vietnam elevated ties to the Comprehensive Strategic Partnership and a month after the Japan-Vietnam raised their relationship to the same level.

- Vietnam is a **long, narrow nation shaped like the letter 'S'**.
- It is in Southeast Asia on the eastern edge of the peninsula known as **Indochina**.



- Its neighbors include **China to the north** and **Laos and Cambodia to the west**.

- The **South China Sea** lies to the east and south.

- The mountains of the **Annam Cordillera** rise over most of the western side of Vietnam, while a thousand-mile (1,600-kilometer) coastline dominates the east.

- Two of Vietnam's largest rivers, the **Mekong in the south** and the **Red in the north**, end at the South China Sea in huge swampy plains called deltas.

- As a communist country, Vietnam has **no official religion**. But people are free to worship if they want to, and many follow what's called the "Three Teachings" of Confucianism, Taoism, and Buddhism.
- Vietnam's **main exports** include crude oil, seafood, rice, shoes, wooden products, machinery, electronics, coffee, and clothing.

FINLAND

(# Scandinavia)

Finland entered into a defense cooperation agreement with the United States, allowing the U.S. military access to Finnish national security facilities.

- Finland is **part of Scandinavia**, a geographical region in northern Europe, and **shares land borders with Norway, Sweden, and Russia**.

- The **Baltic Sea borders the country to the south** and southwest.

- Finland's remote northern province, known as **Lapland**, sits above the Arctic Circle.
- Finland is also home to the **Sami**, a herding people once known as the Lapps. They live in Lapland, where they herd reindeer.
- The **northern lights, or aurora borealis**, can be seen in the Lapland region of Finland regularly in the fall, winter, and spring.
- Finland is heavily forested, with over 70 percent of the country covered by thick woodlands.
- It is called **"land of a thousand lakes."**
- Currently over 75 percent of the labor force works in the service industry, such as in hotels and restaurants.
- The **country's top business is manufacturing**, particularly in the wood, metals, and electronics industries.



RED SEA MAP (# Middle East)

- Red Sea is an arm of the Indian Ocean**, between northeastern Africa and the Arabian Peninsula.
- The sea covers an area of around 438,000 km².
- At its **northern end**, the sea branches out; the **western branch is known as the Gulf of Suez** and the **eastern arm as the Gulf of Aqaba**.
- The **Red Sea connects the Indian Ocean with the Atlantic Ocean** through the Arabian Sea, the Gulf of Aden, the Bab el Mandeb Strait, the Suez Canal and the Mediterranean Sea.
- Countries bordering the Red Sea are **Saudi Arabia and Yemen in the east** and **Egypt, Sudan, Eritrea and Djibouti in the west**.
- Israel has access to the **Red Sea via its port in Eilat** and **Jordan via Aqaba on the Gulf of Aqaba**.



ECUADOR (# South America)

Murder and violence linked to drug trafficking has soared, as the country has become one of the most dangerous in Latin America.

- Ecuador is located in the **western corner at the top of the South American continent.**
- Ecuador is **named after the Equator**, the imaginary line around the Earth that splits the country in two. Most of the country is in the **Southern Hemisphere.**
- It is bordered by **Colombia in the north, Peru to the east** and the **Pacific Ocean** in the west.



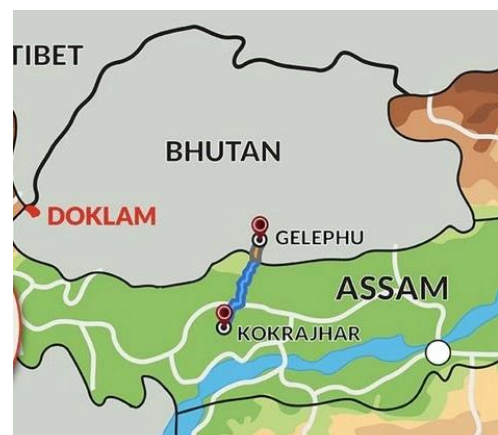
- The high Andes Mountains form the backbone of the country.

- | |
|---|
| <ul style="list-style-type: none"> Cotopaxi in the Andes is the highest active volcano in the world. |
| <ul style="list-style-type: none"> The Galápagos Islands, west of the mainland of Ecuador are part of Ecuador and are home to unique reptiles, birds, and plants. |
| <ul style="list-style-type: none"> The Costa, or coastal plain region is where many of the world's bananas are grown. |
| <ul style="list-style-type: none"> The Sierra is also made up of farmland. The Oriente is east of the Andes and is rich in oil. |

GELEPHU SMART CITY PROJECT (# Bhutan)

Bhutan's King has announced plans to build a massive "international city" in an area of over 1,000 sq. km. on its border with Assam. This project is known as the Gelephu Project.

