

**APRIL
2024**

KSG

An Institute For **IAS** Exam...



WITH LOADED FEATURES

- **PHILOSOPHY OF THE MONTH** • **PRE-SHOTS** • **MAP CONNECT**
- **THEMATIC ESSAYS** • **CONTEMPORARY ETHICS CASE STUDIES**

“GET YOUR MAINS ANSWER EVALUATED THROUGH THIS COPY”

MESSAGE FROM DR. KHAN

Dear Students,

*The heat of the approaching prelims examination might have outshone the summer sun for many of you. Some of you might be facing problems with time, so this month, let's talk about **Time Management**.*

Time and Tide wait for none.** Thus, the eternal truth stands that **time manages itself** and doesn't wait for anybody. It is not time that needs management, **we need to manage ourselves!

*Usually, **perspective changes the way we handle things.** Some may find fitting all the scheduled tasks into 24 hours difficult or even impossible. Some get the output we hope for, while others don't. Why? **This is where Task Management comes into the picture.** It teaches us to be **in control of our day!***

*But, what I want to suggest to you is **Priority Management.***

***Prioritize what comes first** while scheduling the day's tasks; Task Management automatically happens with this. "**Eat the Frog**" by **Brian Tracy** offers the same advice: **Conquer what looks the toughest to you, first in the day and ease later on.** Break the tasks down into more minor, more manageable things.*

*When you manage to complete the prioritized and then the non-prioritized tasks of the day, you manage time at the end of the day, week, and month. **While socializing is great for morale and has motivational benefits,** it needs to be done at specific intervals; otherwise, it can be very distracting. **Managing your priorities will help decrease your stress and anxiety.** If not managed properly, confusion will plague your mind, thus reducing efficiency.*

*"Two roads diverged in a wood, and I—
I took the one less travelled by,
And that has made all the difference."*

*This **Robert Frost poem** motivates us to go ahead with the less-chosen paths.*

***Sort your priorities out; don't let the pressure of making hard choices put you down!** I hope this makes a difference in your lives.*

My best wishes are always with you!

Stay Blessed!

GS CONNECT

It gives us immense pleasure to present an innovative approach to mastering current affairs. Current is a passing wind and diverse issues happen at the same time. It is to an extent chaotic. Newspapers, magazines, and various other sources report the chaos per se. With our experience of current affairs, we have tried to give "the current" a medium to travel. It is the syllabus of the UPSC with its components that are the medium through which the "Current is Passed" to the readers. **Ever since the new syllabus of the UPSC came into existence, the current has been gaining significance both at prelims as well as mains examination.** This book is meant to cover current affairs and related questions arising from those events. We have not only covered the current events for their factual contents but also presented them in such a way that any question asked from that topic gets covered. Moreover, topics are also "peppered" with the relevant facts/key concepts that are related to the theme. We have also given **questions for practice both, subjective and objective**, so that candidates are oriented to the examination mode. It is a collection covering myriad sources yet in a manageable size. To use this book, we recommend you to, master the components of the General Studies (GS) syllabus as broken into rows and columns (**provided on the subsequent page**). Each cell comprising the portion of GS becomes the connection for the current and every news subsequently covered guides the reader to the address of the syllabus. It is logical to expect that the same issue may be connected to more than one topic of the syllabus. Further, the news also has some additional vistas opened for the readers by adding a box with the title "**PEPPER IT WITH**" where we expect the students to build further around the theme. We are also trying to reach the remotest part of the country with our spirit and zeal of "**Mains Answer Writing**", which has been admired by students, CSE rank holders, and other scholars. Continuing in line with the effort, we have started **programs like Destinaire, Navigator, NEEV, AWSDP plus, KOL, DL& MP, Advance Foundation Course, Weekend Courses as well as Optional Courses (PSIR, Sociology, History, and Geography)**. When it comes to evaluation, we are all together at a different level. We are also reaching every nook and corner with this expertise for the aspirants of CSE. Now you can write a Mains Answer and get it evaluated by our Expert Team and can get Feedback. Drop a mail at **evaluation@ksgindia.com** to register yourself in our race to perfection. Don't wait, it's your golden chance to crack this exam and fulfill your passionate dream.

Team KSG

S. No.	GS- I	GS- II	GS- III	GS-IV	Mis
1	Indian Culture-Art Forms, Literature and Architecture from ancient to modern times.	Indian constitution- Amendments, acts and bills.	Various measures to boost Indian economy- planning, policies, management	Ethical issues related to family society, education, Corruption etc.	
2	Indian History significant events, personalities, issues and the Freedom Struggle.	Legislative, executive and judicial processes.	Government budgeting and issues related to budget.	Ethics in public and private administration	
3	Post independence issues, National boundary and disputes.	Constitutional, non-constitutional, judicial, quasi-judicial, administrative and other types of bodies.	Agriculture, animal husbandry and transport	Issues	
4	Indian society features, issues, globalization and diversity	Federal structure and local bodies. Their powers and functions.	Food security- measures to boost food security and food processing. Issues related to land- land reforms	Related laws and rules	
5	Women - issues and developments	Government policies and various governance issues like transparency, accountability and – governance	Industries and infrastructure- their growth and investment model	Governance/e- Governance	
6	Urbanization – problems and remedies	Committees and schemes.	Space and technology, IT space, robotics and computer	Ethics in international issues	
7	Distribution of industries and resources – India and world	Non-government issues, self-help groups and role of civil society	Disease, biotechnology and human welfare	Personalities and their teachings	
8	Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc	Vulnerable sections of our society and social sector issues like Poverty, Hunger, Education, and their initiatives.	Innovations, intellectual property, Awards, POI and other important aspects of S&T	Other important topics	
9		International Relation- India and other countries, various Indian and international agreements, effects of other countries on India and international institutions.	Environment; government initiatives, various judgment, pollution, degradation and conservation efforts		
10			Disaster & Disaster Management		
11			Challenges to internal security, Various Security forces and agencies and their mandate. Cybersecurity; money laundering and its prevention.		



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POLITY

Fixing India's VVPAT-based audit of EVMs

News Excerpt:

The **Supreme Court (SC)** has decided to **hear petitions** seeking **100% cross-verification** of the Voter Verifiable Paper Audit Trail (**VVPAT**) slips with the vote count as per Electronic Voting Machines (**EVMs**).

- The **Election Commission of India (ECI)** has been **criticised for limiting the Voter Verified Paper Audit Trail (VVPAT)-based audit of Electronic Voting Machines (EVMs) to a token exercise** and for a lack of transparency in the matter.

Emergence of EVMs and VVPAT:

- In the **first two general elections** of **1952** and **1957**, each candidate had a separate box with their election symbol. Voters had to drop a **blank ballot paper** into the **box of the candidate** they wanted to vote for.
- From the **third election, ballot papers** with the **names of candidates** and their **symbols** were introduced, and voters put a stamp on the candidate of their choice.
- The EVM was introduced on a **trial basis in 1982** in the assembly constituency of Paravur in **Kerala**. They were deployed in all booths during the assembly elections of **Tamil Nadu, Kerala, Puducherry and West Bengal** in 2001.
 - The SC has **upheld** the validity of **using EVMs** in elections in various judgments.
- In the **2004 general elections** to the Lok Sabha, EVMs were used in all 543 constituencies.
 - In **Subramanian Swamy versus Election Commission of India (2013)**, the SC ruled that a **paper trail** is an indispensable requirement for free and fair elections.
- The **2019** elections had **EVMs** backed with **100% VVPAT** in all constituencies.

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What is a VVPAT machine?

- The VVPAT machine is attached to the ballot unit of the EVM and **provides visual verification for the vote cast** by a voter by printing a slip of paper with the voter's choice on it.
- This slip of paper, containing the candidate's serial number, name, and party symbol, is displayed in the machine behind a glass window. The **voter has seven seconds to verify her vote**, after which the slip falls into a compartment underneath.
- **No voter can take the VVPAT slip back home**, as it is later used to verify votes cast in five randomly selected polling booths.

WHAT IS AN ELECTRONIC VOTING MACHINE? IN WHAT WAY ITS FUNCTIONING IS DIFFERENT FROM THE CONVENTIONAL SYSTEM OF VOTING?

- An **Electronic Voting Machine (EVM)** is an electronic device for recording votes. An Electronic Voting Machine consists of two Units – a **Control Unit** and a **Balloting Unit** – joined by a five-meter cable.
- The **Control Unit** is placed with the **Presiding Officer** or a **Polling Officer** and the **Balloting Unit** is placed inside the voting compartment.
- Instead of issuing a ballot paper, the **Polling Officer** in charge of the **Control Unit** will release a ballot by pressing the **Ballot Button** on the **Control Unit**.
- This will enable the voter to cast his vote by pressing the **blue button**.



EVM



VVPAT

ABOUT VVPAT:

- VVPAT is only an augmented feature of the EVMs. The **Voter Verified Paper Audit Trail** can give feedback to electors casting their votes.
- We can say it is a kind of independently working printer machine that enables the voters to check if the vote they cast had gone to the intended contestee.

THE WORKING OF VVPATS:

- After casting their votes in the EVM, the voter can press a button in the EVM machine and it prints a paper slip that will reveal the symbol and name of the candidate for whom they have voted. Hence the voters can verify their choice.
- The ballot slip thus printed will be visible to the voter for about seven seconds through a glass case in the VVPAT.
- After that, the ballot paper will be cut letting it fall inside the drop box accompanied by a beep sound. Only the polling officers can access the VVPAT machine.

Doubts and concerns raised about the functioning of EVMs:

- EVMs are **susceptible to hacking**, as are electronic devices.
 - However, the ECI has repeatedly clarified that it is a standalone device like a **calculator with no connectivity to any external device** and, hence, free from any kind of external hack.
- The **sample size for matching the EVM count with VVPAT slips** is five per assembly constituency/segment. This is **not based on any scientific criteria** and may fail to detect defective EVMs during counting.

- The present process also allows various parties to identify **booth-wise polling behaviour**, which can result in **profiling and intimidation**.

VVPAT-based audit of EVMs:

- The VVPAT-based audit of EVMs is a simple problem of **statistical quality control**.
- It is very similar to the **“lot acceptance sampling technique”** that is widely used in industry and trade.
 - Suppose the number of defectives found in a randomly drawn statistical sample is less than or equal to a specified acceptance number, the lot (or 'population') is accepted. In that case, otherwise, the lot is rejected.
- Here, a **‘defective EVM’ is defined as one with a mismatch between the EVM count and the VVPAT’s manual count of voter slips** due to EVM malfunction or EVM manipulation.
- The **acceptance number** will have to be **‘zero defective EVM’ in the context of elections**.
 - **Even if there is a single instance of mismatch between the EVM count and VVPAT manual count** in the randomly drawn sample of EVMs, the ‘population’ of EVMs from which the sample was drawn **should be ‘rejected’**.
 - **‘Rejection’ here means non-acceptance of the EVM counts for that ‘population’** and doing manual counting of VVPAT slips for all the remaining EVMs of that ‘population’.
 - In such a scenario, the **election result should be declared only based on the VVPAT count**.
- Thus, the **VVPAT-based audit of EVMs** involves **three essential elements** —
 - A **clear definition of the ‘population’ of EVMs** from which the statistical sample **would be drawn**.
 - It could be all the EVMs deployed in an Assembly constituency, a Parliamentary constituency, a State as a whole, India as a whole, a region (or group of districts) within a State, or any other.
 - The population size (N) could vary widely depending on how we define the ‘population’.
 - Determination of **statistically correct and administratively viable sample size (n)** of EVMs whose VVPAT slips will be hand-counted.
 - **Application of the ‘decision rule’**, viz., in the event of a mismatch between the EVM count and the VVPAT count in the chosen sample of ‘n’ EVMs, the **hand counting of VVPAT slips will have to be done for all the remaining (N-n) EVMs** forming part of that ‘population’.

Related News:

The **Central Information Commission (CIC)** has expressed **“severe displeasure”** over the **ECI not furnishing a reply to an RTI plea** raising questions on the credibility of EVMs and VVPAT machines.

Background of the case:

- Noted technical professionals and academicians, including retired IAS, IPS, and IFS officers, had written to the ECI, posing serious questions about the **credibility of EVMs and VVPAT machines**.
- An **RTI** was also filed that asked the ECI about the **action taken** on a **“representation”** given to it by eminent citizens.
 - The representative raised similar questions on the credibility of EVMs and VVPAT machines.
 - Through the **RTI application** filed in **November 2022**, the applicant wanted to know about the **persons and public authorities** to whom the representation was forwarded, details of any meetings held on the issue and all relevant file notings.

EC’s response to the Right to Information (RTI):

- The **ECI did not give any response** to the applicant within the **mandatory 30-day period**.
 - The applicant's **first appeal** to senior officials was also not heard.

Central Information Commission’s directions:

- The CIC termed the **ECI’s non-response** as a **“gross violation” of the law** and directed it to furnish a **written explanation for the violation**.
- The ECI has also been asked to provide a **point-wise response** to the original RTI query **within 30 days**.

Lacuna from the ECI’s side regarding VVPAT-based audits of EVMs:

- ECI has **not specified the ‘population’ to which its sample size relates**.
- It has **not explained how it arrived at its sample size**.
- It has been **silent on the ‘next steps’ in the event of a mismatch between the EVM count and the VVPAT count in the selected sample**, and it has ignored reported occurrences of mismatch.
- A **system** of VVPAT-based audits of EVMs in which these three vital issues have **been left vague or unaddressed** is categorically unacceptable.

Way Forward:

- The **100% use of VVPAT** has enabled the voters to verify that their votes are **‘recorded as cast’**. However, a few **additional steps** must be adopted to make the entire process **more robust** and ensure that the votes are **‘counted as recorded’**.
- A **100% match of EVM count with VVPAT slips** would be **unscientific and cumbersome**.

PEPPER IT WITH:
ECI, MCC, Ballot system, CIC

- The **sample for matching** EVM count and VVPAT slips should be decided scientifically by **dividing each State into large regions**.
- In case of even a single error, the **VVPAT slips** should be **counted fully** for the concerned region and form the basis for results. This would instil statistically significant **confidence** in the **counting process**. **Also, cross-verification should be done**.
- Further, in order to provide a degree of cover for voters at the **booth level**, **'totalizer' machines** can be introduced that would **aggregate votes in 15-20 EVMs** before revealing the candidate-wise count.
- Over the years, the SC has been indulgent towards the ECI due to its role in the conduct of elections under Article 324.
- However, SC must compel the ECI to make public how it has defined the population, arrived at its sample size, and, most importantly, its decision rule in the event of a mismatch. Only then will the SC's order of 2013 on VVPAT be faithfully implemented in letter and spirit.

Postal ballot voting

News Excerpt:

The Election Commission of India (ECI) has announced that **media persons covering "polling day activities"** are now **eligible to vote** in the upcoming Lok Sabha elections 2024 and State Assembly polls **through postal ballots**.

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What are Postal Ballots?

- Postal ballots, also known as **mail-in ballots**, allow registered voters to cast their votes by mail instead of physically going to a polling station.
- This system serves as a **convenient alternative for individuals unable to vote in person** due to various circumstances, such as **being away from their home constituency, facing a disability, or performing essential services on election day**.






Who is eligible to cast their vote through postal ballots?

- **Service voters:** Members of the **armed forces, paramilitary forces, and government employees deployed on election duty** far from their home constituencies.
- **Absentee voters:** Individuals unable to vote in person due to reasons like work commitments, illness, or disability.
 - **For example, in October 2019,** the Ministry of Law and Justice amended the **Conduct of Election Rules, 1961, lowering the age from 85 to 80** (for **senior citizens**) and **allowing Persons with Disabilities (PwDs)** to cast votes through postal ballots in the **2020 Delhi Assembly polls**.
- **Electors on election duty:** Government officials and polling staff assigned duties at polling stations other than their own.
- **Electors under Preventive Detention:** Individuals detained under **preventive custody** orders during the election period.
- **Essential services covering polling day activities:** Media persons with authorization letters from the EC and those involved in essential services such as metros, railways, and healthcare have the option to vote using postal ballots in Lok Sabha and four state Assembly polls.

How to apply for a postal ballot?

- To apply for a postal ballot, eligible voters must apply **Form 12 D** to their respective constituency's Returning Officer (RO).
- The application typically requires **personal details, voter identification information, and the reason for seeking a postal ballot**.
- The **RO verifies eligibility** and **issues the postal ballot** if the criteria are met.
 - For **service voters**, the **RO sends the postal ballot paper** through the record office, **directly or through**

Who is eligible to avail the vote-for-home facility?

 <p>People aged 85 and above</p>	 <p>Persons with Disabilities</p> <p>The disability shall not be less than 40% of the prescribed handicap and certified by the certifying authority</p>	 <p>Mediapersons covering 'polling day activities'</p> <p>Carrying authorisation letters from the Election Commission</p>	 <p>Workers from essential services</p> <p>Services such as metros, railways and health care</p>	 <p>Service voters</p> <p>Personnel of the armed forces posted away from their hometowns, Central Armed Police Forces personnel deployed away from home and those on poll duty</p>
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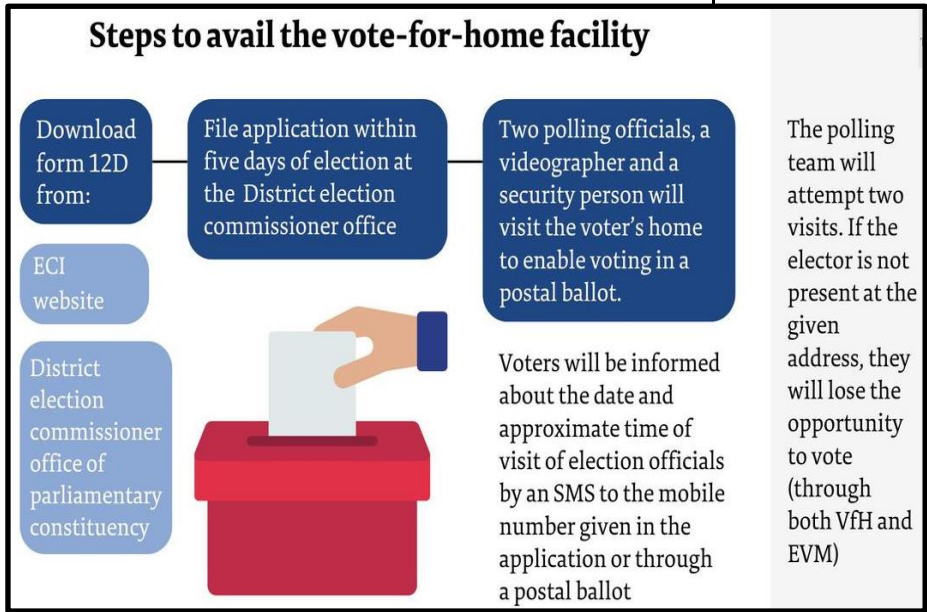
the Ministry of External Affairs service voters serving outside India.

- For **senior citizens**, a team of **two polling officials, a videographer, and security personnel will visit the residence** of the elector to facilitate this process.
- Voters will be informed of the date and time of the official's visit via SMS.

- The RO and election officials scrutinize postal ballots for validity and integrity, adding valid ballots to the respective candidate's vote count.

What else has the ECI done for inclusive elections?

- The government is also experimenting with **remote voting for domestic migrants.**



The polling team will attempt two visits. If the elector is not present at the given address, they will lose the opportunity to vote (through both VfH and EVM)

○ The **Multi Constituency Remote Electronic Voting Machine (RVM)** would allow **people who migrate within the country for employment and opportunity (almost 450 million, as per the latest 2011 census) to vote for their home constituencies from remote locations.**

○ Internal migrants face a string of challenges due to the transient nature of their life and livelihood.

○ Many are reluctant to enroll multiple times, unwilling to have their names deleted from the electoral rolls of their home constituencies, and facing an emotional disconnect with the places they migrate to.

- If a **senior citizen** or a **person with a disability** chooses to go to the

What is the process of postal voting?

- **Receiving the postal ballot:** Once approved, the RO sends the postal ballot to the voter's registered address, including the ballot paper, declaration form, secrecy sleeve, and pre-paid return envelope.
- **Marking the ballot:** Voters mark their preferred candidate(s) on the ballot paper in the secrecy sleeve to ensure confidentiality.
 - People with **blindness or physical infirmity** are allowed to **nominate a companion** and get assistance while voting at home.
- **Completing the declaration form:** Voters fill out the declaration form, providing their signature and other relevant details.
- **Sealing the envelope:** Voters seal the marked ballot paper and declaration form inside the secrecy sleeve and place it into the pre-paid return envelope.
- **Returning the postal ballot:** Voters affix the postage stamp and mail the return envelope to the designated address within the specified time.

Counting of postal ballots:

- Postal ballots are **counted separately** from votes cast at polling stations.
- On the designated counting day, postal ballots are **collected by postal authorities** and **brought to the counting centre.**

booth, the ECI has mandated officials to provide

Assured Minimum Facilities (AMF) like **ramps, wheelchairs, first aid and toilets at polling stations.**

PEPPER IT WITH:
District Election Commissioner, Returning Officer, Preventive Detention, RVM

- Measures, new and old, are being highlighted, including the provision of **free transportation on poll day, appointment of State and District PwD icons, and Braille-enabled EVMs and EPICs.**

Right against adverse effects of climate change: SC

News Excerpt:

In a case relating to the conservation of the critically endangered Great Indian Bustard (GIB), the Supreme Court (SC) has asserted that individuals possess a **"right to be shielded from the detrimental impacts of climate change," a right that ought to be upheld under Articles 14 and 21 of the Constitution.**

More About the News:

The Bench highlighted the increasing significance of the recent overlap between climate change and human rights,

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emphasizing the urgent need for states to tackle climate-related consequences with a rights-based approach.

Constitutional Provisions (DPSP) related to Climate Change:

- **Article 48A** of the Constitution provides that the State shall endeavour to protect and improve the environment and safeguard the country's forests and wildlife.
- **Clause (g) of Article 51A** stipulates that it is the duty of every citizen of India to protect and improve the natural environment, including forests, lakes, rivers, and wildlife, and to have compassion for living creatures.

The intersection between climate change and human rights:

- **This has been put in sharp focus**, underscoring the imperative for states to address climate impacts through the lens of rights.
- **States owe a duty of care to citizens to prevent harm and ensure overall well-being**, and the Right to a healthy and clean environment is undoubtedly part of this duty of care.
- States are **compelled to take effective measures to mitigate climate change** and ensure that all individuals have the necessary capacity to adapt to the climate crisis.
- **For e.g.**, It is essential to harness power from renewable energy sources in Rajasthan and Gujarat to meet the rising power demand in the country expeditiously and sustainably.
- This is also **necessitated by India's international commitments with respect to climate change**.

The Case Before SC:

- The case before the SC revolved around a writ petition filed by retired government official and conservationist **M K Ranjitsinh**, which sought to secure protection for the critically endangered **Great Indian Bustard (GIB)** and the Lesser Florican.
- The petition, among other demands, **called for the formulation and execution of an emergency response plan to safeguard and revive the GIB population**.
 - This included measures such as the installation of bird diverters, halting the approval of new projects and lease renewals for existing projects, and dismantling power infrastructure like overhead transmission lines, wind turbines, and solar panels within and around vital habitats.
- **During a hearing held in March, the apex court was considering an appeal to modify its April 19, 2021 order, which restricted the establishment of overhead transmission lines within a territory**

spanning approximately 99,000 sq km in the GIB habitat across Rajasthan and Gujarat.