- The project is expected to be an **"economic corridor connecting South Asia with Southeast Asia via India's northeastern States"**.
- The city is expected to follow environmental standards and sustainability as a goal, and will aim to **attract "quality investment" from "specially screened" international companies.**



- The project is expected to include “**zero emission**” industries, a “**mindfulness city**” that plays to Bhutan’s strength in tourism and wellness, as well as infrastructure companies.
- The project is expected to be a “**Special Administrative Region**” that would be run under different laws to facilitate more international investment.
- The project is expected to be a “**point of inflection**” and “**transformation**” for Bhutan and South Asia.
- The Government of India agrees to construct the **first India-Bhutan railway line to Gelephu**.
- The railway will also connect with roadways and border trading points into **Assam and West Bengal**, eventually providing Bhutan access to Myanmar, Thailand, Cambodia, and Singapore.

SERBIA

(# Southeastern Europe)

Police in Serbia detained many people as opposition plans more protests against election results



- Serbia, the **former core republic of Yugoslavia** is now a landlocked country in the central part of the **Balkan Peninsula** in Southeastern Europe.
- The **Carpathian Mountains** and **Balkan Mountains** stretch in a north–south direction in eastern Serbia.
- It is bordered by four of the six former Yugoslavian socialist republics, **Bosnia and Herzegovina, Croatia, Republic of Macedonia, and Montenegro**.
- It shares also borders with **Albania, Bulgaria, Hungary, and Romania**.
- Most famous personality- **Novak Djokovic**.

IMPORTANT EDITORIALS

Note: The topics in this section are **highly important** from the perspective of UPSC Main Examination.

These topics **provide valuable inputs** for General Studies Answer Writing, Essay topics and solving Case Studies

ISRAEL AND PALESTINE

(# International Relations)

The only lasting solution is for Israel to vacate its occupation of the West Bank and let a viable Palestinian state emerge

- The United Nations says 1.3 million of the 2.3 million residents of the Hamas-controlled Gaza Strip have been displaced, and almost half of all homes in Gaza have been damaged or destroyed.

Outcomes

- One outcome of a war is when both sides gain something of value to them. The Israeli-Hamas war is likely to end in that kind of scenario.
- **Israel will win in military terms.** But Hamas is **likely to win in terms of a greatly increased following among Arab populations everywhere**, including, **especially, in the occupied West Bank.**
- The Palestine Authority, which has been ruling there for the past 30 years, has become vastly unpopular and corrupt.
- Palestine Authority President Mahmoud Abbas, the most moderate Palestine leader Israel could have ever hoped for, has failed singularly in making any progress towards the objective of establishing a Palestinian state in the West Bank.
- He is perceived as collaborating with Israel in its hunt for 'terrorists'. The peace process has long been dead.

'Right of self-defence' and the reality

- As United Nations Secretary-General António Guterres has reminded the international community, the Hamas attack on Israel on October 7, 2023, condemnable and despicable as it was, did not happen in a vacuum.

- Under **Article 51 of the Charter of the United Nations**, Israel has the inherent right of self-defence. The same article lays down that after acting in self-defence, the state concerned must report the action taken by it to the UN Security Council (UNSC). This does not seem to have been done.

- In any case, **self-defence does not authorise the disproportionate or indiscriminate use of force against civilians.** It has been reported that Gaza's rate of death during Israel's

assault has few precedents in this century — almost 15,000, a majority of them women and children. This goes well beyond the prevailing customary law of self-defence.

What happens when Hamas has been subdued? What takes its place?

- Some, including the U.S. President Joe Biden, have suggested that the Ramallah-based Palestine Authority should take over administering the Gaza Strip, once the situation becomes ready for that.
- ‘The rich Arab states’, would be asked to finance the rebuilding of Gaza.
- The **only problem** is that the Palestinians, in Gaza as well as in West Bank, do not want the Palestine Authority led by Mr. Abbas to rule anywhere, let alone Gaza.

• The **only available option** is to **hold fresh elections**, in Gaza as well as in the West Bank, under international supervision as and when the situation allows.

• The UN should be asked to **deploy a peace-keeping contingent** on the border between Gaza and Israel to ensure security for both.

• The suffocating **blockade of Gaza would be lifted**.

- Israel does not like the UN, and likes the UN Secretary-General even less. It should be remembered that it was the UN that gave birth and legitimacy to the insipient state of Israel. The U.S. will need to take the lead on this in the UNSC.

Feasibility of two-state solution

- Meanwhile, the proposal for a two-state solution, long pushed aside, has come alive. Everyone seems to be repeating the two-state mantra.

But how feasible is the two-state concept today?

- The **1993 Oslo Accord envisaged Palestine** to be based in the **West Bank**. Today, the West Bank is heavily populated by Israeli settlers, 4,50,000 at latest count. No Israeli government will succeed in persuading the settlers to return. Force would be required. The land is like Swiss cheese, having settler roads and innumerable settlements, with more planned.
- The current Israeli Prime Minister, Benjamin Netanyahu, will never agree to a Palestinian state, however truncated.
- What is needed, as soon as conditions permit, is to have a reality check of the two-state proposal — what is feasible and what is not. **Painful concessions will be required**, including **land swaps**, and a **monitoring mechanism** established to hold each side to the commitments they make.
- The only lasting solution is for Israel to vacate its occupation of the West Bank and let a viable Palestinian state emerge.

Abraham Accords are a foundation

- To ensure Israel's legitimate concern for the safety of its people, the **new state should be demilitarised**. Other measures can be thought of to assure the Israelis of their safety.

- Israel's neighbouring **Arab states should all be engaged in this process**. The Abraham Accords provide a foundation.
- If Israel has the vision of living in harmony in the region with its Arab neighbours, this is the only way. When that happens, Iran will lose its proclaimed reason for its anti-Israel tirades; Hezbollah will, likewise, lose its most important plank for threatening Israel.
- For decades, Israeli-Palestinian relations have been locked in a never-ending cycle of death, destruction, and misery. The war in Gaza is the latest iteration. It should be the last. The Middle East could, finally, enjoy stable peace and security.

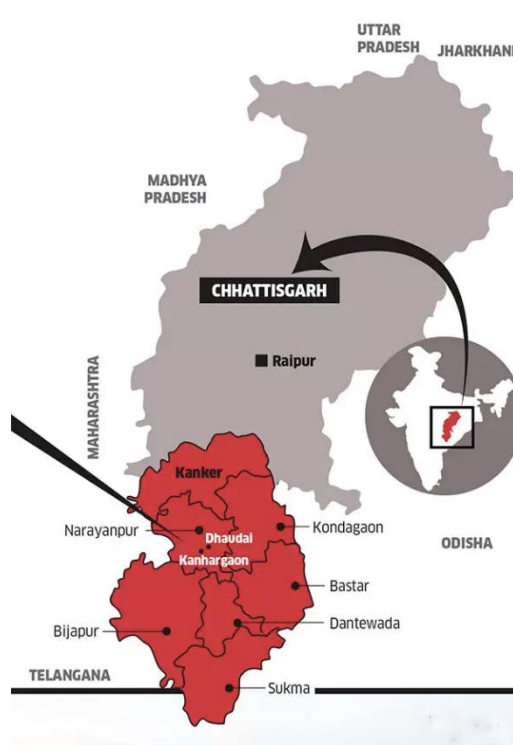
DEMOCRACY A COUNTER TO MAOISTS

(# Governance # Security)

The dismal polling turnout in the Maoist-affected areas of Chhattisgarh is a pointer that democracy needs to be strengthened at the grassroots

Scenario

- In Chhattisgarh, it is said that the party with which the tribal voter goes forms the government in the State as tribal voters have a 34% of the vote share in the State. Maoist insurgency in the country presently thrives in the tribal regions of Chhattisgarh, particularly in Bastar.
- **Tribals form the main cadre base of the movement.** Elections in these Maoist strongholds, that are **Schedule Five areas, have always been affected by violence** in the backdrop of boycott calls by the Maoists.
- Voter turnout in Maoist-affected areas such as **Bijapur and Kanta was as low as 3% to 4%.**
- Democracy has varied connotations for the tribal population inhabiting the regions with the ongoing Maoist insurgency.
- If analysed from the **Maoists' perspective of boycotts**, it may be added that the insurgents who claim to fight the state for the cause of the people, force these very people to shun the most effective tool towards empowerment, i.e., **by not participating in the democratic process**. This calling out is essential so as to establish the sham — that 'Maoists are for the people's cause'.



Non-serious implementation of PESA

- Although a few of the political parties in the field came up with the issues concerning complete implementation of the Provisions of the Panchayats (Extension to Scheduled Areas) Act (PESA), modalities to execute the same were not brought out in a clear manner.

- In spite of the PESA Act being passed in 1996, **not one of the State governments concerned has implemented the same in the correct spirit**, by issuing policy directives.

- The **Act envisions the empowerment of gram sabhas as the sole authority** to govern various aspects of the socio-economic lives of the tribal community in the respective jurisdiction.
- The **intent behind the Act was to bring people at the grassroots level face to face with the government and** was **aligned to the tribal way of life** in historical and traditional terms.
- Various State governments have implemented this Act in a half-hearted manner to meet their ulterior motives. **This gap has been exploited by the Maoists** to foster their agenda and by having their writ run in their strongholds through 'jantana sarkar'.
- The PESA Act, given its potential, **could be commandeered as the greatest enabler to mainstream the tribal community** by accommodating their aspirations. Its dogged implementation is highly do-able, in the mid and long run. This could render the Maoists, whose influence is receding, irrelevant.