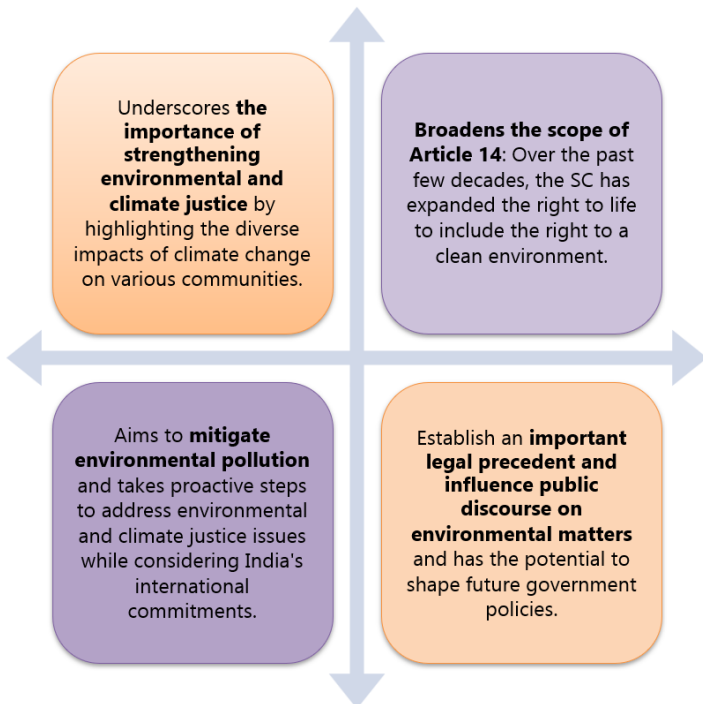
- The Ministry of Environment, Forests, and Climate Change (MoEFCC), Ministry of Power, and Ministry of New and Renewable Energy (MoNRE) had filed the modification plea, citing adverse implications for India's power sector.
- The ministries referenced India's commitments under the **Paris Climate Treaty** to transition to non-fossil fuel energy sources as a key reason for seeking a modification of the 2021 order.
- Also, the **measures for protecting GIB clash with the installations of major solar and wind energy-producing projects**, which are majorly operational in the same area of the country. It was also contended that putting high-voltage power lines underground was technically not feasible.
- Allowing the request, the Bench pointed to the practical difficulties in implementing the order, including the technical and land acquisition challenges and prohibitive costs.

Key arguments given by the three-judge Bench presided by the Chief Justice of India:

- Referring to the environmental aspects of the Directive Principles of State Policy (DPSP), the Court underscored **the need to interpret them in conjunction with the Right to life and personal liberty** guaranteed under Article 21 of the Constitution.
- Although **Article 48A and Article 51A** are not justiciable provisions of the Constitution, they indicate that the Constitution recognizes the importance of the natural world.
- **Article 21** recognizes the Right to life and personal liberty, while **Article 14** indicates that all persons shall have equality before the law and the equal protection of laws.
- **The Right to a clean environment means that** the Right to life is not fully realized without a clean environment that is stable and unimpacted by the vagaries of climate change.
- The **Right to Health** (part of the Right to life under Article 21) is impacted by factors such as air pollution, shifts in vector-borne diseases, rising temperatures, droughts, shortages in food supplies due to crop failure, storms, and flooding.
 - The inability of underserved communities to adapt to climate change or cope with its effects violates Article 21 and Article 14.
- The CJ also touched upon the **issues of climate change jurisprudence and the need to harness renewable energy**, especially solar power, as well as balance the conservation of the GIB with the conservation of the environment as a whole.

- It set up a **nine-member committee of experts** to **assess the feasibility of undergrounding power lines in specific areas**, considering factors such as terrain, population density and infrastructure requirements.
 - The committee consists of **independent experts, National Board of Wildlife members, power company representatives, and other stakeholders.**
 - It asked the committee to complete its task and submit a report to SC through the Union Government on or before July 31, 2024.
- The SC also made **additional observations concerning climate change and legal proceedings in other jurisdictions.** The ruling emphasized India's obligations to prevent climate change and mitigate its adverse impacts.

What are the implications of the SC's judgment for environmental jurisprudence?



Way Forward:

Despite governmental policy, rules, and regulations recognizing the adverse effects of climate change and seeking to combat it, **no single or umbrella legislation in India relates to climate change and its related concerns.** However, this does not mean that the people of India do not have a right against the adverse effects of climate change. The SC has frequently invoked the Constitution to uphold human rights related to environmental issues, including the Right to live in a healthy

PEPPER IT WITH:
National Board of Wildlife, Paris Climate Treaty, DPSP, Mission LIFE

environment, access to pollution-free water and air, and residing in a pollution-free setting. Such recognitions typically highlight broader public interest concerns where existing laws and policies are insufficient.

Defamation Case for retweeting defamatory content

News Excerpt:

The Supreme Court (SC) has **restrained a trial court from proceeding** with a defamation case against Delhi Chief Minister Arvind Kejriwal for **retweeting** a YouTube video against the BJP's IT cell.

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Background of the case:

- The SC was hearing Kejriwal's challenge to an **order of the Delhi High Court (HC)** upholding the summons issued to him in a criminal defamation case for **retweeting an allegedly defamatory video.**
- The complainant claimed that Mr. Kejriwal had retweeted a video titled 'BJP IT Cell Part-2', in which **"certain defamatory statements were made"** against him.
- Earlier, **Delhi HC** had observed that **"every retweet of defamatory imputation would ordinarily amount to 'publication' under IPC Section 499."**
- Delhi CM had gone to the HC against two orders — by a **magisterial court summoning** him and by the **sessions court dismissing his revision plea against the summons.**

Defamation under Indian Law:

- Under Indian law, defamation can be a **civil wrong or a criminal offence.**
- **Civil defamation** can be **libel (through writing) or slander (spoken word)** and is based on **tort law.**
 - It is punishable with financial compensation, and damages are computed based on probabilities.
- In **criminal cases**, defamation must be **proven beyond reasonable doubt.**
 - **Section 499** of the **Indian Penal Code** defines criminal defamation.
 - Whoever, by **words** either **spoken or intended to be read**, or **by signs** or **by visible representations**, **makes or publishes any imputation** concerning any person **intending to harm**, or **knowing or having reason to believe that such imputation will harm**, the **reputation of such person**, is said to defame that person.
 - There are certain **exceptions** to the **Act of Defamation** under **Section 499:**
 - The suggestion of truth for the public good, Public conduct of public servants,

Committee to assess the damage:

- The proposed specialized ministry committee would comprise representatives of the **National Tiger Conservation Authority (NTCA), Wildlife Institute of India, Central Empowered Committee, and a Joint Secretary from the MoEFCC.**
- It would **assess the extent of damage** done to the **Corbett Reserve's** green cover, quantify the **restoration cost**, and identify the **"delinquent"** persons and officials responsible for the damage.

SC's ruling on Ecotourism and Tiger Safaris:

- Instead of treating ecotourism as a panacea for conservation and revenue generation, the **approach must be ecocentrism, not anthropocentrism.**
- **Banning tiger safaris in core areas** and the Constitution of a committee to explore the feasibility of permitting tiger safaris in peripheral areas of Tiger Reserves.
- The **guidelines would be applicable in all tiger reserves across India.**
- **Disagreed** with the **NTCA's 2019 guidelines, which permitted a tiger safari similar to a zoo in a national park.**
- Tigers should be sourced from the same landscape as where the safari is being conducted and not outside the tiger reserve.

Precautionary Principle for Environmental Conservation:

- It says, **"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent such environmental degradation."**
- SC invoked this **principle** while banning **Tiger Safaris** in core areas to ensure the least damage to the environment.
- **"In salient respects, the principle applies to biodiversity more than any other environmental problem.** This is because the **mass extinction gathering force will, if it proceeds unchecked, not only eliminate half or more species but will leave the biosphere impoverished for at least 5 million years."**
 - Therefore, the precautionary principle applies not only to tigers but also to other species, especially endangered ones.

Gaps in SC's judgement:

- The SC's decision appears to be a mirage in the **absence of a well-defined methodology.**
- **Restoring costs doesn't fully compensate for the environment's lost ability to provide goods and services.**

Methodologies used in India to recover compensation for loss of forest:

- The framework of valuation, which predated the **T.N. Godavarman case (1996)**, was aimed at replacing lost natural forests with compensatory plantations.
- The two choices that serve as the background for the valuation of forest land in India are now **compensatory afforestation levy and net present value (NPV).**
- **Compensatory Afforestation Levy:**
 - It was **introduced in 2016** through the **Compensatory Afforestation Fund Act 2016.**
 - The Act provides the **legal framework for compensating the loss of forest and ecosystem services due to diversion of forest land** for non-forestry purposes as per provisions of the **Forest (Conservation) Act, 1980.**
 - The **Compensatory Afforestation Fund Rules, 2018 (CAF Rules)** provide the **way NPV funds are to be utilized** by various State/Union Territory (UT) Compensatory Afforestation Fund Management and Planning Authority (**CAMPA**).
- **Net Present Value (NPV):**
 - **NPV is the value of ecosystem goods and services of forests lost due to diverted lands.**
 - It is a mandatory one-time payment for diverting forestland for non-forest use, under the Forest (Conservation) Act, 1980.
 - Since the **Levy** is found to be insufficient in terms of making good the loss, the **Court introduced the NPV in 2002** as an additional payment obligation.
- But both these methodologies do not rightly account for the correlation between the removal of trees and the harm caused to other environmental goods and services.

Way Forward:

- In the context of the growing degradation of biodiversity hotspots and the support to revenue-generating ecotourism, a **valuation method** that is **based on ecosystem services** (food, water, and services regulating the climate and floods, etc.) is a must.
 - The system refers to the **benefits people obtain from natural ecosystems in contrast with man-made structures.**
- SC could have set a precedent by saying that **ecosystem services are more important** and generate more revenue than ecotourism or raised the need to put in place a precise law and policy relating to ecosystem services.

PEPPER IT WITH:
CAMPA Funds, Forest Conservation Act, 1980, NTCA, MSTRIPES

- The reasoning provided by the **International Court of Justice (ICJ)** in **Costa Rica v. Nicaragua (2018)** could have been used to understand the **methodologies in evaluating damage to the environment**.
- The ICJ asserted that **damage to the environment**, and the consequent loss of the **ability of the environment to provide goods and services**, is compensable.

Restricted by surrogacy laws, Indians are going abroad to become parents

News Excerpt:

There is a rise in the number of privileged Indians travelling abroad for surrogacy due to changes in surrogacy rules.

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More about the News:

- This decision has once again sparked the **debate of Choice vs. Right**.
 - The distinction between a **"choice"** and a **"right"** in family-making reflects patriarchal notions of bloodline purity.
 - While both surrogacy and adoption should be considered equal choices, there shouldn't be an implied disparity in their status or recognition.

Latest change to the Surrogacy (Regulation) Act, 2021

Married couples can now use donor eggs or sperm if they suffer from a medical condition necessitating the use of donor gametes.

What about "single" women?

However, these changes are not applicable to "single" women widows or divorcees. - The Act allows "single" women between the age of 35 to 45 years access to surrogacy, provided they use their own eggs.

What is surrogacy?

- According to The Surrogacy (Regulation) Act, **Surrogacy** is defined as a practice where a woman gives birth to a child for an intending couple with the intention to hand it over to them after the birth.
- It is permitted only for **altruistic purposes** or for **couples who suffer from proven infertility or disease**.
- Surrogacy is **prohibited for commercial purposes**, including for sale, prostitution, or any other forms of exploitation.
- There are two main types of surrogacy:
 - **Traditional surrogacy** is where the **surrogate mother is biologically related to the child**.
 - **Gestational surrogacy**, where the **child is not biologically related to the surrogate**.

Who can avail of surrogacy?

- Under the Surrogacy (Regulation) Act, surrogacy is permissible for couples with **proven infertility or disease or for altruistic purposes**.
- The eligibility criteria for couples **include being married for at least five years, meeting age requirements, and not having any living child (biological, adopted, or surrogate), except in specific cases such as children with disabilities or life-threatening disorders**.

Who can be a surrogate?

- A surrogate mother must be a **close relative of the intended couple**, a married woman with at least one child of her own, aged between 25-35 years, and has been a surrogate **only once in her life**.
- She must also possess a certificate of medical and psychological fitness for surrogacy.
- Single Persons, live-in couples, LGBTQ couples, and couples older than 45 years cannot access surrogacy in India.

Who regulates surrogacy?

- **The Surrogacy (Regulation) Act** regulates surrogacy in India.
- The Act provides for the constitution of **National Surrogacy Boards (NSB) and State Surrogacy Boards (SSB)**, tasked with enforcing standards for surrogacy clinics, investigating breaches, and recommending modifications.
- **Surrogacy clinics** must apply for registration and adhere to regulations set forth by these boards.

Why are couples going overseas?

- **The law is compelling couples to go overseas:**
 - The Surrogacy (Regulation) Act of 2021 in India prohibits commercial surrogacy and only allows altruistic arrangements under strict eligibility criteria, such as married couples or ever-married single women (widowed or divorced).
 - The law mandates that the intending parents must use their own gametes for gestational surrogacy, excluding the possibility of using donor gametes.
 - These stringent regulations make it challenging for many couples to pursue surrogacy within India, leading them to seek options abroad where surrogacy laws may be more permissive or where commercial surrogacy is legal.
- **Where are surrogacy providers:**
 - Surrogacy providers are often located in countries where surrogacy laws are more flexible or where commercial surrogacy is permitted.
 - Popular destinations include the **United States, Canada, Ukraine, Russia, and some Southeast Asian countries**.

- **The citizenship status of the child:**
 - It varies depending on the country where the surrogacy takes place and the citizenship laws of the intended parents' home country.
 - For example, In the **United States**, if a child is born to surrogate parents who are citizens or legal residents, then the child typically receives U.S. citizenship automatically.
 - Similarly, in other countries, the child's citizenship status may be determined by factors such as the **nationality of the intended parents, the surrogate mother's citizenship, and the laws governing surrogacy in that country.**
- **Benefits of US Surrogacy:**
 - Despite the high cost, many Indian couples choose the US for surrogacy due to well-defined laws, **options for genetic parentage, gender selection, and the possibility of the child obtaining US citizenship, which can be advantageous for education and other opportunities.**

Criticisms:

- **Exploitation of Surrogate Mothers**, particularly those from economically disadvantaged backgrounds:
 - Women may be **coerced or financially incentivized to become surrogates**, often without fully understanding the risks or implications involved.
 - They may lack adequate legal protections and access to healthcare, leading to concerns about their well-being during and after pregnancy.
- **Commercialization and Commodification:** Despite regulations prohibiting commercial surrogacy, concerns persist about the **commodification of women's bodies and reproductive capacities.**
 - The profit-driven nature of surrogacy arrangements may **prioritize financial gain over the welfare of surrogate mothers and children.**
- **Ethical Considerations & Dilemmas** regarding the rights of all parties involved:
 - The **autonomy and agency** of surrogate mothers, the **genetic connections between intended parents and children**, and the **psychological**

Social Challenges:

- The deeply entrenched socio-cultural norms and perceptions surrounding family, parenthood, and reproductive rights.
- **Traditional notions of kinship and bloodline purity** clash with modern conceptions of family diversity and reproductive autonomy.
- **Cultural stigmas and biases against infertility** can further exacerbate the challenges.
- **May challenge existing social hierarchies and gender roles**, prompting broader debates.

Legal Restrictions on Surrogacy:

- The Surrogacy (Regulation) Act of 2021 in **India permits surrogacy only for married couples, widows, or divorcees aged 35 to 45.**
- **Single women, including those never married, are excluded from this legal framework** reflecting discrimination and societal biases against single women.

Contested Eligibility Criteria:

- The focus on marital status as a determining factor for eligibility in surrogacy is an exclusionary approach. It **fails to address the reproductive rights of single individuals, same-sex couples, and non-married couples.**

Barriers to Safe Abortions:

- The **Medical Termination of Pregnancy Act**, even after amendment, **does not explicitly address the needs of single women seeking abortions.**
- This lack of clarity leads to obstacles in accessing reproductive healthcare services, including safe abortion services.

Stigma and Traditional Notions:

- The stigma against single motherhood is rooted in traditional ideas about the family structure and the perceived need for children to have fathers.
- However, these notions **overlook the capabilities of single women and queer couples to provide a nurturing environment for children.**

Advocacy for Inclusive Policies:

- There's a call for a shift in the assessment of the welfare of the child, moving away from the traditional emphasis on the presence of a father to a **focus on supported parenting.**
- This would benefit not only single women but also queer couples and non-traditional families, aligning with the evolving understanding of family dynamics and parental responsibilities.

FIGURE: LEGAL & SOCIAL CHALLENGES

- impact on all individuals** within the surrogacy arrangement.
- Issues of **genetic selection, ownership of embryos**, and the long-term implications for children born through surrogacy.
 - **Regulatory Challenges:** The legal framework remains **fragmented and inconsistent**.
 - The existing regulations may be **inadequate to address the evolving complexities of surrogacy practices**, leading to loopholes and ambiguities that can be exploited.
 - **Globalization and Transnational Surrogacy:** Raised concerns about legal jurisdiction, cross-border exploitation, and disparities in regulatory standards.
 - The **outsourcing of surrogacy to countries with lax regulations** may exacerbate inequalities and ethical dilemmas.
 - Transnational surrogacy arrangements may also pose challenges related to **citizenship, nationality, and the legal recognition of parental rights, particularly for children born through international surrogacy**.

Way Forward:

- It is imperative for policymakers, healthcare professionals, and civil society to **collaborate in shaping a more inclusive and ethically responsible approach to surrogacy** that respects the rights and dignity of all individuals involved.
- Statutory reforms should cater to the **rights of the oocyte donors**.
- The **revealing of donors' identities should be voluntarily permissible**, and the rights to equality and parenthood of members of the LGBTQIA+ community who wish to engage in surrogacy should be considered.
- Finally, it is critical that the **provision for awarding compensation to surrogates be made in order to protect those vulnerable to exploitation**.

PEPPER IT WITH:

Abortion laws, Altruistic vs Commercial Surrogacy, Gestational Surrogacy

PRE-SHOTS

Right to sleep as a basic human requirement

News Excerpt:

The **Bombay High Court (HC)** said the **right to sleep** is a basic human requirement that cannot be violated.

About the news:

- The HC gave the order in a plea filed by a **64-year-old challenging his arrest** by the Enforcement Directorate (ED) and **subsequently questioning him throughout the night** in a money laundering case.

- A **division bench** of two Justices said it **disapproved** of the **practice of questioning** the petitioner through the **night**, whether it is **voluntary or not**.
 - The **'right to sleep' / 'right to blink'** is a **basic human requirement**, and as much as non-providing of the same violates a person's human rights.
 - Lack of sleep **affects a person's health** and may impair his **mental faculties, cognitive skills**, etc. Hence, the statement must be recorded during **earthly hours**, not at night.
- The HC deems it appropriate to **direct the ED** to issue a **circular/directions** about the timings to record statements when summons are issued.

Previous judicial interpretations:

- **Sayed Maqsood Ali v. State of Madhya Pradesh (2001):**
 - The **Madhya Pradesh HC** stated that every citizen is entitled to live in a decent environment and have the right to have a peaceful night's sleep.
- **Ramila Maidan v. Home Secretary, Union of India (2011):**
 - Suo moto action was taken against the brutal actions of police against those sleeping in Ramleela Maidan, which was given on rent for a yoga training camp organized by Baba Ramdev.
 - Four days into the campaign, Baba Ramdev started a hunger strike against corruption with a mass crowd of over 50,000 people.
 - At midnight, the police started the lathi charge and used tear gas to remove the crowd.
 - A **two-judge bench** found this to be a **violation** of the **right to assemble peacefully** and without arms, the **freedom to speech and expression**, and the **right to sleep** as per **Article 21 (protection of life and personal liberty)**.
 - But **no citizen** could **claim** sleeping to be his **fundamental right**.

How is noise pollution related to the right to sleep?

- The quality of sleep is often linked to the surroundings in which one sleeps. Therefore, the **higher the noise pollution rates**, the **worse the quality of undisturbed sleep** will be.
 - Here, precedents and regulations **prohibiting higher sound levels** at night help regulate the right to sleep.
- **Church of God (Full Gospel) v. KKR Majestic Colony Welfare Assn. (2000):**
 - **Religion-related noise pollution** was taken into account by the Supreme Court.
 - It issued directions to control noise pollution to ensure that such activities do not disturb **old or infirm persons, students or children** sleeping early.

- The Court also analyzed the 'natural right to sleep' entitled to **young babies**.

Can an arrested person continue to be CM while in custody?

News Excerpt:

Concerns are being raised about whether Delhi's Chief Minister can effectively serve in a public office that demands a high degree of morality, given the recent decision by a Metropolitan Magistrate to remand him in the custody of the Enforcement Directorate (ED).

Previous Judgements:

Senthil Balaji case:

- The Madras High Court's (HC) ruling in **S. Ramachandran vs. V. Senthil Balaji** deliberated on whether a Minister should forfeit his right to occupy a public office that requires a high degree of moral standard if he is accused of involvement in a "financial scandal."
- Mr. Senthil Balaji, a former **Tamil Nadu Electricity Minister**, was arrested by **the ED in 2023** on money laundering charges.
 - He continued to be a State Minister without portfolio while he was in judicial custody.
- The Madras HC heard arguments on:
 - whether he "has virtually forfeited his office as a Minister on account of being arrested and detained in prison, or in other words by being in judicial custody."
 - whether he had "disabled himself from performing the duties and responsibilities of being a public servant."
- Arguments in the Madras HC referred to a 2014 Supreme Court (SC) Constitution Bench ruling in **Manoj Narula vs Union of India**.
 - The SC ruling emphasized that constitutional morality is the primary standard for holding a public office, which entails **adhering to the rule of law**.
 - Another key aspect highlighted was **good governance**, suggesting that governments should prioritize the **broader public interest** over **narrow private or political interests**.
 - The third was **constitutional trust**, that is, to **uphold the high degree of morality attached to a public office**.

Practical difficulties of occupying public office while in jail:

- A Minister sitting in prison cannot ask the Secretary of State to get the files concerning any of the departments without breaching the **oath of office**.

- The files would have to be "**scanned thoroughly**" by the **prison authorities** before they reach his hands.

- Should a person be **paid a salary** from the **State exchequer** while occupying a public office without performing any duty attached to the office he held?

Legal and Constitutional position:

- There is **no bar in law on a person continuing as Chief Minister or Minister** once he is **arrested**.
 - **Section 8 Clause 3 of the Representation of the People Act, 1951** deals with the disqualification of a lawmaker and says a person convicted for an offence and sentenced to two years or above shall be disqualified from the date of such conviction.
- The **Law Commission** has recommended the disqualification of an MP or an MLA if **charges were framed** against them in any such case.
 - However, these **recommendations were never accepted** by the government or put in place.