Way ahead

- The Maoists have created a myth about themselves by pretending to be champions of the tribal cause, and the same needs to be called out in a credible manner **by empowering democracy at the grassroots.**
- **Tribal leadership needs to be nurtured by acknowledging them and giving them a voice.**
- The resolution to the challenge posed by the Maoists is not only about security and development but is also about looking beyond, by enabling democracy at the grassroots — something that **recognises tribal aspirations and calls out the ulterior intentions of Maoists.**
- Or, otherwise, we will continue paying short-term attention to the Maoist challenge only when they strike, at their sweet will.

DELIBERATIVE DEMOCRACY IN DANGER?

(# Governance # Freedom of speech)

Denial of legislative debate furthers democratic backsliding in India.

- The government's stymieing of any debate in Parliament and the Chair's recourse to an unprecedented **high number of suspensions of Opposition legislators** following their demand for a statement in the Houses and a debate, have been in line with its **disregard for deliberative democracy.**
- **Unlike in the two Lok Sabhas (2004-14)**, when even ruling party legislators, including rebels, were suspended for unruliness, **only Opposition members have been subject to suspension**, which includes those for far less severe offences since 2014.

Deliberative democracy

- The **hallmark of a functioning democracy is deliberation**, wherein **elected legislators' debate and discuss issues of public import and seek solutions** to issues that affect citizens.
- A **thorough deliberation involves** not just televised speeches from Parliament but also **debates, the utilisation of parliamentary and standing committees** to delve into the issue and for Bills and legislation to be discussed threadbare before consideration.
- Instead, over the course of recent parliamentary sessions during the National Democratic Alliance's tenure, there have been multiple attempts at browbeating the Opposition, getting Bills passed without adequate discussion, disallowing amendments on merit, and under-utilising standing and parliamentary committees while trying hard to play to the gallery. Legislative business and parliamentary work have been given short shrift, while theatrics by legislators in both the Treasury and Opposition benches, and one-upmanship through the use of suspensions, have dominated proceedings.
- It is no wonder that such actions have compelled global democracy reports by research institutions such as **V-Dem Institute to characterise India's democracy as an "electoral autocracy"**.
- Worse, the **use of the draconian Unlawful Activities (Prevention) Act to indiscriminately target dissenters**, such as the protesters who threw canisters and raised slogans in Parliament, has also fallen into the recent pattern of a deliberate equation of dissent with terror.
- Again, this has led the **U.S.-based Freedom House**, that measures civil and political liberties, to **declare India as "partially free"**.
- The recent actions by the government only contribute further to the backsliding of democracy in India, making these developments a matter of serious concern.

HFSS FOOD

(# Society # Health)

Nutrition literacy and effective food labelling combined with tax on High-Fat Sugar Salt (HFSS) foods can help improve health outcomes.

Global scenario

- The **consumption of High Fat Sugar Salt (HFSS) foods** is one of the **major risk factors to a host of health issues** that include **obesity, diabetes, and high blood pressure**.
- According to a **World Bank report of 2019**, worldwide, **70% of all overweight and obese people live in Low- and Middle-Income Countries**, with a 55% rise in rural areas across the globe, dispelling the perception that overweight/obesity is only a problem in high-income countries and urban and affluent communities.
- The **Non-Communicable Diseases (NCDs) burden** in India has **skyrocketed from 38% in 1990 to 65% in 2019**. The global burden of diseases study shows that annually, 1.2 million deaths in India can be attributed to dietary risks alone.

India's shift in dietary habits

- The **ultra-processed food sector in India** witnessed a **compounded annual growth rate of 13.4% between 2011 and 2021**.
- As the **world's largest producer and consumer of sugar in 2022**, the country has seen an **alarming surge in consumption of HFSS foods**.
- About **50%-60% of edible sugar, salt and fat produced in India is consumed by the processed food industry**.
- **Sales of snacks and soft drinks have tripled over the past decade**, exceeding \$30 billion last year, indicating a disturbing trend in dietary habits.
- There is a **global trend of utilising fiscal measures to combat obesity**.
- **Taxation is considered to be an effective means** to reduce the consumption of these products as most consumers are price responsive towards them.

Case for high HFSS tax

- The imperative for taxing HFSS arises due to negative externalities and internalities.
- **Negative externalities manifest as societal costs** in the form of **increased health-care expenditures**.
- For example, the **escalation of diabetes and obesity** due to increased HFSS consumption leads to **external costs imposed on society**, necessitating substantial health-care expenditures, borne through elevated taxes to finance public health insurance such as the Ayushman Bharat Yojana.
- Meanwhile, **internalities, stemming from consumers' limited understanding, influenced by aggressive marketing**, result in inadvertent harm to themselves.
- **Taxes can offer a targeted and effective means** to curb detrimental consumption habits, thereby reducing societal burdens.
- Implementing such taxes has shown promise in various countries, demonstrating a reduction in the purchase of unhealthy items.
- Unlike the taxation of other sin goods such as tobacco and alcohol, the HFSS taxation need not be viewed as a means for raising revenue, but should be seen as a **fiscal tool to incentivise the industry to reformulate the products more in favour of healthier alternatives** and for people to reorganise their food consumption basket in favour of a healthier diet.

Benefits of taxation

- HFSS taxation in India should not be merely seen as an economic or fiscal policy concern but it **deserves to be considered a public health imperative**.
- Effectively designed taxes can reap multiple benefits — they can **act as a**
- **deterrent to consuming HFSS;**
- **promote healthier food choices;**
- **prompt manufacturers to reformulate foods;**

- **improve public health outcomes;**
 - **reduce the burden on the health-care system, and**
 - **foster the nation's well-being.**
- When combined with other measures such as promotion of nutrition literacy and effective food labelling, it can be a more potent tool to combat the rising epidemic of overweight and obesity by creating a more sustainable and equitable food system.

ETHANOL DILEMMA

(# Energy # Food security)

The future of India's renewables strategy hangs on a delicate food-fuel trade-off; and a choice between intensifying hunger and reducing fossil fuel use.

India's challenge

- As more than 100 countries at COP28 in Dubai pledged the tripling of global renewable energy capacity by 2030, **India faces a tightrope walk with regard to its ethanol blending target.**
- While **ethanol blended petrol (EBP) increased from 1.6% in 2013-14 to 11.8% in 2022-23**, the **20% target by 2025 has run into trouble with low sugar stocks in 2022-23** and the impending shortfall in sugarcane production this year.

- Now, the government is looking at a **major transition towards grains-based ethanol** for meeting the target.
- The recent authorisation of the **National Agricultural Cooperative Marketing Federation of India (NAFED)** and the **National Cooperative Consumers' Federation of India (NCCF)** to **procure maize (corn) for supplying ethanol distilleries** indicates emphasis on this transition and will boost an organised maize-feed supply chain for ethanol. This, however, risks creating more challenges for the economy.

Crude and food prices

- The **two major feedstock for ethanol production** are **sugarcane (Brazil) and corn (the U.S.)**.
- A **crucial difference** between the use of sugarcane and corn for producing ethanol **is the degree of food-fuel conflict that emerges.**

- In the **case of sugarcane, ethanol is produced by processing the molasses (C-heavy/B-heavy)** and **constitutes minimal trade-off with the sugar output.**
- But **using corn for producing ethanol directly reduces its use as food or livestock feed.**
- It **not only diverts grain to fuel use, but also links food prices directly with crude oil prices** through the demand side. The very high crude prices that prevailed for a decade in 2004-14 pulled up ethanol and corn prices to historical highs.

- More importantly, the **high corn prices were quickly transmitted to other grain markets as soft grains**, such as wheat/barley, started getting redirected into the livestock industry as corn substitutes.
- Unlike in the U.S., **sugarcane is the more obvious choice for tropical countries such as Brazil or India** where cane yields are higher.
- This is not to argue that using sugarcane for ethanol does not have adverse impacts on environment or hunger.
- **More land under water-intensive sugarcane cultivation can displace food production as well as degrade water tables**, but these can be regulated by appropriate land-use policies.

Meeting the target

- In India though, **differential pricing introduced in 2017-18 incentivised the use of cane juice** directly to produce ethanol and exacerbated the food versus fuel binary, which is otherwise relatively subdued in the case of cane-based ethanol.
- When **price incentives were given for ethanol produced from cane juice** without the extraction of sugar, a process which gives a substantially higher yield of ethanol, mills abandoned the more sustainable molasses route.
- This was **driven by the urge to hasten the journey towards the 2025 EBP target**, which it achieved. The success generated **challenges in the form of reduced sugar stocks**.
- The **December 2023 order** by the Ministry of Consumer Affairs **banning the use of cane juice for ethanol production is a timely, corrective step**.
- **But by adopting a transition to grains-based ethanol to fast-track the 2025 target achievement** (maize is expected to supply around half of the ethanol feed in 2023-24 and beyond), **is the government hurtling towards a looming spectre of uncontrollable food inflation?**
- For this path to meet the EBP target by 2025, India needs 16.5 million tonnes of grains annually (government estimates). This is a sufficiently **high quantity to trigger a short-run price spiral in grain markets**.

- The **future of India's renewables strategy hangs on a delicate food-fuel trade-off**; and a choice between intensifying hunger and reducing fossil fuel use.
- On the one hand, the **government can reconsider its EBP target** and stagger it to contain the contradictions.
- On the other hand, we need **more investment in public infrastructure, urban design to contain the fuel demand for automobiles**, and in **renewables such as solar power**.

JOBLESSNESS

(# Economic Justice # Society)

The employment challenge can no longer be met only through more rapid GDP growth; a separate policy focus is needed on employment.

Types of Employment

- At the outset, it is useful to distinguish the two types of employment that prevail in an economy such as India.
- The **first is wage employment** which is a **result of labour demanded by employers** in their pursuit of profits.
- The **second is self-employment** where labour supply and labour demand are identical, i.e., the worker employs herself.
- A further useful distinction can also be made **between wage labour and jobs**.
- The **first includes all forms of labour done for an employer** including daily wage work at one extreme and highly paid corporate jobs at the other.
- But, **jobs generally refer to relatively better paid regular wage or salaried employment**.
- In other words, **all jobs are wage labour, but all wage labour cannot be called jobs**.