Uttar Pradesh Madarsa Education Act

News Excerpt:

The Supreme Court stayed the operation of an **Allahabad High Court judgment** that struck down a 20-year-old Uttar Pradesh law regulating madrasas and ordered the transfer of their students to regular schools.

More About the news:

- A **three-judge Bench headed by Chief Justice of India D.Y. Chandrachud** decided in an interim order to **freeze the implementation of the High Court judgment** of March 22 even as the Uttar Pradesh government said it had learned to "accept" the verdict.
 - The Bench said it "would impinge on the future course of education of nearly 17 lakh students who are pursuing education in these institutions".
- The State claimed to have fought tooth and nail for the survival of the **Uttar Pradesh Board of Madrasa Education Act, 2004**, in the High Court.
 - However, it has now reconciled to the **High Court's point of view that the Act threatened the principles of secularism and was violative of the Basic Structure of the Constitution**.
- The Attorney General of India submitted the basic question in Court, "How did you support a law that
- provides for a wide array of State entanglement with religion and religious institutions?"
- Additional Solicitor General for Uttar Pradesh said the course of instruction provided in madrasas did not involve broad-based **subjects such as Maths, Science, and Social Studies**. The study of secular subjects was optional.

- But the Court countered the State's logic, asking how the striking down of a law regulating madrasas would ensure that madrasa students were instructed in Maths, Science, Social Studies, Languages and History.
- "The **remedy** would not be to strike down the Madrasa Board Act, but to **issue suitable directions to enable students pursuing their education in madrasas to access the quality of education made available by the State in other institutions**," Chief Justice Chandrachud dictated in the order for the Bench.
- The Court said **if the State had a "legitimate public interest"** in all students, including those in madrasas, it **ought to ensure that "they receive education of a requisite quality and standard which make them qualified to pursue a dignified existence"**.
 - The Court said it was left to the choice of students and their parents to stay back or leave madrasas to join mainstream schools.
 - However, the High Court's direction of their transfer to **"regular"** schools was unwarranted.
- Additional Solicitor General for Uttar Pradesh tried to reason that the madrasas had not been shut down after all.
 - Only the students have been directed to be re-allocated.
 - He argued that **Article 28(1) of the Constitution prohibited religious instruction in educational institutions wholly maintained out of State funds**.
- Appearing for an association of madrasa teachers that challenged the High Court judgment, said that the **verdict affected the lives of nearly 17 lakh students spread across 16,000 madrasas in Uttar Pradesh**.
 - They said that unlike what the State claimed, **only 560 of the 16,000 madrasas were recognized by State funds**.
 - The petitioners argued that **imparting religious instruction in secular institutions was not proscribed in the Constitution**.
 - Besides, subjects other than Islamic theology are taught in madrasas, the petitioners submitted.
 - They said that madrasa education would continue to be unregulated without the Board.
- In his order, the Chief Justice said the **High Court seemed to have "conflated the concept of madrasa education with the regulatory powers attached to the Board"**. The reasoning was prima facie misconceived.

Why did the Allahabad HC deem it unconstitutional?

- The Allahabad HC had invalidated the Uttar Pradesh Board of Madarsa Education Act, 2004, declaring it

About the U.P. Madarsa Education Act:

- Enacted in **2004**, the Uttar Pradesh Board of Madarsa Education Act was designed to streamline madrasa education, defining it as education in Arabic, Urdu, Persian, Islamic studies, Tibb (traditional medicine), philosophy and other specified branches.
- Uttar Pradesh is **home to approximately 25,000 madrasas, out of which 16,500 are officially recognized by the Uttar Pradesh Madrasa Education Board**.
 - Among these recognized institutions, 560 receive financial support from the government.
 - Additionally, there are 8,500 unrecognized madrasas operating in the State.
- The **Madarsa Education Board awards undergraduate and postgraduate degrees** known as **Kamil and Fazil** respectively. **Diplomas** issued by the Board are referred to as Qari and grant certificates and other academic honours.
- The Board is responsible for **conducting examinations for courses** such as Munshi, Maulvi (Class X), and Alim (Class XII).
- The Madarsa Education Board is responsible for **specifying the curriculum, textbooks, reference books, and any other teaching materials required** for courses such as Tahtania, Fauquania, Munshi, Maulvi, Alim, Kamil, and Fazil.

"unconstitutional" and in conflict with the principle of secularism.

- The HC observed that the Madarsa Act **contravenes the fundamental tenets of secularism**, a core element of the Constitution.
- The Act **does not ensure the provision of high-quality compulsory education up to the age of 14 years or Class VIII, as mandated by Article 21-A**.
- Furthermore, **it does not guarantee universal and high-quality school education for all children enrolled in madrasas**.
- Additionally, the Allahabad High Court recognized the petitioner's argument that the **Board's power to grant degrees infringes upon the jurisdiction of the University Grants Commission (UGC)**.

Candidate's right to privacy from voters

News Excerpt:

According to the Supreme Court (SC), voters' right to know about **election candidates is absolute**, but it doesn't require them to lay out their **life threadbare for examination** as they, too, are entitled to **privacy**.

About SC's Judgement:

- The SC bench ruled that a candidate's decision to maintain privacy on **irrelevant** personal matters isn't

considered a 'corrupt practice' under **Section 123 of the Representation of People Act, 1951.**

- They clarified that such non-disclosure doesn't constitute a "defect of a substantial nature" under **Section 36(4) of the RPA 1951.**
- The SC clarified that candidates are not obliged to expose every aspect of their lives to public scrutiny when declaring their assets during elections.
 - The Court emphasized that candidates' declarations of assets are meant to **further democratic participation by citizens** and **enhance voters' right to information**, enabling them to **cast their votes rationally and intelligently.**
 - The Court distinguished that a candidate **doesn't need to declare every item** of movable property, such as **clothing, shoes, crockery, stationery, and**

furniture unless these items **are of such value** as to constitute a sizeable asset in itself or reflect upon the candidate's candidature in terms of their lifestyle.

- The Court stated that each case would **have its own peculiarities regarding what would amount to a non-disclosure of substantial assets.**
 - While suppressing information about a collection of expensive watches from voters would be considered a substantial defect, suppressing the value of simple, inexpensive watches owned by the candidate and their family members may not amount to a defect at all.
 - The Court emphasized that each case would have to be judged on its own facts to determine whether the **non-disclosure of certain assets is substantial or not.**

- The judgment aimed to strike a balance between **voters' right to access relevant information about a candidate's assets** and **the candidate's right to privacy**, acknowledging that not every minor detail needs to be exposed for public scrutiny.

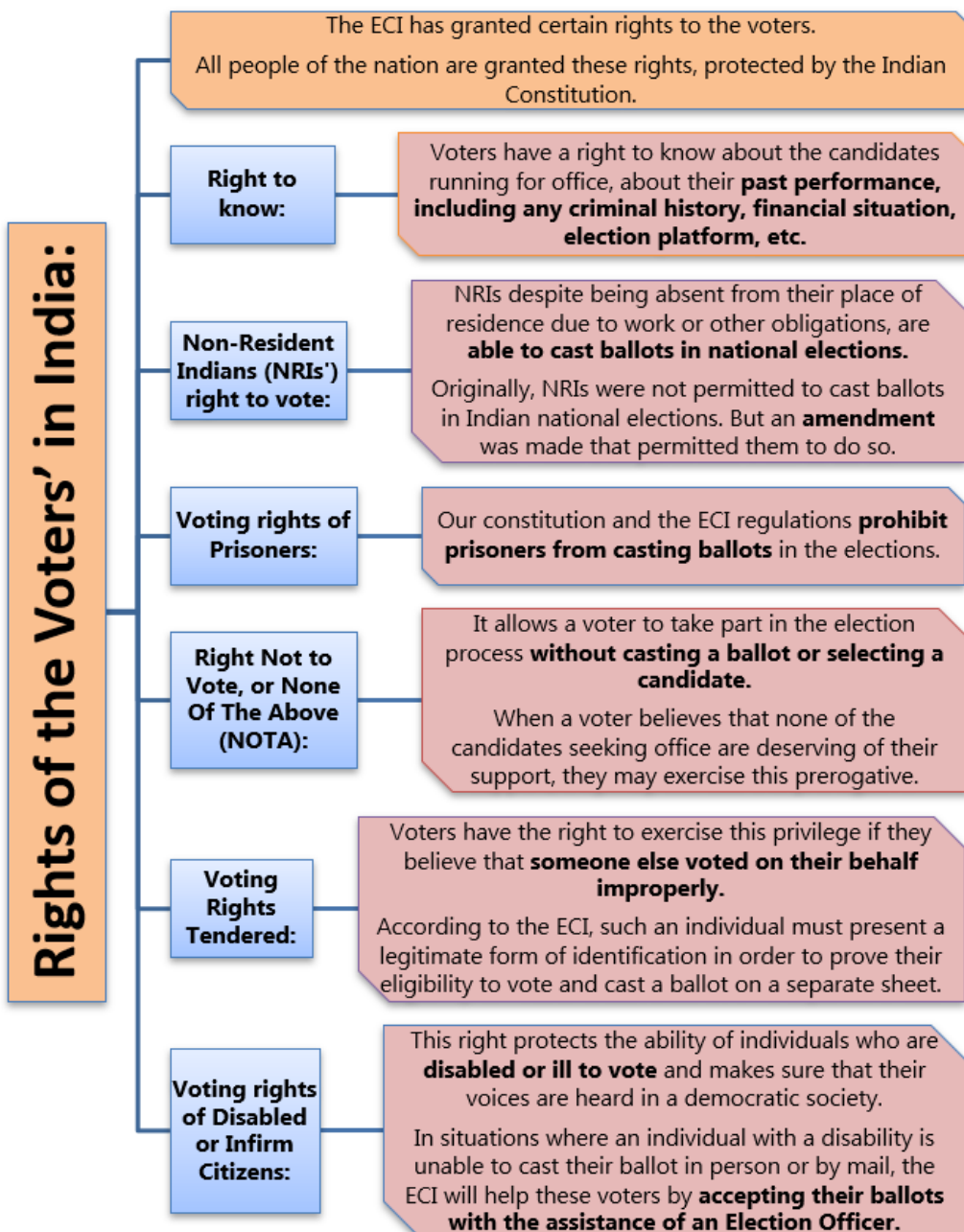
Campaigning in the name of religion

News Excerpt:

The BJP complained to the Election Commission of India (ECI) about Rahul Gandhi's remark about Hindu sentiment, While DMK counter-complained the religious appeal made by the PM.

What is Section 123 of RPA 51?

- **Section 123(3) of the Representation of the People Act, 1951 (RP Act)** provides that appeals by a candidate, or any other person with the consent of a candidate, to vote or **refrain from voting** on the ground of his **religion, race, caste, community or language** is a corrupt electoral practice.
- **Section 123(3A)** denounces any attempt by a candidate to promote feelings



of enmity or hatred among citizens on these grounds during elections.

- The **RP Act 1951** further provides that anyone found **guilty of corrupt electoral practice** can be debarred from contesting elections for a **maximum period of up to six years**.

History of Implementation of the RPA and the Model Code of Conduct (MCC):

- **Before 1961**, Section 123(3) of the RP Act provided that a **'systemic'** appeal by a candidate on the grounds of religion, race, caste or community would amount to a corrupt electoral practice.
 - However, in order to **curb communal, fissiparous and separatist tendencies**, the word **'systemic'** was omitted through an amendment in 1961.
 - This meant that even a stray appeal for success in the elections on the grounds of **one's religion or narrow communal affiliation** would be viewed with disfavour by the law.
- There are leaders across political parties against whom cases have been registered under the **RP Act** and the **Indian Penal Code** in this regard.
 - Supreme Court convicted **Bal Thackeray of Shiv Sena in 1995** for this corrupt electoral practice.
- The ECI, on such occasions, at best, **bans leaders from campaigning** for a short period of two to three days for violating the MCC.
- The **MCC** provides that:
 - No party or candidate shall indulge in any activity that may aggravate existing differences, create mutual hatred, or cause tension between different castes, religious or linguistic communities.
 - There shall be no appeal to caste or communal feelings to secure votes.
 - Mosques, churches, temples, or other places of worship may not be used as forums for election propaganda.

Key points related to Abhiram Singh versus C.

D. Commachen (2017) case:

- **Decision:** A seven-judge Bench, by a majority of 4:3, held that candidates should not appeal for votes on the basis of not just their religion but also that of the voters.
- **Interpretation of Section 123(3):** The majority view provided a **'purposive interpretation'** of Section 123(3) rather than just a literal one. This rendered any appeal in the name of religion or even the voters a corrupt electoral practice.
- **Secular Nature of Elections:** Elections to **Parliament or State legislatures are deemed as secular exercises**. The constitutional ethos **forbids the mixing of religious considerations with the secular functions of the State**.

- **Religion as Personal Faith:** Religion should remain a **matter of personal faith** and not be exploited for political gains.

District Election Management Plan

News Excerpt:

The conduct of elections demands thorough planning and precise execution to uphold principles of freedom, fairness, and inclusivity. A cornerstone of this planning process is the **District Election Management Plan (DEMP)**, a detailed **blueprint utilizing statistics and analysis** to ensure the smooth conduct of elections.

- The **significance of planning in the conduct of elections has heightened due to the escalating complexities and diverse activities involved**.

What is DEMP?

The District Election Management Plan (DEMP) serves as a **comprehensive document that streamlines election preparations**.

- **It utilizes statistical analysis to inform detailed planning** across various aspects of the electoral process.
- According to the Election Planner of the Election Commission of India (ECI), the **DEMP must be prepared at least six months prior to the tentative Poll Day**.
- Early preparation of the DEMP allows for assessing the status and requirements of various components such as polling station facilities, Electronic Voting Machines (EVMs), logistics, manpower, training, transportation, security measures, and the Systematic Voters' Education and Electoral Participation (SVEEP) initiative.
- The preparation and execution of the DEMP involve a **collaborative effort among various stakeholders**, including election officials, administrative authorities, law enforcement and procedures agencies, political parties, and media.

Key elements of the DEMP include:

- **District Profile:** This provides a foundational understanding of the electoral strategy, including a political map with constituencies, key demographic and infrastructure statistics, administrative setup, and socio-economic features of the district.
- **Accessibility of Polling Stations:** Strategies are outlined to improve the availability and accessibility of polling stations, ensuring they have necessary facilities such as **ramps, electricity, lighting, drinking water, toilets, and internet connectivity**.
 - **Special provisions are made for voters with disabilities (PwD) and senior citizens** through 24*7 control rooms, home voting options and advanced postal ballot voting.

- **Systematic Voters' Education and Electoral Participation (SVEEP) Plan:** This plan focuses on increasing electoral participation through activities tailored to address low voter turnout areas.
- **Election Personnel Management:** Strategies are developed for planning, training, welfare, and deployment of election personnel.
 - This includes creating a database of poll personnel, assessing requirements, addressing gaps in personnel needs, and training district-level teams to enforce the **Model Code of Conduct (MCC)**.
- **Force Deployment Plan:** Detailed planning is done in coordination with the district police, including vulnerability mapping of polling stations based on past disturbances and voter turnout.
- **Material Management:** Procurement plans are outlined for essential items such as indelible ink, seals, stamps, stationary, and statutory forms.
 - Similarly, plans for **Electronic Voting Machines (EVMs) management, including secure storage, transportation, and maintenance, are also included.**
- **Vote counting and results reporting:** Protocols for counting votes, tallying results, and reporting outcomes transparently and timely.
- **Complaints and dispute resolution:** Procedures for handling complaints, disputes, and irregularities that may arise during the electoral process, including mechanisms for adjudicating disputes and resolving conflicts.
- **Post-election activities:** Plans for post-election activities such as data analysis, reporting, and evaluation of the electoral process to identify areas for improvement in future elections.

How House terms and poll schedules are decided?

News Excerpt:

The **date of counting for Assembly elections in Arunachal Pradesh and Sikkim** has been **advanced by two days to ensure** that their existing Houses' terms don't end before the election process is complete.

The Constitution provision about the terms of State Assemblies and Lok Sabha:

- The **terms of both State Assemblies and Lok Sabha** last for **five years from the first sitting of the House.**
- **Article 172(1) states:** "Every **Legislative Assembly** of every State, unless sooner dissolved, **shall continue for five years from the date appointed for its first meeting** and no longer and the expiration of the said period of five years shall operate as a dissolution of the Assembly".
 - The term of the Assembly may, while a **Proclamation of Emergency** is in operation, **be extended by Parliament for a period not exceeding one year at a time and not extending in any case beyond a period of six months after the Proclamation has ceased to operate.**
- For **Lok Sabha, Article 83(2) states:** The House of the People, unless sooner dissolved, **shall continue for five years from the date appointed for its first meeting** and no longer and the expiration of the said period of five years shall operate as a dissolution of the House.

What are the things that the ECI looks at while fixing the election schedule?

- It is standard procedure for the ECI to consider factors such as -
 - **Weather, festivals, and important examinations,** as well as the **availability of school buildings,** where polling stations are often set up, and **teachers** are mobilized for election duty while deciding the schedule of elections.

Earlier such instances:

- In 2004, the tenure of the Assembly in Andhra Pradesh (AP) was to end on May 13, the same day that counting for Lok Sabha and other states was scheduled.
 - So, the counting in AP was scheduled for May 11.
- In 2023, the date of counting for the Assembly election in Mizoram was changed from December 3 to December 4.
- December 3 was a Sunday, and according to the ECI, Sundays hold special significance for the people of [Christian-majority] Mizoram.

SOCIAL ISSUES

Food Waste Index Report 2024

News Excerpt:

According to the latest **UN Environment Programme's (UNEP)** Food Waste Index Report, the **world wasted an estimated 19% of the food produced globally in 2022**, or about 1.05 billion metric tons.

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Status of Food Waste:

Important terms:

- **Food waste:** Food and its associated inedible parts removed from the human food supply chain.
 - It includes both **edible parts** (intended for human consumption) and **inedible parts** (not intended for human consumption), such as bones, rinds, and pits/stones.
- **Food loss:** All crop and livestock human-edible commodity quantities that completely exit the post-harvest/slaughter production/supply chain.
- **Food Waste Index:** It is overseen by UNEP, tracks the global and national generation of food and inedible parts wasted at the retail and consumer levels (household and food service).

Food Waste in India:

- Indian households waste an **estimated 78.2 million tonnes of food** annually, despite the country having the largest population suffering from hunger.
 - **India ranks 111th out of 125 countries on the Global Hunger Index**, indicating a serious level of hunger severity.
- **Per capita food waste in India is estimated at 55 kg per year**, with rural areas wasting less compared to urban areas.
- Data on food wastage in India is categorised under '**Medium Confidence**', indicating limitations in geographic coverage and sample size.
- **Global Food Waste:**
 - Globally, 1.05 billion tonnes of food waste (including inedible parts) were generated in 2022, amounting to **132 kg per capita**.
 - Household waste accounts for the majority (60%) of food waste, while commercial food systems, including food services and retail account for 28% and 12% respectively.
 - An additional **13% of food is lost in the supply chain** between harvest and market, often due to rejection or spoilage of edible food.
 - More than a billion meals are thrown away every day worldwide, representing about a fifth of all food

produced globally and a third of humanity faces food insecurity.

- Food waste is not confined to 'rich' countries but also prevalent in upper-middle and lower-middle-income countries.

Impact of Food waste:

Environmental impact:

- Squanders natural resources and also contributes substantially to climate change and biodiversity loss. It accounts for close to **10% of global greenhouse gas emissions and displaces wildlife** due to intensive farming practices.
- Consumer-level waste imposes the highest burden.
- Hotter countries tend to generate more food waste per capita due to higher consumption of fresh foods with substantial inedible parts and inadequate cold chain facilities.

Economic toll:

- Estimated at roughly \$1 trillion, reflecting the substantial costs incurred due to inefficiencies in the food supply chain.

Complexity surrounding Food Waste:

Significance of considering inedible parts:

- Measuring food waste accurately involves assessing both edible and inedible parts.
- Additionally, upcycling of inedible parts back into the human supply chain contributes to **circular food systems** and improves food security.

Extent of edible food waste:

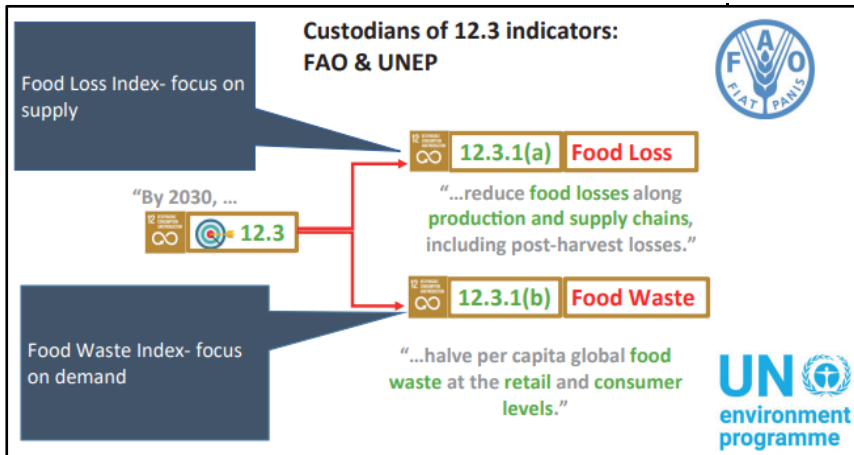
- Limited data exists on the edible fraction of food waste globally, but estimates suggest it could range from 31% to 77% of total food waste.
 - Even at the lower end of this range, the quantity of edible food wasted is significant, amounting to 1.3 meals per person impacted by hunger per day.

Challenges in data availability:

- There's a **lack of accurate nationwide data** on food waste in the retail and food service sectors, particularly outside high-income countries.

Measurement and reporting of SDG Target 12.3:

- SDG 12.3 includes two indicators:
 - **Indicator 12.3.1(a)** measures food loss across the supply chain up to but excluding retail.
 - **Indicator 12.3.1(b)** measures food waste at the retail and consumer levels. It allows for the separate reporting of inedible parts where measured.



- FAO and UNEP serve as custodians for these indicators, respectively.
 - The Food Loss Index focuses on losses for key commodities, while the Food Waste Index measures total food waste, including inedible parts and waste generated in manufacturing processes.

Way Forward:

- **Education and awareness** about the importance of reducing food waste and adopting sustainable consumption habits.
- **Research and technology:** Invest in research and technology to gather reliable data and identify trends and patterns to inform targeted interventions.
- **Governments should incentivise food waste reduction initiatives,** implement food recovery programs, and support sustainable food production and distribution practices.
- **Collaborative partnerships:** Foster collaboration among governments, businesses, non-profit organizations, and communities to address food waste comprehensively.
- **Consumer empowerment:** Empower consumers to make informed choices and reduce food waste at the household level.
 - **Promote meal planning, proper storage techniques, portion control, and creative cooking methods** to minimize food waste in households.

PEPPER IT WITH:
Global Hunger Index, SDG 12, Circular food system,

Anaemia prevalence in 8 States over-estimated

News Excerpt:

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A study across eight States in India has found that the prevalence of anemia has been overestimated by previous surveys.