When we speak of a jobs problem, we are speaking of inadequate labour demand particularly for regular wage work.

- The Indian economy has historically been characterised by the presence of **both open unemployment (out of work job-seekers)** as well as **high levels of informal employment consisting of the self-employed as well as casual wage workers**.
- The last is also **called “disguised unemployment”** because, being similar to open unemployment, it also indicates a lack of adequate employment opportunities in the formal sector.

This lack of opportunities is reflected by a more or less stagnant employment growth rate of salaried workers in the non-agricultural sector in the last four decades. What explains such constraints in the labour demand of formal sector?

- The labour demand in the formal non-agricultural sector is determined by two distinct factors.
- **First**, since firms in the formal sector hire workers to produce output for profit, labour demand **depends on the amount of output that firms are able to sell**.
- Under any given level of technological development, **labour demand in the formal sector rises when demand for output rises**.
- **Second, labour demand depends on the state of technology** that dictates the number of workers that firms need to hire to produce one unit of output.

- **Introduction of labour-saving technologies** enables firms to produce the same amount of output by **hiring a lower number of workers**.

- Since economic policy is generally framed in terms of output growth (think of GDP or value-added), rather than the level of output, let us examine this argument in terms of growth rates.

- **Employment growth rate is determined by the relative strength of two factors** — the **output growth rate** and the **labour productivity growth rate** (growth rate of output per worker).

- If **labour productivity growth rate does not change**, **higher output growth rate increases employment growth rate**.

- In other words, policies that promote higher economic growth would also achieve higher employment growth.

- On the other hand, **if labour productivity growth rate rises**, employment **growth rate falls for a given output growth rate**.

Jobless growth with Indian characteristics

- As an economy grows, it is generally seen that it also becomes more productive. That is, in the process of producing a greater amount of total output, firms **become capable of producing more output per worker**. This happens because of what economists call “**economies of scale**”.
- As firms produce more output, they find it easier to **adopt labour-saving technologies**.

- The evidence suggests that the **employment challenge can no longer be met only through more rapid GDP growth**. Rather, a separate policy focus is needed on employment in addition to the focus on GDP growth.

- Such **employment policies will need both demand side and supply side components**.

- For example, to the extent firms in India find it easier to automate due to a lack of adequate skilled labour, **increasing the quality of the workforce through better public provisioning of education and health care, as well as bridging the skills gap**, are important.

- On the demand side, **direct public job creation** will be needed.

- **Financing such expenditures** while maintaining debt-stability requires the reorienting of the current macroeconomic framework in a significant way, **including increasing the direct tax to GDP ratio by reducing exemptions and improving compliance**, and a more imaginative use of macro-policy to pursue a constructive employment agenda.

INDIA AND RUSSIA

(# India and the world)

Take away from External Affairs Minister S. Jaishankar's visit to Russia

- India took care **not to criticise Russia, worries over the flagging of defence supplies, continued issues over paying Russia for imports.**
- It is clear that a large part of Mr. Jaishankar's mission was to **smooth over the perception of differences.**
- The **resultant agreements**, pertaining to furthering collaboration

<ul style="list-style-type: none"> • in future Kudankulam nuclear power projects,
--

<ul style="list-style-type: none"> • fostering connectivity,

<ul style="list-style-type: none"> • trade and resuming talks for the Eurasian Economic Union-India free trade agreement, and
--

<ul style="list-style-type: none"> • joint military production indicate that bilateral relations are on track.

- Mr. Jaishankar's announcement that **imports of Russian hydrocarbons will continue to rise** despite the West's Russian sanctions, indicated the strength of ties that continue "regardless of political fluctuations".
- Mr. Jaishankar's affirmation that the **annual leadership summit will be resumed in 2024**, appeared to signify that both sides are working to eliminate any static in the relationship.

<ul style="list-style-type: none"> • It remains to be seen whether the bonhomie will yield concrete movement on the rupee-rouble payment mechanism, or on expediting the delayed delivery of S-400 air system units.

<ul style="list-style-type: none"> • However, the larger import of his visit, and his words that the "geopolitical and strategic convergence" between India and Russia in a multipolar world that is "rebalancing", will be watched most closely by votaries and critics of the relationship.

RENEWABLE ENERGY COMMITMENT

(# Energy # Environment)

Major world economies seem unwilling to move away from fossil fuel

- The **boundary wall enclosing discussions around global climate is 1.5°C**, or the average increase in global temperatures since pre-industrial times.
- Now **that 1°C is crossed**, all the wrangling under way at the climate summit in Dubai is to cap the half-degree rise.
- **Global pledges to cut emissions are insufficient** to achieve this.

Estimates

- Current estimates are that to limit warming to 1.5°C, the world **requires three times more renewable energy capacity by 2030, or at least 11,000 GW.**

- That **there is wide global consensus on the need** for this tripling was first formally articulated in the **New Delhi Leaders' Declaration at the G-20 summit in Delhi in September**.
- In the run-up to the Dubai summit, it was perceived that this would be widely endorsed by the larger group of about 190 countries signatory to the UN convention on climate.
- It turns out that, **so far, 118 countries have endorsed the pledge and two major countries, i.e., India and China, have so far abstained from signing**.
- The Global Renewables and Energy Efficiency Pledge, while still a draft text, says that in their pursuit of tripling renewable energy capacity, signatories should also commit to "...**phase down of unabated coal power**, in particular ending the continued investment in unabated new coal-fired power plants". This is a major red line for India.

- While India has positioned itself as a champion for renewable energy — its **2030 targets as articulated in its formal, nationally determined contributions (NDC) speak of tripling renewable energy capacity to 500 GW** from the current 170 GW — it has reiterated several times that it could not be forced to give up certain fuels.

- **Coal-fired plants are responsible for nearly 70%** of India's greenhouse gas emissions. Developed countries that have made commitments to give up coal often have other large, fossil-fuel resources as back-up.
- The United States joined 56 other countries at Dubai in a commitment to completely eschew coal for its energy use, by 2035.
- However, the **U.S. only draws about 20% of its energy from coal** and at least 55% from oil and gas, with plans to actually produce more of it in 2030 than at present.
- The paradox of the world's major economies' commitment to renewable energy is that it is not, as of now, actively geared to replace fossil fuel.

- Till there is an honest **commitment to actually replace existing and future fossil capacity** with clean energy, pledges and declarations are worth little more than the paper they are drafted on.

GENE THERAPY

(# Society # Health)

Gene therapy offers new hope for those with sickle-cell disease

- After the U.K. drug regulator approved **Casgevy**, the gene therapy to **treat people above 12 with sickle cell disease** and **beta thalassemia**, the U.S. FDA has approved two gene therapies — **Casgevy** and **Lyfgenia** — to treat sickle cell disease in patients over 12.
- These landmark decisions **mark the beginning of gene therapy using the CRISPR-Cas9 tool** to treat diseases that could otherwise be cured only through **bone marrow transplantation**.
- While **Lyfgenia uses a disabled lentivirus as a vector** to introduce into the blood stem cells a new gene for haemoglobin that mimics the healthy version, **Casgevy uses the gene-**

editing tool of CRISPR-Cas9 to disable a particular gene (BCL11A) that turns off foetal haemoglobin production in blood stem cells.

- While about **10% of adults continue to produce foetal haemoglobin**, in others, the **BCL11A gene prevents the production of foetal haemoglobin**.
- By disabling the **BCL11A gene, foetal haemoglobin** that is produced, which does not have the abnormalities of adult haemoglobin, **helps treat patients with sickle-cell disease or beta thalassaemia**.
- **Benefits:** Since both gene therapies **use patients' own blood cells for gene editing**, the number of patients who can potentially be treated will be huge as these treatments **do not rely on matching bone marrow donors**.

Problems

- But in reality, these treatments would be **exorbitantly expensive**.
- Also, much like bone marrow transplantation, **only certain hospitals will be equipped to extract a patient's blood stem cells and use the genetic editing tool** to the stem cells before reinjecting them, thus limiting the number of beneficiaries.
- With clinical trials evaluating the therapies in a very small number of patients and for shorter duration, the compulsion to continuously monitor their safety and efficacy through real world data cannot be overemphasised: the **possibility of unintended genetic modifications and their resultant side effects are real when the CRISPR-Cas9 tool is used**.

KEEPING COPs RELEVANT

(# Environment #Committment)

COP meetings must use climate science to promote justice and equity

- Since 1995, when the first of the United Nations Conference of Parties (COP) was organised, it has undergone a remarkable shift in character.
- **There is no country today that will not publicly affirm its faith in the scientific assessment** — that greenhouse gas emissions must be contained drastically to cap the rise in global temperatures to 1.5°C — and **yet it has never inspired any sense of urgency to cut fossil fuel use**, the dominant source of GHGs.

Persistent challenges

- That it has taken nearly three decades for COP to acknowledge this fact, as laid out in the Dubai Consensus, suggests that **political expediency and strategic second-guessing has unfortunately weaponised even climate science**.
- Thus, **countries responsible for most of the human-emitted carbon** point to record temperatures and their links to rising emissions when **arguing for reining in emissions from developing countries**.
- However, they are **loathe to accept this link** when developing and island nations demand funds as reparations for devastations already wreaked by climate change.