Methodology of study:

- While the **NFHS surveys** measured **haemoglobin** using **finger prick-based capillary blood**, the new study used **venous blood** to measure **haemoglobin** and **iron status through ferritin**.
- **Capillary blood haemoglobin** may **underestimate the true values** due to the phenomenon called **plasma-skimming**, leading to a slightly **lower red blood cell count** compared to venous blood.
- **Mixing of tissue fluid** during capillary blood sample collection can dilute haemoglobin levels, further reducing accuracy.
- The **WHO** has also recently **recommended** that anaemia be diagnosed from **venous blood estimations** of haemoglobin.

Key findings of the study:

- The majority of cases of anaemia were mild, with **18.4%** of the entire sample experiencing **mild anaemia**, **14.7%** with **moderate anaemia**, and **1.8%** with **severe anaemia**.
- **Women** exhibited a **higher overall prevalence** of anaemia compared to men, with **22% of women**

What is anaemia?

Anaemia happens when the number of red blood cells or the haemoglobin concentration within them is lower than normal.

What causes anaemia?

Common symptoms of anaemia include

Dietary changes can help reduce anaemia in some cases by

experiencing moderate anaemia compared to **7.6% of men.**

- Among different **age groups**:
 - **44%, 41%, and 45%** in **adolescent girls, adults, and elderly women**, respectively.
 - For **adolescent boys, adults, and elderly men**, the prevalence of anaemia was **24%, 21%, and 37%**, respectively.
 - The **prevalence of anaemia** was much **higher** as per the **NFHS surveys** that used capillary blood — **60.8%** for women, **62.6%** for adolescent girls, **26%** for men and **31.8%** for adolescent boys.
- **State wise data**:
 - **Assam** had the **highest prevalence** of total anaemia, with **69.8% overall** and **78.3%** among women.
 - **Odisha** exhibited a prevalence of **55% overall** and **63%** among women.
 - **Meghalaya** showed the **lowest prevalence** of anaemia at **12.1% overall** and **14.6%** among women, followed by **Telangana** with **16.9% overall** and **24.6%** among women.
- **Iron deficiency**:
 - Iron deficiency **prevalence** within the **entire group** was at **18.4**.
 - It was **highest among adolescent girls** (31.5%) followed by adult women (27.7%), and elderly women (13.6%).
 - The prevalence of iron deficiency was **16.0%, 10.7%** and **11.2%** for **adolescent boys, adults, and elderly men**, respectively.

Impact of diet on anaemia:

- A significant portion of the Indian population primarily consumes **cereal-based diets** with **limited intake of coloured vegetables** and **fruits.**

- The **decreasing protein, vitamin, and mineral levels in cereals** due to **climate change** are prompting a **need for dietary diversification** towards more resilient options like **millets.**
- While **millets** may **contain phytates** that can hinder nutrient absorption, they are rich in **iron and calcium**, potentially leading to **higher overall intake** of these essential nutrients.

PEPPER IT WITH:
 NFHS, National Anaemia Mukh Bharat, Red Blood cells & white blood cells, Iron Deficiency



FIGURE: INITIATIVE TAKEN BY GOVERNMENT

Lancet projects fall in India's fertility rate

News Excerpt:

A recent **Lancet study** on global fertility rates indicates a **decline** in **India's total fertility rate (TFR)**.

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Total Fertility Rate (TFR):

- It is the **average number of children a woman would give birth to** during her **lifetime** if she were to pass through her childbearing years (15-49 years) experiencing the present-day age-specific fertility rates.
- It is **calculated** by adding up all the age-specific fertility rates, multiplying this sum by five (the width of the age-group interval), and then dividing by 1,000.

Key highlights of the study:

India's fertility rate:

- In **2021**, India's TFR was **1.91 children per woman**, below the necessary **replacement fertility level** of **2.1**.
- India's TFR has been seeing a **decline** over the last century, with the fertility rate falling from **6.18 children per woman** in 1950 to a projected **1.29 children per woman by 2050**. It can **further fall** to **1.04 children per woman** in the year 2100.

Global fertility rate:

- The study estimates that by **2050**, **155 of the 204 countries** will have **fertility below the replacement level**. This figure is expected to rise to **198 countries by 2100**.
- By 2100, the **estimated fertility rates** will be **below the replacement level** in more than 95% of the world's countries and territories, but disparities in rates will remain.

Factors contributing to the decline of TFR in India:

- Delay in marriage and pregnancy:** The age of marriage is being delayed, leading to a decrease in the average age of first pregnancy.
 - Women are opting for pregnancy in their mid to **late 30s** instead of their **mid-20s**.
- Increase in female literacy and workforce participation:** Higher levels of education and increased participation of women in the workforce are leading to a shift in priorities.
 - Women are **focusing** more on their **careers** and **personal aspirations**, which is decreasing their desire for large families.
- Urbanisation and busy lifestyles:** Busy lifestyles in urban areas and high-stress jobs are causing individuals to reconsider having children altogether. The demands of modern urban living may **discourage** individuals from **starting or expanding** their **families**.

- Economic unviability:** For many families in India, having more children is not economically viable.
 - Rising living costs, education expenses**, and the desire for a higher standard of living can **deter couples** from having more children.
- Social changes:** Social norms and values regarding family size and dynamics are evolving. Today, the notion that **large families** are necessary for **social security** is considered **outdated**.

Implications of low fertility for the economy:

- Ageing population:** With a declining fertility rate, India will likely face an ageing population in the future.
 - This demographic shift can **strain public services** such as **healthcare** and **pension systems**, as **fewer working-age individuals** will be available to support the elderly population.
- Labour force shortages:** A decrease in the number of young people entering the workforce due to lower birth rates can lead to labour force shortages.
 - This could impact various **economic sectors**, including manufacturing, agriculture, and services, affecting productivity and **economic growth**.
- Economic productivity:** A shrinking workforce resulting from lower fertility rates can potentially **hamper** economic productivity.
 - With fewer individuals contributing to the labour force, there may be challenges in **sustaining economic growth** and development.
- Pension systems:** A lower birth rate means fewer individuals entering the workforce to support social security and pension systems.
 - This could **strain government budgets** and **necessitate reforms** to ensure the sustainability of these systems in the face of demographic changes.

Way Forward:

- Scandinavian nations**—like Sweden and Denmark promote gender parity as they **finance healthcare**, offer **inexpensive child care**, and launch **extensive programs** aimed at engaging men.
- Men** would need to shoulder more of the **caregiving and home responsibilities** if they wanted women to be able to balance professions and parenthood.
- In addition to **social security and pension reforms**, economic measures that promote growth and **job creation** will be crucial for adjusting to and lessening the effects of lower birth rates.
- To address the implications of declining fertility rates, policymakers may need to **implement reforms** to encourage **family formation** and support **working parents**.

PEPPER IT WITH:
Fertility rate, Contraceptive Prevalence Rate

- Measures include **affordable childcare, parental leave policies, and incentives for larger families.**

PRE-SHOTS

World Happiness Report 2024

News Excerpt:

In the World Happiness Report for 2024, **India** was ranked **126th out of the 150** countries.

About World Happiness Report:

- It is released annually around **March 20th** as part of the **International Day of Happiness** celebration by the **United Nations Sustainable Development Solutions Network (UN SDSN)**.
 - The report is a partnership of **Gallup, the Oxford Wellbeing Research Centre, the UN SDSN, and the WHR's Editorial Board.**

Sustainable Development Solutions Network (SDSN):

- The UN Sustainable Development Solutions Network (SDSN) was set up in **2012** under the auspices of the then **UN Secretary-General**.
- It mobilises global **scientific and technological expertise** to promote **practical solutions** for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the **Paris Climate Agreement**.
- It considers **six variables: GDP per capita, healthy life expectancy, social support, freedom, generosity, and absence of corruption.**
- The World Happiness Report now provides **separate rankings by age group.**
- The **top 10 countries** are **Finland, Denmark, Iceland, Sweden, Israel, Netherlands, Norway, Luxembourg, Switzerland, and Australia.**
 - Finland emerged as the happiest country in the world, topping the **World Happiness Report 2024, the seventh successive year.**
- Afghanistan** remains at the bottom of the overall rankings as the world's '**unhappiest**' nation, followed by Congo, Sierra Leone, Lesotho, and Lebanon.

Key findings about India:

- India's** rank in the happiness index is **lower than its neighbouring countries** like China (60th), Nepal (93rd), Pakistan (108th), Myanmar (118th), Sri Lanka (128th), and Bangladesh (129th).
- The report noted a **gender disparity** in happiness within India, with **older women reporting lower levels of life satisfaction** compared to older men.
- Education and caste** emerged as **significant factors** affecting life satisfaction in India. Individuals with **higher levels of education** and belonging to **higher social castes** reported **higher happiness levels.**

- India's ranking for **happiness among young people, aged 30 and below**, was notably lower at **127th place.**
 - This **indicates potential challenges or disparities** the younger demographic faces
 - regarding overall life satisfaction and well-being.
- India's ranking for **happiness among older people, aged 60 and above**, was slightly higher at **121st place.**
 - This suggests that **older individuals** in India may **perceive higher levels of life satisfaction** compared to their younger counterparts.

India TB Report-2024

News Excerpt:

According to the **India TB Report 2024** released by the Ministry of Health and Family Welfare (MoHFW), the **gap** between the **estimated number and actual cases** of tuberculosis (TB) is **closing.**

Key highlights of India TB Report 2024:

TB CASES IN INDIA OVER THE YEARS			
	India TB Report 2020	2023	2024
Estimated TB cases	26.9 lakh	27.4 lakh	27.8 lakh
Number of cases reported	24.04 lakh	24.2 lakh	25.5 lakh
Reported from private sector	6.8 lakh	7.3 lakh	8.4 lakh
% cases from Private sector	28.20%	30%	32.90%
Estimated Mortality	4.36 lakh	3.2 lakh	3.2 lakh

- Reduction in missing TB cases:** The gap between estimated and actual **TB cases is decreasing**, with only 2.3 lakh missing cases in 2023 compared to 3.2 lakh the previous year.
 - Tracking TB patients through the **Ni-kshay portal** has contributed to reducing missing cases.
- Notifications from the private sector have increased**, with nearly 33% (8.4 lakh) of the 25.5 lakh reported cases in 2023 coming from private healthcare providers.
- These estimates are based on **India's in-country model**, a new methodology developed by India and accepted by the **World Health Organisation.**
- A test to check for **medication resistance** was administered to 58% of patients with confirmed TB, up from 25% in 2015.

- This facilitates prompt access to suitable treatments, particularly for patients with tuberculosis that is **resistant to drugs**.
- **India reached its 2023 target** of initiating treatment in **95% of diagnosed TB patients**.

Factors contributing to reduced TB incidence in India:

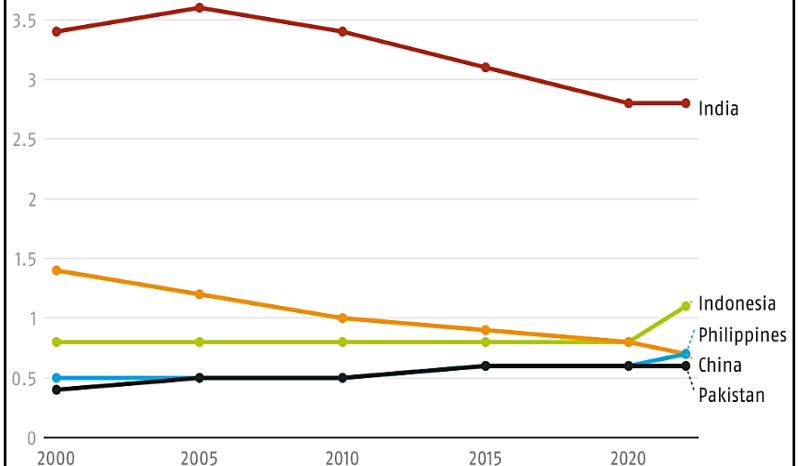
- **Easy availability of drugs:**
 - All first-line TB drugs are now accessible even in remote areas.
 - Costly medicines like **bedaquiline** are available in government institutions, aiding in curing many cases of **multidrug-resistant TB (MDR TB)**.
- **Development of newer drugs:**
 - At least **16 new drugs** are undergoing **Phase I or II clinical trials**, and **22** are in **pre-clinical stages**.
 - Research on shorter treatment regimens is also ongoing, potentially improving patient compliance and reducing the risk of drug resistance.
- **Ni-KSHAY:**
 - NI-KSHAY (Ni=End, Kshay=TB) is the **web-enabled patient management system** under the **National Tuberculosis Elimination Programme (NTEP)**.
 - It is developed and maintained by the **Central TB Division (CTD)**, and MoHFW in collaboration with the **National Informatics Centre (NIC)**, and the **World Health Organization India's Office**.
 - It is used by health functionaries at various levels across the country, both in the **public and private sectors**, to register cases under their care, order various types of tests from Labs across the country, **record** treatment details, **monitor** treatment adherence, and **transfer** cases between care providers.
 - It also functions as the **National TB Surveillance System** and enables reporting of various surveillance data to the Government of India.
- **Pradhan Mantri TB Mukh Bharat Abhiyan (PMTBMBA):**
 - It is launched by the Ministry of Health and Family Welfare (MoHFW) of India to **eliminate tuberculosis (TB) by 2025**.
 - It emphasizes the need for a **multi-sectoral response** involving various **stakeholders**, including communities and societal institutions.
 - It is significant for its **community-driven approach** and its focus on **reducing the stigma** associated with TB.
 - It involves the community in a '**Jan Andolan**' to accelerate progress towards TB elimination, making it a unique model.

World TB status:

- **High TB incidence countries** such as China, the Philippines, and Pakistan reported fewer than a million cases in 2022.
- TB ranks as the **second leading cause of infectious deaths globally**, following Covid, according to the World Health Organization.
- While an estimated 11 million people worldwide were diagnosed with TB in 2022, over a million died from it.

But India still accounts for a third of TB cases globally...

Number of cases of TB, in million



Data shows the incidence of tuberculosis (TB) in high-burden countries

Remove Bournvita from 'health drinks' section

News Excerpt:

The **Commerce and Industry Ministry** said in an advisory to all **e-commerce companies** to remove drinks and beverages, including **Bournvita**, from the **health drinks category** from their **portals or sites**.

About the news:

- National Commission for Protection of Child Rights (**NCPCR**) directed Bournvita to withdraw all "**misleading**" advertisements, packaging and labels following a video by social media influencer.
 - The influencer had highlighted the **high sugar content in the drink**, sparking criticism of the brand and a widespread debate.
 - **NCPCR** after its inquiry concluded that there is **no 'health drink' defined under FSS Act 2006**.
- Food Safety and Standards Authority of India (**FSSAI**) directed all e-commerce **food business operators (FBOs)** to ensure **appropriate categorisation** of **food products** being sold on their websites.

- This direction came after FSSAI observed instances of **certain cold drinks and beverages**, such as **dairy-based beverage mixes, cereal-based beverage mixes, and malt-based beverages**, being sold on these websites under the category of 'health drink' or 'energy drink'.

Proprietary foods are items of food that are **not standardised** in food safety and standards (food product standards and food additives) regulations and food safety and standards (health supplements, nutraceuticals, food for special dietary use, food for special medical purpose, functional food, and novel food) regulations, but use standardized ingredients.

Significance of the move:

- This action will enhance **clarity and transparency** regarding the **nature and functional properties** of the products, allowing consumers to make informed choices without any **misleading information**,
- The food safety regulator had iterated that 'energy drinks' is permitted to be used for **carbonated and non-carbonated water-based flavored drinks**.
 - Further, 'health drinks' are **not defined** anywhere under the **Food Safety and Standards Act 2006**.

About National Commission for Protection of Child Rights (NCPCR):

- It is a statutory body constituted under section (3) of the **Commission of Protection of Child Rights (CPCR) Act 2005**.
- Its mandate is to ensure that all laws, policies, programs and administrative systems conform to the vision of the rights of the child as enunciated in the Constitution of India as well as the **United Nations Convention on the Rights of the Child**.
- A child is defined as a person falling in the age group of 0 to 18 years.**

Quacquarelli Symonds (QS) World University Rankings

News Excerpt:

JNU is best for development studies in India, while IIM-Ahmedabad tops for management in recently released **QS World University Rankings**.

Key findings:

- In the 2024 QS World University Rankings by Subject, **sixty-nine Indian universities** have earned spots, marking a **19.4% increase** from the previous year's 355 entries.
- According to the **rankings** by Subject, **IIM-Ahmedabad** ranks among the **top 25** institutions globally for **business and management studies**, while **IIM-Bangalore** and **IIM-Calcutta** are within the **top 50**.

- Jawaharlal Nehru University** leads among Indian universities, securing the **20th position** globally for development studies, and the **Saveetha Institute of Medical and Technical Sciences** in Chennai holds the **24th position** globally for dentistry studies.
- Though the **12 Institutes of Eminence (IoE)** represent a small fraction of Indian universities, they contribute significantly, accounting for **40%** of the country's 180 total entries.
 - Additionally, the **IoE leads with 47 of the 69 top-100** Indian positions and **14 of the 21 positions** across 55 academic disciplines and **five faculty areas** in this edition of the rankings.
- The **University of Delhi** emerges as the **most represented Indian institution** in the rankings with **30 entries**, followed closely by **IIT Bombay** with **28 entries** and **IIT Kharagpur** with **27 entries**.
- Noteworthy **improvements** are seen at **IIT Madras**, which has **22 entries**, eight of which have improved, six of which declined, and four of which remained unchanged. Similarly, **IIT Delhi** secured **19 entries**, 11 of which showed improvement, three of which declined, and three of which remained unchanged.
- Notably, **72% of the Indian entries** this year have either **debuted**, shown **improvement**, or **maintained** their positions. At the same time, only **18%** experienced a **decline**, showcasing an impressive **17% year-on-year improvement** for India.

Subject	University	2024 Global Ranking
Development studies	JNU	20
Business & management studies	IIM Ahmedabad	22
Computer science & Information systems	IIT Delhi	63
Pharmacy & pharmacology	NIPER Hyderabad	64
Law	OP Jindal Global University	72
Mathematics	IIT Bombay	89
Medicine	AIIMS New Delhi	127
Physics & astronomy	IISc Bangalore	134
Accounting & Finance	IIM Bangalore	151-200
Communication & media studies	Delhi University	201-250

- The rankings show significant progress in India, with a **20% improvement** in the **citations per paper** indicator, reflecting **strong research capability**.
- India has emerged as one of the world's **fastest-growing research centres**, with a **54% surge** in **research output** from **2017 to 2022**, surpassing the global average and outpacing Western peers.
- While **India ranks fourth** globally in **research volume**, it ranks **ninth** in **research impact**, indicating the need for prioritising high-quality, impactful research dissemination.

South Asia Development Update Report

News Excerpt:

According to the **World Bank's April South Asia Development Update report**, **India** has moved **fewer people** to **non-agriculture jobs** than most neighbouring nations.

South Asia Development Update:

- Previously known as **South Asia Economic Focus**, is prepared **twice a year** by the **Office of the Chief Economist for the South Asia region** of the **World Bank**.
- The report presents the **near-term economic outlook** for **South Asia** as well as an in-depth analysis of **topical challenges** and **opportunities** for **policymakers** in Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka.

Key highlights of the report:

- **India** could only manage to move a **smaller share** of its **working-age population** away from **farm-related work** than many of its neighbours.
- **Bangladesh, Bhutan, Sri Lanka** and **Nepal** have managed to shift a **bigger share** of jobs to **non-agricultural work** than India.
- Only **Pakistan** and the **Maldives** show a **lower shift** than **India** among South Asian countries.
- **India-specific trends:**
 - The **share of working-age** Indians who are **employed in agri-based jobs** has come down over the years.
 - This employment ratio for India was **63.9%** in **2000**. It declined to **53.8%** in **2019**.
 - The majority of its **neighbours** have seen a **lower decline** or an improvement since the turn of the millennium.
- **Gender trends:**

- The increased **participation of women** in India could be driven by **rising self-employment** among them driven by economic distress.
- There have been some **gains for women** as the **employment ratio for men** has **declined**.
- Most **South Asian countries** recorded a **decline** in the **employment ratio**.
 - The **employment ratio for men** in India **declined** by **9.6% points**, the lowest after Nepal and Bhutan, between 2000 and 2023.
- **India** and **Bangladesh** are among the countries that saw a **divergent gender trend** when it comes to employment.
 - **Women's employment ratio** in **India** increased by **1.4% points**. It was the **highest** for **Bangladesh** at **11.6% points**.
 - Women in **Bangladesh** are reportedly more **economically active** because of factors like the growth of its **garment industry**.

UNHRC Resolution for Intersex Rights

News Excerpt:

The **United Nations Human Rights Council (UNHRC)** voted to adopt a resolution designed to protect the rights of intersex people, the first initiative of its kind.

Key highlights:

- 24 countries voted in favour, twenty-three abstained, and none voted against the resolution, which was spearheaded by **Finland, South Africa, Chile** and **Australia**.
- The resolution calls on states to **combat discrimination, violence and harmful practices** against persons with innate variations in sex characteristics and address their root causes, as well as help intersex people realize the **enjoyment** of the **highest attainable standard** of physical and mental health.
- It also requests that the Office of the U.N. The High Commissioner for Human Rights **publishes** a report examining in detail **discriminatory laws and policies, acts of violence and harmful practices** against persons with innate variations in sex characteristics in all regions of the world.

UN Human Rights Council (UNHRC)

- UNHRC is an **intergovernmental body** within the United Nations system responsible for strengthening the **promotion and protection of human rights** worldwide, **addressing situations of human rights violations**, and **making**

recommendations on them.

- It meets at the **United Nations Office in Geneva (UNOG)**.

Intersex persons:

- Intersex persons are born with a wide range of natural variations in their sex characteristics that **don't fit the typical definition of male or female, including sexual anatomy, reproductive organs or chromosome patterns.**
- It's estimated that up to **1.7% of the population** is born with intersex traits, according to UN data.
- Working with civil society and intersex rights defenders, UNHRC has led several initiatives to promote the visibility and rights of intersex people and issued a **Technical Note in 2023** for States and other stakeholders on UN recommendations on the rights of intersex people and **good practices** in their implementation.

Resurgence of mumps in Kerala

News Excerpt:

Several states, including Maharashtra, Telangana, Kerala, and Andhra Pradesh, were reporting a **resurgence in measles cases.**

About Mumps:

- Mumps is a **viral and contagious infection** primarily transmitted by **respiratory secretions**, such as **droplets and saliva**, and **direct contact** with an infected person.

- Although mumps is common in children, it also occurs among pregnant women and can lead to complications.
- It is caused by **paramyxovirus, a member of the Rubulavirus family.**
- Mumps is a self-limiting, airborne viral disease and **presents as fever and headache in mostly children and adolescents, with painful swelling of the salivary glands (parotid glands) on both sides of the face.**
- There is no specific treatment, and the patient recovers **with rest and symptomatic management in about two weeks.**

Why is the mumps vaccine not part of the national immunization schedule?

- Despite being a **vaccine-preventable disease**, mumps has **never been a part of the Universal Immunisation Programme (UIP) because of the disease's no-mortality profile** and the perception that it has **low public health significance.**
- However, the **Indian Academy of Paediatrics (IAP)** has always maintained that the public health significance of mumps has been underestimated mainly because of the **poor documentation** of clinical cases, its **complications and patients' follow-up data**, and the **lack of published studies.**
- The Indian Academy of Paediatrics (IAP) advocates using **the MMR (Mumps-Measles-Rubella) vaccine** in **UIP.**

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ECONOMY

Decentralized Industrialization Model

News Excerpt:

Part of Tamil Nadu's economic success can be attributed to its **Decentralized Industrialization Model**, which involves cluster capitalists and grassroots entrepreneurs.

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About the News:

- The agricultural sector's contribution to Tamil Nadu's **Gross Value Added (GVA)** (which represents GDP minus product taxes and subsidies) and the **proportion of the employed labour force** are notably lower than the national average.

SECTOR-WISE SHARES OF GVA & WORKFORCE: 2022-23 (%)

	Gross Value Added*		Workforce	
	All-India	Tamil Nadu	All-India	Tamil Nadu
Agriculture	18.19	12.55	45.76	28.87
Industry**	18.80	22.69	12.27	17.88
Construction	8.84	11.70	13.03	18.04
Services	54.18	53.05	28.94	35.21

*At Basic Prices; ** Includes manufacturing, mining, electricity and utilities. GVA is GDP net of product taxes and subsidies. Source: National Accounts Statistics and Periodic Labour Force Survey.

- This **reduced reliance on agriculture is balanced by increased shares** of industry, services, and construction within the state's economy compared to the overall Indian scenario.

Economic Complexity in the Agriculture Sector:

- Gujarat surpasses Tamil Nadu in terms of industrialization**, with the factory sector contributing 43.4% to the state's Gross Value Added (GVA) and engaging 24.6% of its workforce, compared to Tamil Nadu's 22.7% and 17.9%, respectively.
- However, **Gujarat relies more heavily on agriculture**, accounting for a higher share of its GVA (15.9%) and workforce (41.8%) than Tamil Nadu's 12.6% and 28.9%, respectively. This indicates that **Gujarat's economy is less diversified and balanced than Tamil Nadu's**.

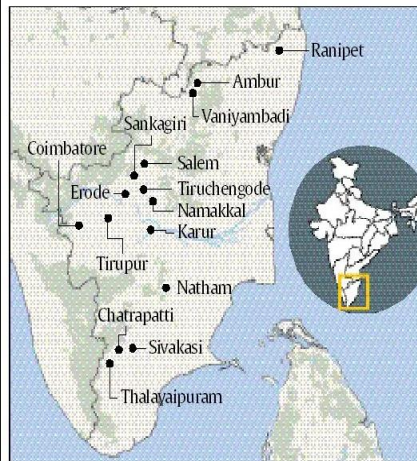
Cluster-based industrialization:

- Tamil Nadu boasts only a handful of large business conglomerates** with annual revenues exceeding Rs 15,000 crore.
- Rather than relying on the so-called Big Capital, **Tamil Nadu's economic transformation owes much to medium-scale businesses, with turnovers ranging from Rs 100 crore to Rs 5,000 crore**. The state's industrialization has been notably decentralized and

spread out, facilitated by the development of various clusters.

- Several of these clusters are extremely renowned, as shown in the figure. Many cluster towns serve as **hubs for multiple industries, offering employment opportunities to locals and reducing the dependence on agriculture**.

INDUSTRY CLUSTERS IN TAMIL NADU



TIRUPUR: Knitwear
COIMBATORE: Spinning mills, engineering industries
SIVAKASI: Safety matches, firecrackers, printing
KARUR: Coach-building, powerlooms
ERODE: Powerlooms, turmeric
SALEM: Powerlooms, home textiles
TIRUCHENGODE: Borewell drilling services
NAMAKKAL: Transportation, poultry
SANKAGIRI: Lorry fleet operators
AMBUR: Leather
VANIYAMBADI: Leather
RANIPET: Leather
CHATRAPATTI: Surgical cotton products
THALAVAIPURAM: Nighties, ladies innerwear
NATHAM: Cheap men's shirts

Entrepreneurship from below:

- Early industrialists** in Tamil Nadu were predominantly from the **Nattukottai Chettiars and Brahmin communities**. The Chettiars, known for their traditional banking and trading expertise, had extensive operations in Southeast Asia and Sri Lanka.
 - Disruptions caused by World War II and the Burmese nationalist movement prompted many to reinvest their wealth back home.
- However, the **recent decentralization of industrialization in Tamil Nadu has been driven by entrepreneurs from more ordinary peasant backgrounds** and provincial mercantile castes.
- What's remarkable about Tamil Nadu's entrepreneurial culture is its **inclusivity across diverse communities and industries**.

Way Forward:

- The grassroots or the **"Bottom-up" entrepreneurship seen in Tamil Nadu, coupled with substantial investments in public health and education, appears to play a significant role in the state's success in industrialization** and economic diversification beyond agriculture.
- Given the government's ongoing **'Make in India' initiative**, other states could potentially adopt the Tamil Nadu model and tailor it to their circumstances and relevant factors.

PEPPER IT WITH:

Industrilization, Bottom-up Entrepreneurship, GVA, Clusters

New UPI rules for access to prepaid instruments

News Excerpt:

The **Reserve Bank of India (RBI)** has proposed to allow individuals to make payments from **prepaid payment instruments (PPIs)** like digital wallets using UPI through any third-party app.

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Current practice:

- **UPI payments** from **bank accounts** can be made by **linking a bank account** through the **bank's UPI app** or **using any third-party UPI application**.
- However, the **same facility is not available for PPIs**.
 - **PPIs** can currently be used to make UPI transactions **only by** using the **application provided by the PPI issuer**.

What are Prepaid Payment Instruments?

- PPIs are instruments that facilitate the **purchase of goods and services**, conduct of **financial services**, enable **remittance facilities**, etc., against the **value stored** therein.
 - They include **wallets, cards, and vouchers, which can be used to purchase goods and services and make fund transfers**.
 - They **offer convenience and security, promoting digital transactions and financial inclusion**.
- **RBI** has introduced PPIs through powers conferred under the **Payment and Settlement Systems Act of 2007**.
- **Banks and non-banks can issue PPIs** after approval from the RBI.
- **PPIs operate independently of a user's bank account**.
 - When you use **PPIs** such as **wallets or cards** to make a payment, the **money is deducted from the associated prepaid account**.
 - Now, **wallets** can only be used to make **UPI payments** using **applications provided** by the **same PPI issuer (like PhonePe or PayTM)**.
- PPIs are **integral to modern digital economies, facilitating efficient, accessible monetary exchanges** without physical cash.

What are Closed System PPIs?

Closed System PPIs are issued by an entity to **facilitate the purchase of goods and services from that entity only**.

- These instruments **cannot be used** for payment or settlement **for third-party services or cash withdrawals**.
- The issuance or operation of such instruments is **not classified as a payment system requiring RBI approval/authorization** and is, therefore, **not regulated or supervised by RBI**.

- New proposed changes will also not apply to closed-system PPIs.

What are the proposed RBI rules for PPIs using UPIs?

- To provide more flexibility to PPI holders, RBI has proposed to permit the **linking of PPIs** through **third-party UPI applications**.
- This will enable the **PPI holders** to make **UPI payments** like **bank account holders**.
- This will allow **all Full KYC PPI Wallets** to become **interoperable**, just like bank accounts and RuPay credit cards, where such instruments can be linked to any UPI App.

How will it benefit the users?

- The RBI's decision to enable PPI linking through third-party UPI apps means users can now **integrate their prepaid wallets or cards** with these apps.
 - Customers will be able to **use any of their UPI apps** to access any of their **wallets**, even if the wallet and the UPI app belong to different companies.
- It will ensure **smooth transactions directly from their PPIs** without the prerequisite of transferring funds to a bank account first.

Unified Payments Interface (UPI):

- It is an **instant payment system** developed by the **National Payments Corporation of India (NPCI)**, an RBI-regulated entity.
- UPI is built over the **IMPS infrastructure** and allows you to transfer money between any two parties' bank accounts instantly.
- It powers **multiple bank accounts** into a **single mobile application** (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood.
- It also caters to the **"peer-to-peer"** collection request, which can be scheduled and paid as needed and convenient.
- **UPI was launched in 2016 by NPCI**.

Way Forward:

This strategic move aims to **boost the flexibility and efficiency of digital payments, simplifying transactions for consumers and expanding the range of services** accessible through their preferred payment methods.

PEPPER IT WITH:

RBI, UPI, NPCI, Payment and Settlement Systems Act of 2007

On Unemployment in Indian States

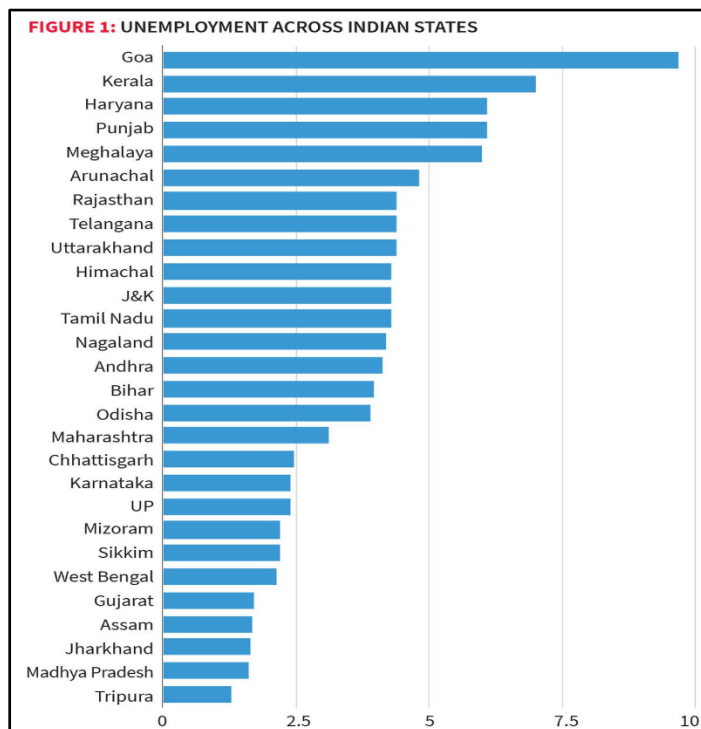
News Excerpt:

A recent report released by the **International Labour Organization (ILO) and the Institute for Human Development (IHD)** revealed that two out of every three unemployed individuals were young graduates, highlighting the need for urgent policy intervention.

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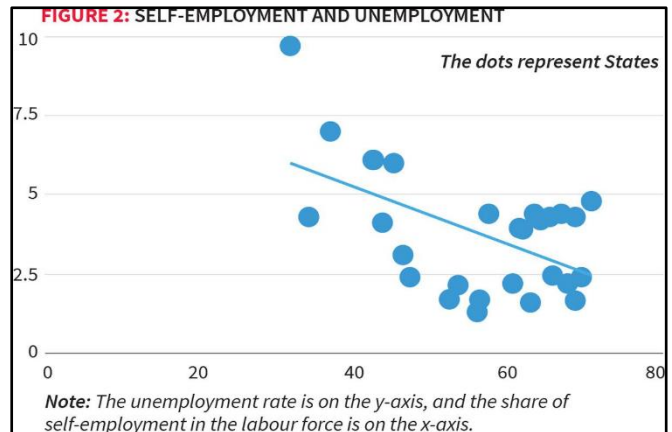
An analysis of unemployment:

- This analysis looks at unemployment in the major States of India — **excluding the Union Territories** — among individuals aged 15 and above as measured by the **Usual Principal and Subsidiary Status (UPSS)**, utilizing data from the **Periodic Labour Force Survey (PLFS) of 2022-23**.
- Goa has the highest unemployment rate (around 10%) among Indian states in 2022-23, over 3 times the national average (3.17%).
- Interestingly, four of the top **five States—Goa, Kerala, Haryana, and Punjab**—are comparatively richer states.
- Most northern and southern states (**except Karnataka**) have **unemployment rates higher than the national average**.
- Larger states **have lower rates**, like 3% in **Maharashtra**, **2.4% in Uttar Pradesh** and **1.6% in Madhya Pradesh**, **bringing down the national average**.
- However, this creates an issue:
 - Most States with **unemployment rates below the national average** also **have per capita incomes below the national average**, except **Maharashtra and Gujarat**.



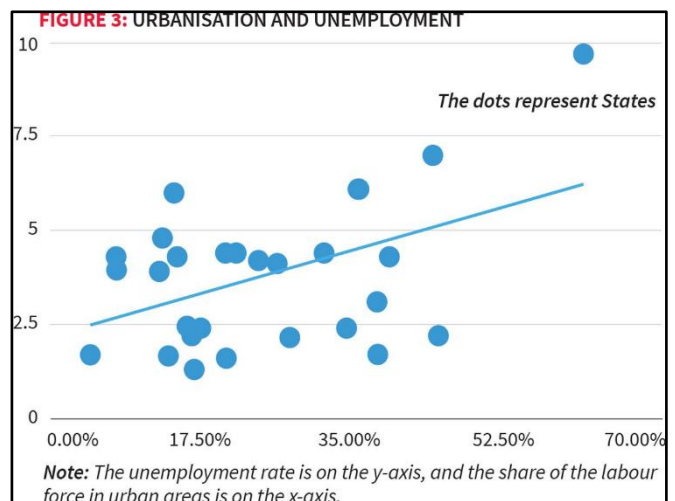
The determinants of unemployment:

- The trend line drawn through the data is **downward-sloping**, indicating that there exists a negative relationship between the two; in States where a large proportion of the labour force is engaged in self-employment, the unemployment rate is low.
 - States with large **informal sectors can absorb more job seekers**.
 - A large proportion of informal self-employment is accounted for by agriculture and the rural economy.
- There is a **positive relationship** between **urbanization**



(share of the urban labour force) and unemployment rates.

- Urbanized states have **smaller informal sectors to absorb job seekers compared to rural areas**.
- Urbanized States have **smaller agrarian and agrarian-dependent sectors**, which means they have a **relatively smaller source of informal jobs available**.



On education and employment:

- There is a clear **positive relationship** between **education levels (share of graduates in the labour force) and unemployment rates** across states.

- **Kerala**, for instance, has a highly educated labour force—30% of the labour force are graduates—but faces high unemployment.
- **Gujarat and Maharashtra** have relatively lower share of graduates in their labour force—roughly 14% and 20%, respectively.
 - Hence, they have lower unemployment rates in spite of being richer and more urbanized.

Potential reasons include:

- A mismatch between **skills acquired by graduates** and the requirements of **growing modern sectors**.
 - This necessitates a focus on teaching infrastructure and standards.
- Higher employment aspirations among graduates who seek high-wage jobs aligned with their qualifications, rather than informal work.
- As economies develop, they **experience a reduction in the role of agriculture**, an **increase in urbanization**, and **higher educational attainment levels**.
 - These structural changes put **upward pressure on unemployment rates** by reducing informal employment opportunities and increasing the supply of educated job seekers.

PEPPER IT WITH:
Unemployment, & its effects, UPSS, PLFS, NSO

Institute for Human Development (IHD):

- It was established in 1998 under the aegis of the **Indian Society of Labour Economics (ISLE)**.
- It is a **non-profit autonomous institution** that conducts studies on labour and employment, poverty, health and nutrition, education, and other aspects of human development.
- It **aims** to contribute towards building a society that fosters and values an inclusive social, economic and political system that is free from poverty and deprivations.

International Labour Organization (ILO):

- The ILO was created in **1919** as part of the **Treaty of Versailles**, which ended World War I.
- In **1946**, the ILO became a **specialised agency** of the **United Nations**.
- It is devoted to promoting **social justice** and internationally recognised **human and labour rights**, pursuing its founding mission that labour peace is essential to prosperity.
- At present, the ILO has 187 Members. India is a founder member of the Organisation.
- A unique feature of the ILO is its **tripartite character**.

Periodic Labour Force Survey (PLFS):

- **The National Sample Survey Office (NSSO)** brings out the Periodic Labour Force Survey (PLFS).
- **The objective of PLFS is primarily twofold:**

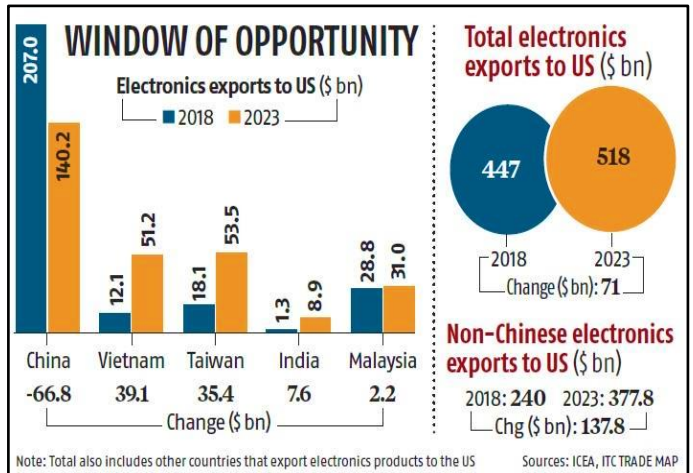
- To estimate the **key employment and unemployment indicators** (viz. **Worker Population Ratio, Labour Force Participation Rate, Unemployment Rate**) in the short time interval of three months for the urban areas only in the **'Current Weekly Status' (CWS)**.
- To estimate employment and unemployment indicators in both 'Usual Status' (ps+ss) and CWS in both **rural and urban areas annually**.
- The Periodic Labour Force Survey (PLFS) also estimates **Labour Force Participation Rates (LFPR), Worker Population Ratios (WPR), Unemployment Rates (UR), and other related statistics**.

India's Electronics trade amid declining Chinese export

News Excerpt:

India lags far behind global competitors like **Vietnam, Taiwan, and Mexico** in leveraging the US's tariff measures against China to boost electronics exports.

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U.S.-China trade war:

- In 2018, the US imposed a **25% punitive duty** on a range of **Chinese electronics** items.
- The trade duties led to a **sharp fall in Chinese electronics** exports to the US from **\$207 billion in 2018 to \$140.2 billion in 2019**.
- The fall created a vacuum as the **US is the largest importer of electronics** products globally.

India's Electronic Export to the USA:

- India's electronics exports to the US rose by **\$7.6 billion** in absolute terms between **2018 and 2023**, up at **\$8.9 billion from \$1.3 billion in 2018**.
- Despite this **seven-times increase**, it represented **only 5.5%** of the total **non-Chinese incremental electronics exports** to the US in this period.

Other global contenders:

The bulk of the shift of US trade has gone to **Vietnam, Taiwan, and Mexico:**

- **Vietnam**
 - Vietnam has been the **biggest beneficiary** at China's cost.
 - It saw an incremental increase in electronics exports worth **\$39.1 billion** between **2018** and **2023**. Vietnam's exports rose from **\$12.1 billion in 2018** to **\$51.2 billion in 2023**.
 - This figure represents a **28.3%** share of the total **non-Chinese incremental electronics exports** to the US in absolute terms during the same period.
- **Taiwan:**
 - Taiwan is also ahead of India, having grabbed a **25.6% share** of incremental exports, rising from **\$18.1 billion in 2018** to **\$53.5 billion** in 2023.
- **Mexico:**
 - **Mexico**, too, has seen a rise in incremental electronics exports to the US in absolute terms, representing **11.2% of non-Chinese exports**.

Challenges faced by Electronics manufacturing in India:

Infrastructure limitations	The cumbersome process of land acquisition & the absence of a plug-and-play model .
Supply Chain constraints	The lack of a robust electronic component ecosystem that requires components to be imported, which results in increased costs and time for the manufacturers.
Regulatory Environment	The lack of uniform implementation of initiatives as well as high tariff on electronics as compared to Asian peers such as Vietnam and Taiwan.
Lack of skilled workforce	Acute shortage of skilled labour is hurting their profitability with 35% defining the impact as "severe" .
Cost Competitiveness	Increase of GST rates on some items as well as less favourable subsidy structures in India. Unlike India, others provide Income Tax Holidays to make it more favourable.

Way Forward:

- The vision of a **'Self-Reliant India'** will only be realized if various sectors in manufacturing scale up their capabilities and technology adoption.
- The need of the hour is to build an environment that **fosters innovation, protects intellectual property, focuses on skill development, and builds infrastructure** that supports the **ecosystem**.
- Boosting **export-led electronic manufacturing** will make India's manufacturing **globally competitive**.

PEPPER IT WITH:
 Made in India, Plug and Play Model, Input Tariffs

- The **Production Linked Incentive (PLI)** scheme that is aimed at promoting domestic manufacturing is likely to give an aggressive push to ensure large multinational companies bring their global manufacturing and supply chain capabilities to India.
- India can also offer a mix of **incentives** to lure investors like others such as **tax breaks, dedicated free-trade or industrial zones, discounted utilities like water and electricity, free land**, and commitments to supply workers.

Reverse Flipping of Unicorns

News Excerpt:

The startup ecosystem in India is experiencing a notable **rise in reverse flipping**.

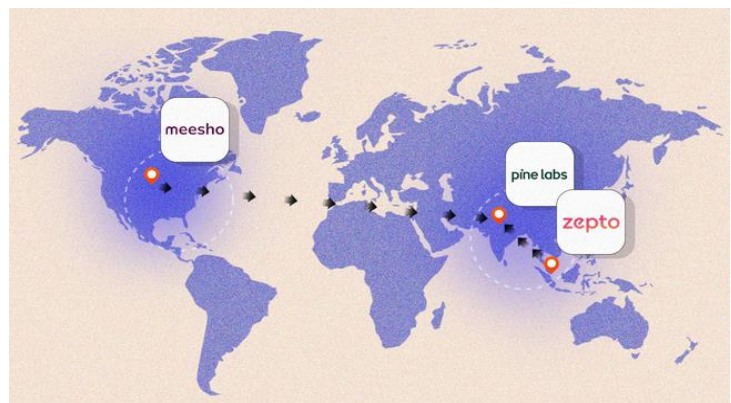
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About Reverse Flipping:

- **Reverse Flipping** is a term for the trend of overseas **startups shifting their domicile to India** and **listing on Indian stock exchanges**.
- Indian startups are now opting to reverse flip back into the country due to its **favourable economic policies, burgeoning domestic market, and growing investor confidence** in the country's startup ecosystem.
- At the time some of these companies were set up, quick and adequate funding was hard to come by locally.
 - As a result, many startups turned to **foreign investors**, which required them to set up holding companies overseas.

Recent Cases of Reverse-Flipping of Unicorns:

- Several high-profile startups have successfully executed reverse flipping to India, solidifying the country's position as a startup hub.



- **Walmart-owned PhonePe** moved its headquarters from **Singapore to India**, leveraging the country's vast user base and digital payment potential.
- **Pine Labs, Meesho, and Zepto** are the latest new-age companies looking to move headquarters to India.

How is Reverse-Flipping done?