- The Loss and Damage Fund, which received commitments worth \$750 million, and therefore cheered as a COP28-success, has only been approved on the condition that **it not be considered as compensation for historical carbon pollution.**
- Related to this is the larger concern that COP meetings are deemed as 'historic' only when they insert new verb phrases — **phase out, phase down, transition** — on cutting emissions but are banal when they consider how little money and technology have been channelled for fossil fuel de-addiction.
- It is time that future meetings **use the science to promote justice and equity and strengthen faith in what is now one of the few working multilateral processes.**



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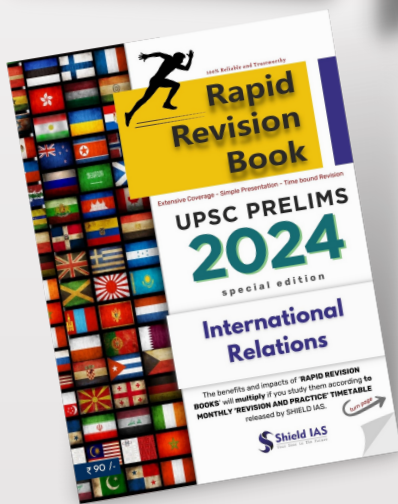
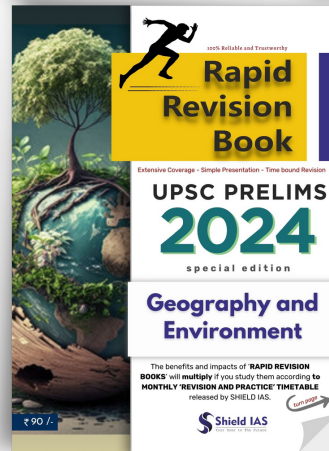
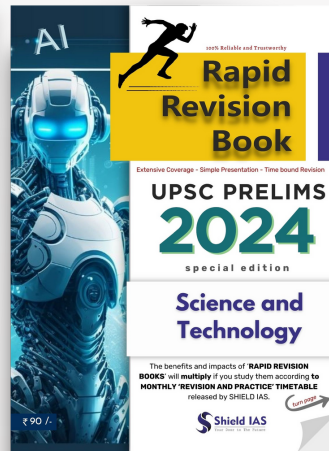
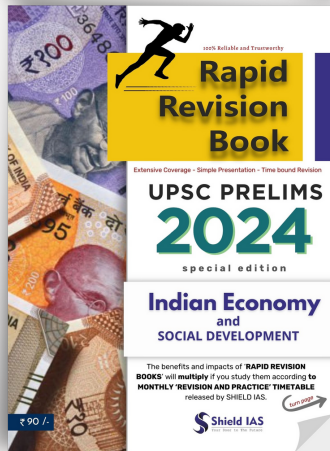
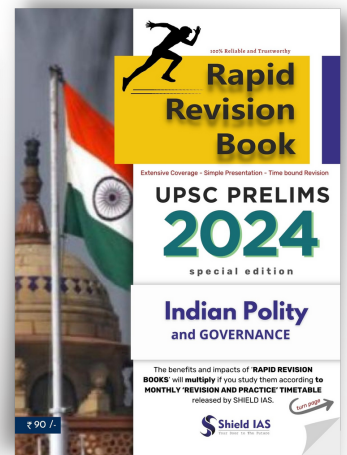
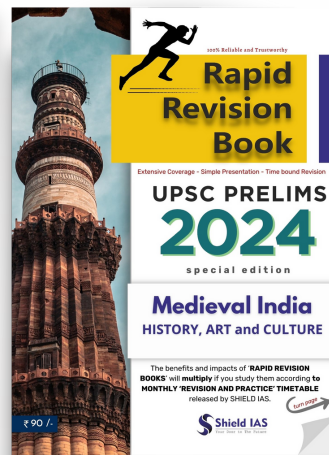
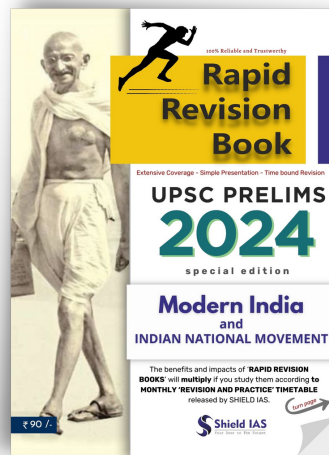
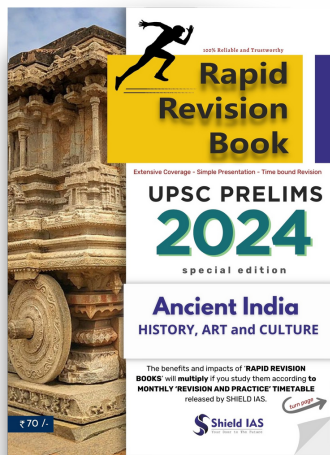
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011-46512150, 7037272363



First Floor, 1/26, Vikas Marg, Near Metro Station, Laxmi Nagar, New Delhi. Metro pillar No. 24

For Business Inquiries: 9540411855