- Structuring a reverse flip is not easy, and startups considering this journey must navigate a maze of regulations.
- Some popular methods include **share swaps and mergers**, which may also require **National Company Law Tribunal (NCLT) approval**.
- The **Economic Survey of 2022-23** acknowledged the **concept of reverse flipping** and has listed possible measures, such as
 - simplifying the processes for **tax holidays**,
 - **taxation of Employee Stock Ownership Plans (ESOPs)**,
 - **capital flows**,
 - **reducing layers of tax** to accelerate the reverse flipping process.

Why are startups opting to reverse flip?

- India is the **world's fifth-largest economy by GDP** and is expected to become the **third-largest economy by 2030**.
 - This growth is driven by several factors, including a **young population, rising urbanization, and increasing disposable income**.
 - This young population is also well-educated, which makes India an attractive market for overseas startups looking for a **skilled and talented workforce**.
 - The Indian capital market also provides overseas startups **access to a large pool of capital**.
- The listing process on the **Indian stock exchanges** is relatively cost-effective compared to many of the Western exchanges.
 - This makes it an attractive option for overseas startups with limited resources.

Longer Queue

Current base of homebound startups

SINGAPORE
Pine Labs, Zepto, Eruditus, Udaan

US
Meesho, Razorpay, Groww

PROS & CONS

Major tax payout is a concern for startups

But better valuation here provides impetus

- Another significant upside is the opportunity to tap into **the growing Indian consumer market**.
- Additionally, **overseas startups can find synergies with Indian companies**.
 - This can lead to **partnerships, joint ventures, and acquisitions**, which in turn help overseas startups expand their reach and operations in India.

Tax implications of reverse flipping:

- Companies opting to reverse flip **will have to pay taxes** in those markets where they are based or in India, depending on the route they choose.
- The **quantum** will depend on the company **valuation** and a **third-party audit**.
- Earlier, **Walmart** paid nearly **\$1 billion** in taxes to the Indian government during the separation of **PhonePe** from parent **Flipkart** and the return of its holding company to India.

Way Forward:

- Despite the potential benefits, structuring a reverse flip poses **challenges due to regulatory complexities, requiring startups to navigate intricate regulations and compliance requirements**.
- Additionally, startups must navigate exchange control regulations when repatriating funds or assets to India, ensuring adherence to all regulatory obligations.
- The **International Financial Services Centres Authority (IFSCA)** established an **expert committee** to devise a strategy for '**Onshoring Indian Innovation to GIFT IFSC**', aiming to make **GIFT City** a preferred destination for startups considering reverse flipping.
- The trend of reverse flipping is likely to continue in the coming years as many overseas startups look to capitalize on India's growth potential, bringing in new investment and jobs.

PEPPER IT WITH:
Unicorns, GIFT IFSC, NCLT.

Patents (Amendment) Rules, 2024

News Excerpt:

The Ministry of Commerce and Industry notified the **Patents (Amendment) Rules, 2024** to amend the Patents Rules, 2003.

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What is a Patent?

A Patent is a **statutory right for an invention** granted for a limited period to the patentee by the Government in exchange for full disclosure of his invention to **exclude** others from making, using, selling, or importing the **patented product or process** for producing that product for those purposes **without his consent**.

• Term of a patent in the Indian system

The term is 20 years from the date of filing of application. However, for applications filed under the national phase under the Patent Cooperation Treaty (PCT), the term of the patent will be 20 years from the international filing date accorded under the PCT.

• Act governs the patent system in India.

The patent system in India is governed by the **Patents Act of 1970**, as amended by the Patents (Amendment) Act of 2005 and the Patents Rules of 2003.

About Patent Rule 2024:

- These rules introduce several provisions **aimed at simplifying** the process of obtaining and managing patents, thereby facilitating a conducive environment for inventors and creators.
- It is expected to **accelerate the economic development** of the nation through science and technology.

Key Features of the New Patent Rule 2024:

- **Streamlining Pre-grant Opposition Rules:** The procedure to file and dispose of the Pre-grant representation by way of opposition under **Section 25(1)** has been further streamlined and made more explicit by providing ways to dispose of the representation and fixing fees to file such representation.
- **Reduction in Time Limits:** The time limit to furnish foreign application filing details in **Form 8** has been changed **from six months** from the date of filing of application to **three months** from the date of issuance of the first examination report.
- **Introduction of Certification of Inventorship:** A unique provision for the New '**Certificate of Inventorship**' has been introduced to acknowledge the contribution of inventors in the patented invention.
- **Decreased Time Restrictions:** The time restriction for submitting requests for examinations has been shortened **from 48 months to 31 months** from the date of application submission, whichever comes first, due to the rapid advancement of technology.
- **Reduction in Renewal Fees:** Renewal fees can now be reduced by 10% if paid in advance through electronic mode for at least four years.
- **Introduction of New Forms and Provisions:** New forms, such as **Form 31** for claiming benefits of the Grace period under **Section 31**, have been introduced.
- **Increased Patent Activity:** The amendments come amidst increased patent activity in India, with record-high patent applications and grants in recent years.
- **The frequency to file the statements of working of patents in Form 27 has been reduced** from once in a financial year to once in every three financial years.

PEPPER IT WITH:
Patents (Amendment) Rules, 2024. Types of Patents

New Electric Vehicle (EV) Policy

News Excerpt:

To promote the manufacturing of electric vehicles in India, the Union Government has approved a new **EV policy** that will pave the way for global EV manufacturers to manufacture locally.

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Objectives of the policy:

- The central goal of this policy is to **enable transitioning to localized production** of EVs in a commercially viable manner and plan as per local market conditions and demand.
- The move attempts to combine two goals - **localizing production and an annual EV car sale of 30% by 2030**.

Major provisions of the new EV Policy:

- Automakers are permitted to import a **maximum of 8,000 electric vehicles (EVs)** annually, priced at **\$35,000 or more**, with a reduced **import duty of 15%**.
 - **Presently**, India imposes **70% to 100% customs duty** on imported vehicles, depending on their value.
 - To qualify for this benefit, automakers must pledge to **invest a minimum of ₹4,150 crore (~\$500 million)** in **India** within the **next three years**.
- They are required to achieve a **50% Domestic Value Addition (DVA)** in vehicles manufactured in India **within five years**.
 - A localization level of **25%** by the **3rd year** and **50% by the 5th year** will have to be achieved.
- A maximum of 40,000 EVs can be imported under the scheme at not more than 8,000 units a year, provided the minimum investment made is \$800 million.
 - Carryover of unused annual import limits is permitted.
- The scheme will be administered by the **Ministry of Heavy Industries (MHI)**.

Impact on the domestic automakers:

- The new Electric Vehicle Policy is likely to **intensify competition** in the electric passenger vehicle (PV) segment but will benefit domestic auto component players due to its emphasis on localization.
- **Positive impact:**
 - The policy makes it lucrative for **global EV players** and **Indian Joint Ventures** with such players to expand sales and manufacture in India.
 - The policy is expected to benefit domestic auto component players who invest in **advanced technologies** that are currently not manufactured in India. It can help the **auto component sector absorb high-end technology** faster, as 50% localization is needed in five years.

- The new policy will also help the industry **benefit from economies of scale, lower production costs, reduced crude oil imports, lower trade deficit, reduced air pollution (particularly in cities), and a positive impact on health and the environment.**
- **Negative impacts:**
 - **Lowering duties would hit the domestic industry, and “the investment climate will get vitiated.”** India’s EV players required more **government support in the early growth stage of the industry.**
 - The entry of Tesla into the Indian market will lead to an increase in competitive intensity and the domestic players will have to step up their play in the electric vehicle segment.
 - Some **global OEMs** in the luxury space who have already introduced their EVs in India and are planning to localize **“may be at a disadvantage.”**
- Most Indian players are leading in the segments **below ₹29 lakhs** as of now, and hence this **policy benefit (from 15% import duty)** will likely be for **Original Equipment Manufacturers (OEMs) catering to consumers in the higher end of the market.**

Challenges in EV adoption in India:

- The Indian EV market, which consists of two and three-wheelers, passenger cars, and even light commercial vehicles, is plagued by **low-battery capacity** and **lower range** (when compared with EV models in the E.U., China, and the U.S.), with crucial parts/systems being imported.
- Lack of proper **charging infrastructure**, range anxiety, and a **limited number of products** in the affordable range due to **limited localization** are also major challenges with EV adoption in India.
- The Indian market has **relied heavily only on government incentives till now.** Therefore, global players face the challenge of delivering high-quality products at an accessible price point, along with dependable driving ranges and a robust charging infrastructure.
- Upscaling charging infrastructure is crucial to scale EV adoption.
 - According to the Confederation of Indian Industry (CII), India may require at least 13 lakh charging stations by 2030 to support **“aggressive EV uptake.”**
 - According to the **Ministry of Heavy Industries**, nine cities with a population of more than **4 million — Delhi, Mumbai, Pune, Ahmedabad, Surat, Bengaluru, Chennai, Hyderabad and Kolkata—** would each require **18,000 public charging stations by 2030.**

Impact of the policy on the Indian market and consumers:

- Indian customer expectations are very challenging and very price-sensitive. In the past, global players who entered the Indian market with products made for other countries were not successful.
 - So global players setting up shop in India must consider **local circumstances, like the environment, roads, driving behavior, and usage conditions.**
- The policy will push global OEMs to understand the Indian market in an accelerated fashion.
 - Global EV manufacturers are not only eyeing the Indian market but are also considering **making India a hub for exports.**
 - It is a **win-win scenario** for the **Indian consumer, the local EV ecosystem, and global OEMs.**
- The localization targets under the scheme would open **significant opportunities for the Indian EV ecosystem.**
 - Excluding chips, battery cells, and magnets, all other components like body parts, motors, and electric parts can be localized within three years, while other areas can be indigenized in the medium term including **BMS (battery management system)** which is mostly software driven.
 - Five years is a sufficiently long-time frame to achieve 50% localization.
- The policy will also **clarify how prospective manufacturers** can make long-term decisions.
- The reduction in custom duty on the import of completely built units for testing and market trials would help global players accelerate the development process with reduced risk.

Way Forward:

PEPPER IT WITH:
 Custom Duty,
 Localization, Battery
 Management System

- The policy attempts to pave the way for **global EV manufacturers to invest in India and to manufacture locally.**
- It will provide Indian consumers with **access to the latest technology** and **boost the Make in India initiative**, strengthening the **EV ecosystem** by promoting healthy competition among EV players.
- It would lead to **higher production, attaining economies of scale, and help reduce air pollution.**

RBI allows FIIs to invest in green bonds

News Excerpt:

In a significant move towards promoting India's green initiatives, the **Reserve Bank of India (RBI)** has

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allowed **Foreign Institutional Investors (FIIS)** to invest in **Sovereign Green Bonds (SGrBs)**.

Foreign Institutional Investor:

- A foreign institutional investor is an investor in a financial market outside its official home country.
- Foreign institutional investors can include **pension funds, investment banks, hedge funds, mutual funds, nation-states' sovereign wealth funds** etc.

Sovereign Green Bonds (SGrBs):

- Sovereign Green Bonds (SGrBs) are a type of **government bond** specifically earmarked to **finance environmentally sustainable projects**.
- By investing in SGrBs, investors **contribute directly to these green causes** while **still receiving financial returns** in the form of interest payments on their investment.
- **SGrBs yield lower interest** than conventional G-Secs, and the **amount foregone** by a bank by investing in them is called a "greenium".

Benefits of investing in SGrBs both for investors and for India's sustainability efforts:

- Promotes environmental sustainability.
- Still offers financial returns to investors.
- Funds can be utilized to support initiatives aligned with India's SDG goals.

How does this decision align with India's sustainability goals and green transition?

- Allowing FIIs to invest in India's green projects **widens the pool of capital available to fund the country's ambitious 2070 net zero goals** as pledged by the Prime Minister of India at **COP26 in Glasgow 2021**.
 - The decision will help in ensuring **50% of India's energy comes** from **non-fossil fuel-based** sources and **reduce the carbon intensity** of the **nation's economy by 45%**.
- By allowing foreign investors to invest in SGrBs, the RBI aims to **deepen the Climate Bonds Market** and **attract more funding for green projects in India**.
- These projects play a crucial role in **reducing the country's carbon footprint** and advancing its sustainability agenda.

What are the implications of the RBI's decision?

The RBI's decision to allow foreign investors in the IFSC to invest in Sovereign Green Bonds **carries several significant implications**.

- It **expands the investor base for SGrBs**, potentially attracting more funds for green projects in India.

- The RBI had issued **SGrBs worth ₹16,000 crore** in two tranches in **January** and **February 2023** with maturities in **2028 and 2033**.
- While in both instances, the **bonds were oversubscribed**, the main participants were domestic financial institutions and banks, narrowing the avenues from where the government could borrow.
- Moreover, these **green government securities (G-Secs)** were classified under the **Statutory Liquidity Ratio (SLR)**, a liquidity rate fixed by the RBI that financial institutions must maintain with themselves before they lend to their customers.
- It **deepens the Climate Bonds Market** by attracting a diverse range of investors interested in **environmentally sustainable investments**.
 - FIIs might also be looking to **gain green credentials** when such investments **may not be available in their home markets** and because India has successfully addressed **greenwashing fears** with the **Sovereign Green Bonds Framework** in late 2022.
- This move **promotes the growth of green finance in India** and supports the country's transition towards sustainability.
 - FIIs are also looking to diversify their pool of green investments, as there is considerable regulatory support, particularly in developed countries. **So, this is an opportunity for them to invest in India's green g-secs.**

PEPPER IT WITH:

Climate Bonds Market,
Foreign Institutional
Investors

PRE-SHOTS

Financial Services Institutions Bureau (FSIB)

News Excerpt:

FSIB, the **headhunter for directors of state-owned banks and financial institutions**, has recommended the name for the **new SIDBI head**.

About Financial Services Institutions Bureau:

- It's a **government body** set up under the **Department of Financial Services**.
- It replaced the **Bank Board Bureau (BBB)**, which had been declared an incompetent authority, and was put in place with the approval of the Appointments Committee of the Cabinet, headed by the **Prime Minister**.

Structure:

- The **Financial Services Institutions Bureau** is headed by a chairman, a central government nominee.
- The board comprises of:
 - The **Secretaries of the Department of Financial Services (DFS)**,
 - The **chairman of the Insurance Regulatory and Development Authority of India (IRDAI)**,
 - A **deputy governor of the RBI**.
- Additionally, it will have **three part-time members** who are experts in **banking** and three more from the **insurance sector**.

International Narcotics Control Board

News Excerpt:

India has been re-elected for a third term to the International Narcotics Control Board.

More about the news:

- **India was re-elected by secret ballot** for the third term for five years from **March 2025-2030**, getting the highest number of votes in the highly competitive election.

About the International Narcotics Control Board (INCB):

- Established in **1968**, it is the **independent and quasi-judicial monitoring body** for the implementation of the **United Nations international drug control conventions**.
- It consists of **13 members who are elected by the Economic and Social Council** and who serve in their personal capacity, not as government representatives.
- **Three members with medical, pharmacological or pharmaceutical experience** are elected from a list of persons nominated by the World Health Organization (WHO), and 10 members are elected from a list of persons nominated by Governments.
- According to information about its mandate, **INCB endeavours, in cooperation with governments**, to ensure that adequate supplies of drugs are available for medical and scientific use and that the diversion of drugs from licit sources to illicit channels does not occur.
- INCB also **monitors Governments' control over chemicals used** in the illicit manufacture of drugs and assists them in preventing the diversion of those chemicals into illicit traffic.

Rising raw material costs hits Indian plastic industry

News Excerpt:

Rising prices of raw materials could further **burden the Indian economy and lead to a hike in the prices of**

plastic goods, said an official of the **Plastics Export Promotion Council (PLEXCONCIL)**.

About the news:

- Raw materials used for manufacturing plastics, such as ethylene and propylene, are **primarily sourced from** countries with abundant petrochemical resources, such as **Russia, Iran, the United Arab Emirates, and Saudi Arabia**. These countries have significant oil and gas reserves, which are the primary sources of these raw materials.
- Being **import-dependent and facing a 20% rise in raw material prices**, Indian products are struggling to remain globally competitive, especially at a time when India is seen as an alternative to China.

About PLEXCONCIL:

- The **Plastics Export Promotion Council (PLEXCONCIL)** was established by the **Ministry of Commerce & Industry**, Department of Commerce, Government of India on 15th July 1955.
- It is the **apex body of the plastics industry in India** and represents over 3,000 exporters who manufacture or export plastics products ranging from raw materials to semi-finished and finished items.
- It is a **non-profit organization** registered under **section 25** of the **Companies Act, 1956** (or section 8 of the Companies Act, 2013). It was one of several **Export Promotion Councils (EPCs)** launched by the Government to project India's image abroad as a reliable supplier of high-quality products to boost the country's exports.
- Products from the Indian plastics industry are **exported to over 200 countries** worldwide including top destinations along with **China** and the **United States of America**.

Digital India Trust Agency

News Excerpt:

The Reserve Bank of India (RBI) is considering setting up a **Digital India Trust Agency (DIGITA)** to combat the growing menace of **illegal lending apps** in the country.

About the news:

- The proposed agency is **part of RBI's efforts to curb growing cyber fraud** and to **stop the mushrooming of illegal lending apps**.
- This proposed agency would **target the rise of illegal loan apps** by **verifying** legitimate ones and creating a public registry.
- Apps **not carrying the 'verified' signature** of DIGITA will be considered **unauthorized** for the purpose of law enforcement.

- This verification process would ensure **apps comply** with regulations and **operate ethically**.
- Only verified apps would receive a "**DIGITA-approved**" seal, making them **easily identifiable for borrowers**.
- It would also help **instil transparency and accountability** within the growing **digital lending sector**, which has witnessed a surge in fraudulent activities and unscrupulous practices in recent times.

Related:

- RBI is already working with the government to tackle the issue of illegal loan apps.
- It has shared a list of **442 digital lending** apps with the **IT Ministry** to **whitelist** with **Google**.
- **Google** has updated its **policy**, and only those apps, that are published by the **RBI's regulated entities (REs)** or those working in partnership with REs, are allowed.
- Google has **removed over 2,200 digital lending apps (DLAs)** from its app store from September 2022 to August 2023.

RBI modifies AIF norms

News Excerpt:

The **Reserve Bank of India (RBI)** relaxed the norms it announced on investments in **Alternative Investment Funds (AIFs)** last year.

Key points of modified AIF's Norms:

- RBI said that its **regulated entities (REs)** will now be required to make provisioning only to the extent of the amount invested by the AIF scheme in the debtor company and not the entire investment.
- Equity shares of the **debtor company** are **excluded** from the definition of "**downstream investments**," allowing banks and NBFCs to invest in AIFs even if the scheme has equity investments in the company to which they have already lent.
 - The term '**debtor company**' has been defined to include any company to which the RE currently has or previously had a loan or investment exposure anytime during the preceding 12 months.
- The above instructions have been issued in exercise of the powers conferred by Sections 21 and 35A of the **Banking Regulation Act, 1949**, read with **Section 56 of the Act** *ibid*; Chapter IIIB of the **Reserve Bank of India Act, 1934** and Sections 30A, 32 and 33 of the **National Housing Bank Act, 1987**.
- These instructions are applicable to all -
 - **Commercial banks** (including Small Finance Banks, Local Area Banks and Regional Rural Banks)
 - **Primary (Urban) Co-operative Banks/State Co-operative Banks/ Central Co-operative Banks**

- **All-India Financial Institutions**
- **Non-Banking Financial Companies** (including Housing Finance Companies)

About AIF:

- Alternative Investment Fund, or AIF, means any fund established or incorporated in India that is a privately pooled investment vehicle that collects funds from sophisticated investors, whether Indian or foreign and invests them in accordance with a defined investment policy for the benefit of its investors.

New solar power rules

News Excerpt:

The Ministry of New and Renewable Energy (MNRE) has brought into effect **the Approved Models and Manufacturers (AMM) of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019** to incentivize India's solar module manufacturing industry.

About the executive order:

This order was first issued by the MNRE in 2019 and requires makers of solar modules to **voluntarily** submit to an inspection of their manufacturing facilities by the **National Institute of Solar Energy**, a Ministry-affiliated body.

- Being on the list as an '**approved**' manufacturing facility certifies a company **complies with the BIS standards** as a legitimate manufacturer of solar panels and not a mere importer or assembler.

Advantage:

The major advantage of being on the list is the **eligibility to compete for tenders** issued by the government for its flagship solar energy programs.

- **PM Surya Ghar Muft Bijli Yojana:** The scheme envisages subsidizing rooftop solar installations for nearly one crore households in the country, involving an estimated subsidy of ₹75,000 crore. However, only domestic manufacturers certified as part of the **Approved Models and Manufacturers (AMM) list** would be eligible.
- **PM KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan)** aims to provide solar pump sets and rural electrification. For manufacturers to be eligible to provide components under this scheme, they have to be certified as **genuine local manufacturers**.
- The government also has a ₹24,000 crore scheme, called the **Production Linked Incentive Scheme**, that is targeted at incentivizing domestic manufacture of solar panels and their components. Eligibility for this scheme, too, requires one to be a **bona fide local manufacturer**.

RBI allows gold hedging in overseas markets

News Excerpt:

The Reserve Bank of India (RBI) has introduced a significant policy amendment, **enabling residents to diversify their hedging strategies** against **gold price volatility** in overseas markets.

Hedging:

- It refers to the practice of **reducing or mitigating the risk of adverse price fluctuations in assets**.
- It involves taking a position in a financial instrument that is **opposite to an existing or anticipated position** in another asset, to offset potential losses.

Over-the-Counter (OTC) Derivative:

- It is a **financial contract that does not trade on an asset exchange** and which can be tailored to each party's needs.

About the news:

- With growing **geopolitical tension** in the **Middle East**, gold prices have skyrocketed.
- RBI has now decided to give resident entities more **flexibility** in hedging their **exposures to gold price risk**.
 - Resident entities are now allowed to do so with **OTC derivatives** in the **IFSC** in addition to derivatives on the **IFSC exchanges**, effective immediately.
 - These derivatives can be used **alongside the existing exchange-traded derivatives**, adhering to the stringent guidelines outlined by RBI.
 - The updated hedging regulations **will take effect immediately**.
- Previously, as per the RBI's **December 2022 directive**, Indian entities were **restricted** to managing their gold price risk exclusively through exchanges recognized by the **International Financial Services Centres Authority (IFSCA)** in the **International Financial Services Centre (IFSC)**.
- The move **aims** to ensure that entities have a **broader range of strategies** at their disposal to **manage potential losses** caused by fluctuations in gold prices.

Omnibus Framework for SROs in Regulated Entities

News Excerpt:

The Reserve Bank of India (RBI) has finalized the Omnibus Framework for recognizing **Self-Regulatory Organisations (SRO)** for its **Regulated Entities**.

Key frameworks for SROs in regulated entities:

- Each **regulated entity sector (RE)**, including fintechs, will have a **separate SRO**.
 - With the finalization of the framework, the RBI will receive applications from various entities seeking to get SRO status.
- The omnibus framework contains **broad parameters viz., objectives, responsibilities, eligibility criteria, governance standards, application process, and other basic conditions for grant of recognition**, which will be common for any SRO proposed to be recognized by the Reserve Bank.
- Other sector-specific guidelines, such as the **number of SROs, membership, etc.**, will be **issued separately by the respective departments of the Reserve Bank** wherever a sectoral SRO is intended to be set up.

Need for an Industry Standard:

- To develop better industry standards for self-regulation of the industry.
- Growth of the REs in terms of number as well as scale of operations.
- Increase in adoption of innovative technologies and enhanced customer outreach.

About Self-Regulatory Organisations (SRO):

- An SRO is expected to **operate with credibility, objectivity, and responsibility under the oversight of the regulator to improve regulatory compliance** for the healthy and sustainable development of the sector to which it caters.
- The SRO **aims to work transparently, professionally, and independently, increasing trust in the sector's integrity**.
- **Compliance with the highest governance standards** is a prerequisite for an effective SRO.
- The **SRO directors need to fulfil the 'fit and proper' criteria as framed by the Board on an ongoing basis**, have relevant expertise/experience, and be persons of high integrity.
 - **At least one-third of the members of the Board of Directors**, including the chairperson, shall be independent and without any active association with the category/class of REs for which the SRO is established.
 - The **Board will ensure that the SRO has adequately skilled human resources** and robust technical capability to monitor the sector.
 - The Board will follow transparent practices to establish its governance processes.
- The **process of seeking recognition as an SRO will be robust** to ensure adherence to a set of stringent parameters essential for the critical role it is expected to play.

AGRICULTURE

Cocoa Production in West Africa

News Excerpt:

A shortage of cocoa beans has led to a near shutdown of processing plants in **Ivory Coast and Ghana**, the two countries responsible for **60% of global production**.

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Demand & Supply of Cocoa Production:

- The global market for chocolate and chocolate products is on the rise. It is projected to **grow faster than 4% annually** over the next few years.
- This growing demand for cocoa underscores the urgency of **addressing the intertwined issues that relate to the industry's sustainability**.
- Three factors are at play.
 - Environmental factor:** The impact of **the El Nino** weather phenomenon has caused drier weather in West Africa. It has contributed to problems on farms, such as the swollen shoot virus disease. As a result, Ghana has lost harvests from nearly 500,000 hectares of land in recent years.
 - The economic cycle of cocoa production** refers to the inherent **patterns of expansion and contraction in cocoa farming**. For example, as cocoa trees age, they become susceptible to diseases, requiring high maintenance costs.
 - Historically, farmers have tended to abandon old farms and start anew in fresh forests.
 - Unfortunately, finding new forests is now increasingly difficult. Perhaps the most severe issue of all is the **lack of fair compensation** for sustainable cocoa production.
 - The human factor** includes challenges such as **illegal mining**, which has overtaken numerous farms in Ghana. Sometimes, farmers lease their land to illegal miners in exchange for payment. These mining activities **degrade the quality of the land**, making it unsuitable for cocoa cultivation.

How have cocoa farmers and cocoa-producing countries' economies been affected?

- At the farm level**, although the rise in prices may initially appear **beneficial to farmers but, a decrease in output leads** to fewer harvests on average, which means that, overall, farmers are not earning more.
 - This issue is compounded by **recent economic challenges in West Africa**, such as **high inflation and currency devaluation**, particularly in Ghana. **These factors have resulted in farmers becoming poorer**.
- Another impact of the output decline is a **reduction in local processing**.

- Major African processing facilities in Ivory Coast and Ghana have either ceased operations or reduced their processing capacity because they cannot afford to purchase beans.
- This likely means that **chocolate prices worldwide will surge**. This, in turn, adversely affects the local production units that have been emerging in recent years.
- However, the bargaining power of West African cocoa-producing countries seems to have increased.

Way Forward:

- Continuing to cultivate cocoa under current conditions is **unsustainable**.
- Some companies produce **cocoa-free chocolate, using technology to transform ingredients such as oats and sunflower seeds** into substitutes for cocoa mass and butter.
- Overall, this is **beneficial** for everyone.
 - The demand for cocoa has resulted in mass deforestation and significant carbon emissions, issues that are likely to worsen due to **climate change**.
 - Moreover, the push for cultivation has led to various forms of **labour abuses**.
- Exploring cocoa alternatives is certainly part of the solution.**

PEPPER IT WITH:

Africa and its industries, El-Nino phenomenon, Illegal Mining

About Cocoa:

- Cocoa is the **dried and partially fermented fatty seed** of the cacao tree from which **chocolate** is made.
- The word cocoa is also used to refer to **cocoa powder**, the dry powder made by grinding cocoa seeds and removing the cocoa butter from the dark, bitter cocoa solids.
- While bean products are known by different names, typically, cocoa is considered the solids of the **cacao seed (bean)**, cocoa butter is the fat component, and chocolate is the combination of the solids and the fat.

Condition of Production for Cocoa:

- Cocoa can be grown up to **300 m** above mean sea level.
- It requires a minimum of **90-100 mm rainfall** per month, with an annual rainfall of **1500-2000 mm**.
- The plants need an equitable climate with well-distributed rainfall. If dry periods are prolonged, irrigation scheduling is necessary.
- The temperature range of **15°-39°C** with an optimum of **25°C** is considered ideal.

Soil for Cocoa:

- Cocoa requires deep and well-drained soils.
- The majority of the area under Cocoa cultivation is on clay loam and sandy loam soil.
- It grows well in the **pH range of 6.5 to 7.0.**

Shade Requirement:

- Cocoa evolved as an under-storey crop in the Amazonian forests.
- Commercial cultivation of cocoa can be done on plantations where 50 per cent of light is ideally available.

Major producing Region:

- Africa is the world's leading producer of cocoa, with **Côte d'Ivoire and Ghana** being the top two producers.
- Other major producing regions include:
 - **Africa:** Cameroon, Nigeria
 - **Southeast Asia:** Indonesia, Malaysia
 - **Latin America:** Ecuador, Brazil, Peru
- In India, Cocoa is being cultivated in the States of **Kerala, Karnataka, Andhra Pradesh and Tamil Nadu. Andhra Pradesh** ranks first in area with 39,714 ha and production of 10,903 MT.

Paira Rice Cropping System

News Excerpt:

Odisha is capitalizing on the Paira Rice Cropping technique to promote climate-resilient agriculture and nutrition sensitivity in the state.

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What is the Paira Rice Cropping System?

- Traditionally, coastal areas of the state have practised the Paira cropping system, where pulse crops were sown in standing paddy fields prior to harvest, utilizing available moisture and requiring **minimal intervention and cost.** However, climate change has dwindled this conservation agricultural practice in recent years.
- This practice **saves time and money (to be spent on land preparation, etc.) and utilizes residual fertility.** This practice is common in both upland and lowland rice cultures. It is also known as **Relay or Utera cropping.**

The case of Odisha:

- Odisha has a cultivable area of over 6.18 million hectares and is endowed with 10 agro-climatic zones. The state **predominantly relies on rice cultivation** to meet the food demands of its population.
- The area under rice crops accounts for about **60 per cent** of the total sown area during the **Kharif season.** On the other hand, pulse crops cover about **50 per cent of the total area during the Rabi season.**

- However, **limited irrigation facilities** during the Rabi season have constrained the expansion of crop production.
- Cultivation of **short-duration pulse, oilseed crops in rice fallow** is helping maximize land use efficiency, boost farmers' income, and promote regenerative agriculture.
- The **residual moisture** left in the soil at rice harvest is often sufficient to raise short-duration pulses and oilseed crops. This is an efficient way of utilizing resources for **sustainable crop intensification and boosting land productivity.**
- **Rice fallow, or uncropped land left after harvest, is a major agricultural issue in eastern India.** However, introducing technologies and crops with tailored agronomy based on landscape suitability helps turn it into an opportunity. It also helps **farm income and ensures food and nutritional security.**
- The state government implemented the comprehensive project on rice fallow management for the first time during the 2022-23 Rabi season, achieving about **70,000 hectares.**
 - Taking a cue from its success, during the 2023-24 Rabi season, the programme has been scaled up to **382,000 hectares** against the target of 400,000. The scheme is being implemented in all 30 districts of the state.
- **Eight crops, including green gram, black gram, field pea, Bengal gram, grass pea, lentil, mustard and sesamum, have been targeted under the scheme.** Local varieties of green gram have shown great potential.

Promoting rice fallow management:

- The rice fallow management initiative is a simple and effective scientific approach that can potentially improve **soil health and climate resilience** of agri-food systems.
- The rice fallow management approach helps enhance crop coverage, reduce soil degradation, increase soil nutrients through a crop systems approach, improve **nutrition security through the consumption of pulses** and other crops, and, above all, **effectively use the region's natural resources.**
- Rice fallow management is the **largest regenerative crop demonstration activity** in the entire country. It will set a milestone in regenerative agriculture and a precedent for sustainable crop management practices nationwide.

Access to eco-friendly inputs:

- Central to the success of the rice fallow initiative is incorporating a diverse range of eco-friendly agri-inputs, **including bio-fertilizers, bio-pesticides and integrated pest management techniques** such as

light traps, pheromone traps and blue and yellow sticky traps. These measures promote **natural pest control**, reduce reliance on chemical pesticides and enhance overall ecosystem health.

- In addition to **pest management strategies**, the programme emphasizes the importance of balanced nutrient management by applying micronutrients.
- Addressing the **issue of soil acidity**, which is a major stumbling block to improving the productivity of non-paddy crops, **dolomitic limestone** is being provided to farmers for the amelioration of acid soils.

PEPPER IT WITH:

Climate Resilient
Agriculture, Relay
Cropping, Soil Acidity

CDP-SURAKSHA

News Excerpt:

The government launched a new platform that will allow instant disbursement of subsidies to **horticulture farmers** in their bank accounts by utilizing the **e-RUPI voucher** as part of the **Cluster Development Programme (CDP)**.

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About CDP-SURAKSHA

- CDP-SURAKSHA, a digital platform, stands for "**System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance.**"
- It facilitates the instantaneous transfer of subsidies to farmers' bank accounts using **e-RUPI vouchers from the National Payments Corporation of India (NPCI)**.
- This platform integrates various features, including database linkage **with PM-KISAN, cloud-based server space provided by NIC, UIDAI validation, eRUPI integration, local government directory (LGD), content management system, geotagging, and geo-fencing.**
- This initiative aims to **boost the growth of India's horticulture sector**, which accounts for nearly **one-third of the agricultural gross value addition (GVA)** and significantly contributes to the economy.
- Over the years, the **total production** of horticulture crops has considerably increased, from **240.53 million tonnes in 2010-11 to 334.60 million tonnes in 2020-21.**

How does the CDP-SURAKSHA work:

- The platform **provides access to farmers, vendors, implementing agencies (IA), cluster development agencies (CDAs), and officials of the National Horticulture Board (NHB).**

- A **farmer can log in using their mobile number and place an order** for planting materials such as seeds, seedlings, and plants based on their requirements.
- Once the **farmer submits their demand, the system prompts them to contribute their share of the planting material cost.**
- The **government subsidy amount is automatically displayed on the screen.** Upon the **farmer's payment, an e-RUPI voucher is generated**, which the vendor receives to supply the requested planting material.
- **Upon delivery, the farmer verifies receipt through geotagged photos and videos of their field.** Only after verification does the IA release payment to the vendor against the e-RUPI voucher.
- The **vendor uploads the invoice on the platform. The IA collects all documents and shares them with the CDA for subsidy release**, after which the subsidy is disbursed to the IA.
- It's worth noting that the farmer can avail of the subsidy at the initial stage when placing the order for planting material through the platform.

About e-RUPI:

- The CDP-SURAKSHA platform utilizes **e-RUPI vouchers provided by the NPCI, which are one-time payment mechanisms redeemable without the need for cards, digital payment apps, or Internet banking access.**
 - These vouchers **can be shared with beneficiaries via SMS or QR code** for specific purposes or activities.
- The new system **differs from the old one in that, previously, farmers had to purchase planting materials themselves and then approach officials for subsidy release. With CDP-SURAKSHA, subsidies are provided upfront to farmers when they purchase planting material.** Vendors supplying the material only receive payment after farmers verify delivery.

What is the Cluster Development Program (CDP)?

- It is a **key component of the central sector scheme managed by the National Horticulture Board (NHB).**
 - Its primary objective is to **capitalize on the geographical specialization of horticulture clusters and promote integrated, market-led development across various stages of production.**
- Currently, **55 horticulture clusters have been identified, with 12 selected for pilot projects.** These clusters are at different developmental stages. Additionally, plans are underway for four more clusters, including **a floriculture cluster in West Bengal,**

coconut clusters in Kerala and Tamil Nadu, and white onion clusters in Gujarat.

- Each cluster will have both an implementing agency and a cluster development agency (CDA).
- The government aims to cover approximately 9 lakh hectares of area across all 55 clusters, benefiting around 10 lakh farmers.
- The initiative is expected to attract private investment of Rs 8,250 crore, supplemented by government assistance tailored to the cluster's size. This assistance ranges up to Rs 25 crore for mini clusters (up to 5,000 ha), up to Rs 50 crore for medium clusters (5,000 to 15,000 ha), and up to Rs 100 crore for mega clusters (over 15,000 ha).

Way Forward:

- The CDP-SURAKSHA platform and the Cluster Development Program represent a transformative effort to modernize and revitalize India's horticulture sector.
- India needs to combine digital innovation, targeted subsidy disbursement, and strategic partnerships to unlock the sector's vast potential and drive economic prosperity and sustainable agricultural development.

PEPPER IT WITH:

National Horticulture Board, NPCI, PM-KISAN

PRE-SHOTS

Mushk budiji - Indigenous Kashmiri rice

News Excerpt:

The Kashmir Himalayas are known for cultivating Mushk budiji, an indigenous rice variety distinguished by its rich aroma and unique taste.

About the Mushk budiji rice:

- Scientists at the Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), Srinagar, reported that altitude and temperature play an important role in developing this aroma.
- A recent study in Nature Scientific Reports identified 35 aromatic compounds at altitudes between 5,000 and 7,000 feet across the valley.
 - Of these, the concentration of aldehydes ranged from 6.33% to 29.09% and alcohols from 0.47% to 30.34%.
- Due to various factors, Mushk budiji was on the verge of extinction. Chief among them was the prevalence of rice blast disease, its low yield, and lack of profitability.
- Scientists at SKUAST studied selected locations on the flavour profile of Mushk budiji using gas chromatography-mass spectroscopy (GC-MS) and

an 'electronic nose' to revive the crop.

The Gas chromatography-mass spectroscopy (GC-MS) and an 'electronic nose.'

- GC-MS is an analytical method used to reveal the presence of volatile compounds in organic mixtures extracted from geological, environmental, and biological samples.
- The e-nose is a tool fitted with various sensors and an artificial intelligence (AI) component; it assesses the flavour attributes of rice samples.

Advantage for farmers:

- Aromatic rice has considerable value worldwide for its distinct flavour, fragrance, and quality, its potential to enhance dining experiences, and its appeal to health-conscious consumers.
- Mushk budiji's export potential could be maximized by cultivating it in places where the environmental conditions cause the variety's flavour compounds to be expressed the most.
- Together with "innovative packaging" to "improve the appeal of these rice varieties in the international market", their findings could "pave the way for significant economic growth in the agricultural sector."

Krishi Integrated Command and Control Centre

News Excerpt:

The Agriculture Minister inaugurated a Krishi Integrated Command and Control Centre (ICCC), a big-screen dashboard of all digital innovations in the sector.

What is the Krishi ICCC?

- It is a tech-based solution involving multiple IT applications and platforms.
- The integrated visualization of the data will help make informed decisions.
- The centre is housed in the Ministry of Agriculture & Farmers' Welfare, which is responsible for legislation, policy formation, and the implementation of initiatives in the agriculture sector.
- It uses state-of-the-art technologies such as artificial intelligence, remote sensing, and Geographic Information Systems (GIS) to collect and process large amounts of granular data.
- It uses platforms, including the Krishi Decision Support System (DSS), to collect micro-level data, process it, and present the macro picture.
- It can also generate customized farmer-specific advisories through an AI machine learning-based system.

- It will identify a farmer through his/ her mobile number or Aadhaar and **match it with the farmer's field information obtained through:**
 - Land records
 - Historical crop sowing information from the crop registry,
 - Weather data from IMD, etc.
- It will then generate a customized advisory in the **farmer's local language.**
- The system will use the **Bhashini platform**, which allows translation into **several Indian languages.**

Farmer's Advisory	Drought Actions	Crop Diversification	Farm Data Repository
<ul style="list-style-type: none"> • GIS-based soil carbon mapping when visualised with weather-related data from IMD, will allow a customised and authentic advisory to be sent to the farmer about the type of crops that can be grown. 	<ul style="list-style-type: none"> • An increase or decrease in the yield from a specific region (as per GCES data) can be correlated with weather, rainfall visualised through the Drought Portal, enabling the administration to understand better. 	<ul style="list-style-type: none"> • An analysis of crop diversification maps, together with field variability for paddy, will enable decision-makers identify areas with scope for diversified cropping. 	<ul style="list-style-type: none"> • Krishi Decision Support System (K-DSS), a platform under development, will act as an agriculture data repository. will help in evidence-based, efficient, decision-making, and help prepare customised advisories.

Figure: Practical Applications of ICC

Visual input and output:

- **Input: Geospatial information is received from multiple sources**, including:
 - Remote sensing
 - **Plot-level data** received through **soil surveys**
 - Weather data from the **India Meteorological Department (IMD)**
 - Sowing data from the **Digital Crop Survey**
 - Farmer and farm-related data from **Krishi Mapper**
 - An application for **geo-fencing** and **geotagging of land**
 - Market intelligence information from the **Unified Portal for Agricultural Statistics (UPAg)**;
 - Yield estimation data from the **General Crop Estimation Survey (GCES).**
- **Output: Relevant trends and estimates on crop yields, production, drought situation, and cropping patterns** (geographic region-wise and year-wise) in **map, timeline, and drill-down views.**

New dwarf coconut and coca varieties

News Excerpt:

The **Ministry of Agriculture and Farmers Welfare** released a new dwarf coconut variety named '**Kalpa Suvarna**' and **two new hybrid cocoa varieties** developed by the **Central Plantation Crops Research Institute (CPCRI).**

About the newly developed varieties:

- **The Kalpa Suvarna variety** is ideal for tender coconut and copra production.
 - The variety starts blooming 30-36 months after planting. Its fruits are **large-sized, oblong, and green in colour.**
 - Its tender nut water content is 431 ml, the copra content is around 186 grams, and the oil content is 64.5%.
 - Under good management, the variety yields 108 to 130 nuts per palm annually. It is recommended for cultivation in Karnataka and Kerala.
- **Coca varieties**
 - The newly released coca varieties, **VTL CH I and VTL CH II**, have **high fat and nutrient content.**
 - **The VTL CH I** is a high-yielder and **can be cultivated as an intercrop** in areca nut and coconut plantations.
 - It suits traditional **Karnataka and Kerala belts, Tamil Nadu, and Andhra Pradesh.**
 - **The VTL CH II** is also a high-yielder. It is tolerant of black pod rot, which is common in high-rainfall regions.
 - It is **suitable for Karnataka and Kerala** and will also be released for **Gujarat and Tamil Nadu.**

About CPCRI:

- It was established in 1970 as **one of the agricultural research institutes** in the National Agricultural Research System (NARS) **under the Indian Council of Agricultural Research (ICAR).**
- At its establishment, the institute was **mandated** to undertake research on coconut, areca nut, cocoa, cashew, oil palm, and spices.
- **The research on cashews, oil palm, and spices was later delinked from CPCRI to form separate institutes.**
- In 2023, a new mandate crop, **Palmyra Palm**, was **added.**
- CPCRI Headquarters is located in the **Kasaragod district of Kerala.**

INTERNATIONAL RELATIONS

Iran's drone attack on Israel

News Excerpt:

Iran has counter-attacked **Israel** after it bombed its consulate in Damascus, Syria, sending waves of tensions in West Asia.

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Background to the present Israel-Iran conflict:

- Earlier, an attack on an **Iranian diplomatic building in Syria** led to the deaths of several senior Iranian military commanders.
- **Iran blamed Israel** for carrying out the airstrike on the building and threatened retaliation.
- Israel has also accused Iran of **funding Hamas** and supplying weapons for the **October 7 attack on its people**.

Iran's attack on Israel:

- Iran has launched a concerted **missile and drone attack against Israel**. According to the Israeli military, around **300 drones and missiles were fired**.
- Some of these projectiles were also fired from **Iraq, Syria, Yemen, and Lebanon**, according to America's defence department.
- **Israel**, with the support of the **US** and the **UK**, took down a number of the weapons fired, minimizing casualties.

Iran-Israel Ties:

- The **Iran-Israel** relationship **has not always been as fraught** as it is today. **Iran was one of the first countries in the region to recognize Israel** after its **formation in 1948**. It was only after **1979** that their diplomatic ties ended.
- A religious state was established in Iran after the **Shah** was overthrown in the **1979 Islamic Revolution**. The regime's view of Israel changed, and it was seen as an **occupier of Palestinian land**.
- While Israel and Iran have **never engaged in direct military confrontation**, both have attempted to **inflict damage** on the other through **proxies** and **limited strategic attacks**. **Israel has attacked**

Iranian nuclear facilities from time to time.

- **Iran, meanwhile**, is seen as responsible for **funding and supporting** several **militant groups** in the region that are anti-Israel and anti-US, such as **Hezbollah in Lebanon** and **Hamas in the Gaza Strip**.

Impact of Iran-Israel conflict on the World:

The Iran-Israel conflict has significant implications not only for the two countries involved but also for the **broader Middle East region**. Here are some of the key impacts:

- **The immediate impact will be higher oil prices.**
 - **Crude oil**, already trading near **six-month highs**, may cross \$100 per barrel if tension worsens.
 - **Supply chain disruptions can happen** as Iran can severely restrict movement in the **Strait of Hormuz**.
 - The conflict will **push inflation** up when developed countries want to reduce interest rates.
 - Global **economic growth could fall below the 3.1%** projected by the International Monetary Fund for 2024.
- **Regional Destabilisation:**
 - The conflict **exacerbates tensions** in an already volatile region.
 - Both Iran and Israel wield significant influence in the Middle East, and their confrontation can escalate into **broader regional conflicts** involving other countries and non-state actors.
- **Global Security Implications:**
 - Given the strategic importance of the Middle East and its energy resources, instability in the region can



have global ramifications, affecting energy markets, trade routes, and international security.

Trade and travel disruptions:

- Apart from oil prices being affected, trade and travel could also be hit in the likelihood of an all-out war between Israel and Iran. The aviation and shipping sectors could also be disrupted.
- Several countries in the region, including **Iran, Jordan, Iraq, Lebanon, and Israel, temporarily closed their airspaces**, opening them later but with restrictions.
- These proxy wars can **prolong existing conflicts** and make regional stability elusive.

Nuclear Proliferation Concerns:

- **Iran's nuclear program** has been a source of tension with Israel and the international community.
- The conflict raises concerns about the **potential for nuclear proliferation** in the region and the risk of a nuclear arms race.

Impact on India:

- India's quick call for **de-escalation in the aftermath of Iran's retaliatory strike against Israel** stands in

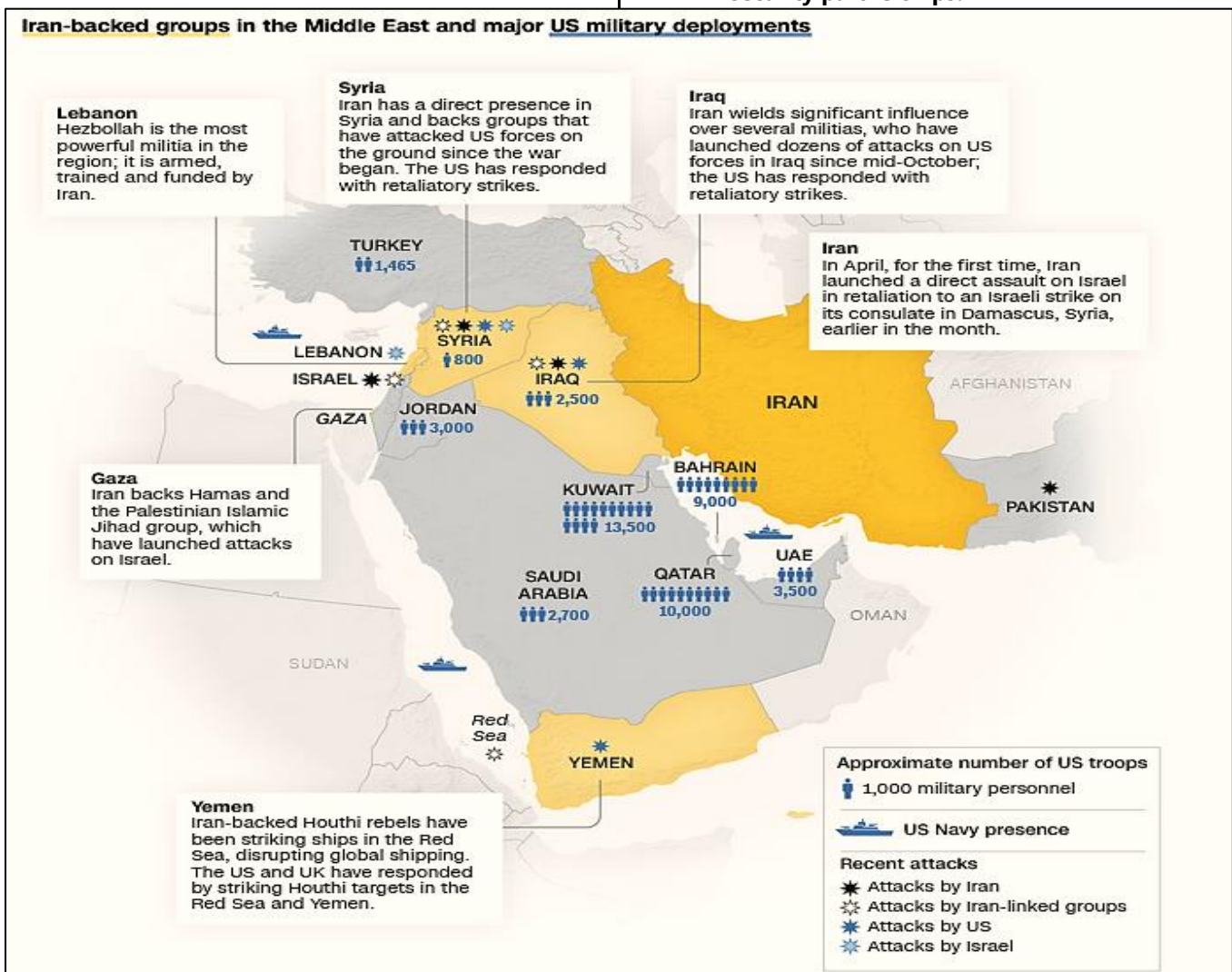
contrast to Delhi's instant expression of solidarity with Israel at the highest political level immediately after the recent terror attack by Hamas. For New Delhi, a potential escalation due to the tension means an impact on all three accounts: **its people, economic interests, and strategic needs.**

- Firstly, while there are about **18,000 Indians in Israel** and about **5,000-10,000 Indians in Iran**, about **90 lakh people** are living and working in the **Gulf and West Asia region.**
- Secondly, **India's economic interests** are tied to **energy security.** The **West Asia** region contributes 80% of **India's oil supplies**, which a potential conflict will impact.
- Thirdly, India has invested in a **strategic relationship with major Arab countries, including Iran and Israel.**

Impact of conflict on India's diplomatic and strategic relationship with both countries:

India-Israel:

- India has a very deep strategic relationship with Israel, especially in the context of **defence and security partnerships.**



- In the last decade or so, the relationship has grown and has been made public — unlike in the past. This has led to **India lending support to Israel** in the first few hours of the **October 7 terrorist attacks** by Hamas.
- The two sides have strong concerns about **extremism and terrorism**, as both have suffered during the **26/11 Mumbai terror attacks**.
- Israel has also emerged as a **major defence supplier**, along with the US, France, and Russia, and New Delhi remembers that Israel stepped up to help during times of crisis, including the **Kargil war in 1999**.

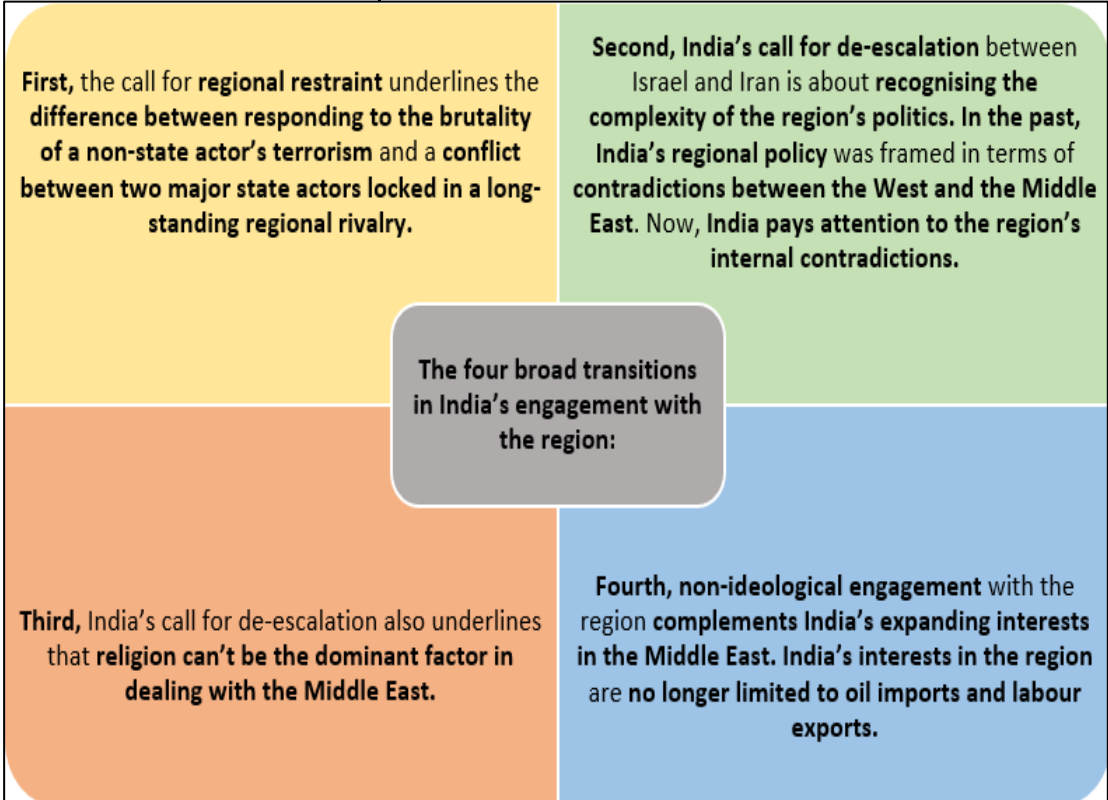
● **India-Iran:**

- India has managed to maintain a **strategic relationship with Iran**, as Tehran has been one of the **major suppliers of crude oil** — which has suffered setbacks due to sanctions.
- Both countries have **shared concerns about terrorism** emanating from **Pakistan and Afghanistan**.
- The two countries also have similar concerns about the **Taliban's treatment of minorities** and the lack of an inclusive and representative government in Kabul.
- **Chabahar** is another strategic economic project that acts as a gateway to **Afghanistan** and **Central Asia** since **Pakistan denies land transit** to Indian goods.

Way Forward:

- The Iranian threat had led to **worldwide diplomatic initiatives** to thwart a possible further conflagration in the region already struggling with Israel's offensive in Gaza.
- India's position that there should be "**immediate de-escalation**," a "**step back from violence**," and a "**return to the path of diplomacy**" is, therefore, crucial for peace in an otherwise volatile region.

PEPPER IT WITH:
Middle East Region, Policy of De-hyphenation, Chahabar Port



- US President Joe Biden has conveyed to Israeli Prime Minister Benjamin Netanyahu that the United States would not participate in any Israeli counter-offensive against Iran. Such pressures from **world leaders will help de-escalate the ongoing situation and help establish peace in the region**.

GCC's 'Vision for Regional Security'

News Excerpt:

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For the first time since its inception, the Gulf Cooperation Council (GCC) announced its **'Vision for Regional Security'** at a ceremony held in its **headquarters in Riyadh**.

Key Points:

- The **'Vision for Regional Security'** is based on the principles of **shared destiny** and **indivisible security** of the member states, and any threat to one is a threat to all the member States.
 - This was also earlier mentioned in the **Joint Defence Agreement of the GCC**, signed in **2000**.
- The vision document is based on the principles of respecting **sovereignty and non-interference** in state internal affairs.
- Vision for Regional Security is a **political commitment and an ethical dedication that unites all**.



- In particular, the vision demands "the **criminalization** of all **groups carrying out terrorist acts**, irrespective of their political or sectarian affiliation, or ties to state institutions".
- Other points include addressing **cyber security issues**, **global energy market stability**, **climate change**, and the advancement of implementing a 'circular carbon economy' and securing **water security**.

Geopolitical Context:

- The document has come at a time when the West Asian region has been engulfed in turmoil since the beginning of the **Israel– Hamas War in October 2023**.
- The vision document explicitly references the **Israel– Palestine issue** and calls for activating the Arab Peace Initiative.
 - Among others, **it calls for a two-state solution**, the withdrawal of Israeli forces to the pre-June 1967 borders, and the establishment of an independent Palestinian State with East Jerusalem as its capital.
 - The **devastating consequences of the ongoing Israel– Hamas War and its regional implications have had an impact** on the formulation of the vision document.
- The GCC often expresses concerns over other regional issues, such as the **crisis in Yemen, Syria, Libya, Lebanon, etc.** Still, the Israel– Palestine issue is the only regional issue mentioned in the vision document.
- The **Israel– Hamas War** has impacted the wider region as well, spilling over into the neighboring Red Sea.
- A coalition of more than 20 countries led by the US has started '**Operation Prosperity Guardian**' to ensure the **freedom of navigation in the Red Sea**.
 - Tensions in the Red Sea affect all GCC countries, but Saudi Arabia is particularly affected as it shares a long border with the Red Sea.
- The **announcement of the document at this point is a conscious move** on the part of the GCC to reaffirm its cohesion in the face of fast-evolving regional crises.
 - It proposes a comprehensive **regional security** framework that promotes negotiation and dialogue to overcome disagreements, violence, and conflict.
 - Furthermore, it reinforces the organisation's role in **mediating and resolving regional conflicts**.

PEPPER IT WITH:
GCC, Red Sea, Operation Prosperity Guardian

AUKUS Alliance

News Excerpt:

Australia is set to provide (\$3bn) to British industry to help support the construction of nuclear-powered

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Gulf Cooperation Council (GCC):

- It is an **economic and political bloc formed in 1981** amid regional conflict and tensions.
- It is a **regional cooperation system** between the Arab States of the Gulf created to meet the challenges imposed by surrounding circumstances.
- It includes **Kuwait, Qatar, Bahrain, Saudi Arabia, the UAE and Oman**.
- These six nations have huge oil resources and some of the highest GDPs per capita worldwide.

What issues does the vision cover?

- The vision is outlined in **15 specific points**, including issues relating to **regional security and stability, economy and development, and climate change**.
- The vision seeks to resolve the issue of **Israel's occupation of the Palestinian territories**, reaffirming the GCC's commitment to the **Arab Peace Initiative** that was first endorsed by the **Arab League in 2002**.
- The vision also calls for the end of Israeli settlements in the **occupied West Bank** and notes that the conflict is a key issue destabilizing the region.
- It addresses **nuclear non-proliferation in the region**, a long-standing issue due to Iran's nuclear program, as well as a commitment to the **right to civil nuclear use**. Both the **UAE and Saudi Arabia has sought this policy**.
 - Iran also says that its nuclear program is for civilian purposes, but Gulf states suspect this could be cover for manufacturing an atomic bomb.
- The vision stresses the **need to maintain maritime and waterway security**, as well as **combating terrorism** and its **financing**, and prevent **weapons** - including **"ballistic missile technology and drone systems"** - from reaching armed groups.

submarines under the AUKUS deal with the United Kingdom and the United States.

What is AUKUS?

AUKUS, or the **Australia-United Kingdom-United States Security Partnership**, is a **trilateral security alliance** established in **September 2021**. It aims to enhance member countries' security and defence capabilities by fostering deeper cooperation in various areas.

- The first initiative under AUKUS involves supporting **Australia in acquiring nuclear-powered submarines** for the Royal Australian Navy, aimed at bolstering Australia's maritime defence capabilities and enhancing its strategic position in the Indo-Pacific region
- The second initiative enhances **joint capabilities and interoperability** among the AUKUS partners. This **initiative aims** to deepen collaboration in key **technological domains** such as **cyber capabilities, artificial intelligence, quantum technologies, and additional undersea capabilities**.

Significance of AUKUS:

- AUKUS allows member countries to enhance their **security and defence capabilities** through joint initiatives, increased interoperability, and technology sharing.
 - This collaboration strengthens integrated deterrence against adversarial actors, particularly in the Indo-Pacific region.
- AUKUS contributes to **regional stability by Strengthening Australia's defence capability and enhancing** its role as a security partner in the Indo-Pacific region.
- AUKUS supports an integrated **industrial base** among the member countries, facilitating more efficient and coordinated development and support of advanced capabilities, which enhances the resilience and competitiveness of the defence industries in the partner nations.

Challenges associated with AUKUS:

- Australia's nuclear submarine plan **raises proliferation concerns, especially in China and Southeast Asia**, necessitating robust safety and non-proliferation standards.
- Developing, operating, and supporting nuclear submarines requires a **skilled workforce, posing challenges amid low unemployment rates** and competition from other industries.
- The **substantial cost** of the submarine program and questions regarding public support pose challenges to its implementation. **Ensuring public confidence and support for the program** is crucial for its success and sustainability.
- Some critics question the underlying strategy of relying on U.S. commitment in Asia and raise concerns about

the implications **for sovereignty and dependence** on a future U.S. administration.

- Challenges in U.S. shipyards' capacity to support the provision of Virginia Class submarines for Australia and the need for reforming the International Traffic in Arms Regulations (ITAR) to **enable technology cooperation under AUKUS**.

Implications of AUKUS for India

- **Enhanced Strategic Leverage:** AUKUS strengthens India's options in dealing with China, potentially boosting strategic leverage in the Indo-Pacific.
- **Increased Collaboration with France:** AUKUS creates opportunities for strategic collaboration between India and France, particularly in maritime security, enhancing regional stability.
- **Strategic Autonomy Maintained:** India can maintain strategic autonomy and engage with China on its own terms, leveraging its partnership with the US and its position in the Indian Ocean.
- **Focus on Non-Military Challenges:** Amidst regional turbulence, AUKUS allows India to prioritize non-military challenges like vaccine diplomacy and technology sharing while ensuring robust security responses in the Indo-Pacific.
- **Assured Security Response:** The agreement assures India that security threats in the Indo-Pacific will be addressed, enabling focus on developmental agendas.

Way Forward:

- **Increasing international awareness of Australia's legislation**, which prohibits the development of nuclear weapons and uranium enrichment facilities, would help reassure other countries that Australia remains serious about its nuclear non-proliferation commitments.
- **An early decision to use lifetime reactor cores** would help address concerns about the diversion of nuclear material from the naval reactors into a nuclear weapons program.
- **Immediate initiation of work with the International Atomic Energy Agency (IAEA)** to develop new monitoring arrangements would increase confidence that Australia intends to use its nuclear reactors only for naval nuclear propulsion.
- **The US will champion a voluntary moratorium** on new nuclear cruise missile deployment and engage in decommissioning dialogue to address escalation risks. AUKUS partners pledge not to erode export controls on sensitive technologies, repair, and recommit to MTCR to reduce arms racing dynamics.

PEPPER IT WITH:
Nuclear Warfare,
IAEA, Indo-Pacific
Region

PRE-SHOTS

India-Eurasian Economic Union (EEU) FTA Negotiations

News Excerpt:

Indian officials and the **Eurasian Economic Union (EEU)** representatives held extensive talks last month to begin **formal negotiations on a free trade agreement (FTA)**.

More about the news:

- The proposed FTA will provide **greater market access to Indian goods and services** in the **EEU countries**.
- In such agreements, two or more **trading partners** either **eliminate** or significantly **reduce customs duties** on the maximum number of goods traded between them.

Eurasian Economic Union (EEU):

- The Eurasian Economic Union comprises five member states: **Russia, Belarus, Kazakhstan, Kyrgyzstan, and Armenia**.
- The **EEU treaty was signed on 29 May 2014 in Astana (now Nur-Sultan) and came into force on 1 January 2015**.
- It is an ambitious project for **economic integration in the former Soviet region**. Its formal objective is to **create a common market** like the **European Union (EU)**.
- It aims to achieve this by **coordinating economic policy, eliminating non-tariff trade barriers, harmonizing regulations, and modernizing the economies of its five member states**.
- The EEU has its own institutions, mirroring those of the EU. These include the **Eurasian Economic Commission in Moscow**, which is its regulatory body, and a **Court of the Eurasian Economic Union based in Minsk, Belarus**.

India and the EEU trade relations:



- India has a long **political and economic history** of cooperation with **Russia and the Soviet Union**.

- In the **EEU bloc, Russia is India's top trading partner**, with a bilateral trade worth **USD 49.4 billion** in fiscal year **2023 (FY23)**.
- **India's exports to Russia** stood at **USD 3.14 billion** in **2022-23**, while **imports** were at **USD 46.2 billion** due to **increased crude oil imports**.

Significance of India-EEU FTA:

- Indian exporters from **engineering goods, electronics, and agriculture sectors** may benefit from the **India-EEU FTA**.
- An agreement with the bloc will open the **lucrative Central Asian consumer market to Indian goods**.
- It will also entrench the **expansion of Indian products in Russia**, which has **suffered a flight of Western brands and goods** after Russia attacked Ukraine early last year.

India and US to reactivate Indian Ocean observation system

News Excerpt:

India and the US have decided to reactivate the **Indian Ocean Observing System (IndOOS)**, which fell into **neglect and disrepair** during the years of the **COVID-19** pandemic.

More about the news:

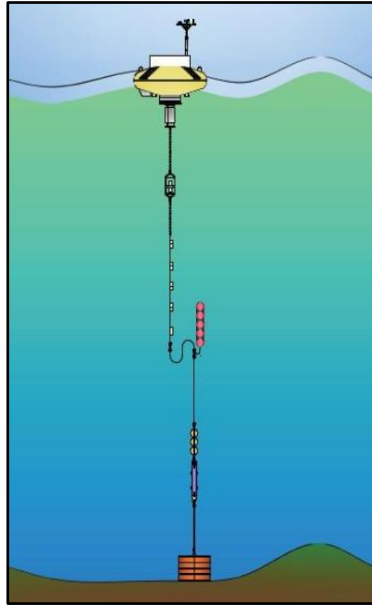
- The closing of IndOOS led to **gaps in observational data**, which is considered crucial by **weather forecasting**, particularly since the links between the Indian Ocean Dipole phenomenon and monsoons were established.
- The reactivation of IndOOS was discussed last month during a meeting of the Earth Sciences Secretary of India with the Administrator of the **National Oceanic and Atmospheric Administration (NOAA)** of the **US**.
 - **NOAA** will provide the **instrumentation**, and **India will give ship time** starting in July to restart the **IndOOS and RAMA array**.

Indian Ocean Observing System (IndOOS):

- It is a **network of 36 moored buoys** on the high seas to collect **high-resolution ocean and atmospheric data** for **weather forecasts**.
- It is a **coordinated system** of **sustained ocean-based observing systems** in the **Indian Ocean** designed to **complement the constellation of earth-observing satellites**.
- The **moored buoys** are part of the **Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA)** programme that was born from a collaboration between the Ministry of Earth Sciences and **NOAA**.

Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA)

- RAMA is the **moored buoy component** of the **Indian Ocean Observing System (IndOOS)**.
- It is a system of **moored observation buoys** in the **Indian Ocean** that collects **meteorological and oceanographic data**.
- It addressed **fundamental questions** about the **ocean's role in monsoon dynamics**.
- **RAMA moored buoys** are usually **replaced once a year** because sensors fall out of calibration and batteries run down.



SCO's NSA Meet

News Excerpt:

India's National Security Advisor (NSA) Ajit Doval attended the **19th Meeting of Secretaries of the Security Council** of Shanghai Cooperation Organisation (SCO) in Astana, Kazakhstan.

About the news:

About the Shanghai Cooperation Organization:

- It is a **permanent intergovernmental international organization** established in 2001 in Shanghai (PRC) by **Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, and Uzbekistan**.
- In June 2017, **India and Pakistan** were inducted as full members of the SCO. This was the organization's first expansion since its formation in 2001.
- Its supreme decision-making body is the **Council of Heads of States (CHS)**, which meets once a year.
- Its **official languages** are **Russian and Chinese**.
- Currently, the SCO countries include:
 - **9 Member States** — India, Iran, Kazakhstan, China, Kyrgyzstan, Pakistan, Russia, Tajikistan, and Uzbekistan.
 - **3 Observer states** - Afghanistan, Belarus, and Mongolia.
- Kazakhstan hosted the meeting, which is the president of the SCO only till July 2024.
- He spoke about respecting all SCO members' **sovereignty and territorial integrity** while

implementing connectivity projects. India is the only country not endorsing China's Belt and Road Initiative.

- India also reiterated its stance against **double standards in the fight against terrorism and voiced apprehension about the security situation in Afghanistan**.
- Condemning the terror attack at the **Crocus city hall in Moscow** last month, Doval expressed India's solidarity with Russia in **combating terrorism in all its manifestations**.

Benefits of SCO to India:

- India's presence in a Eurasian body will enhance its international standing. It is expected that it will help India gain **greater access to regional markets** and its politico-strategic dynamics.
- India will also benefit from stepping up cooperation, especially by participating in the Regional Anti-Terrorist Structure (RATS) that shares **key information and intelligence on the movements of terrorists and drug trafficking**.
- The permanent membership will help India to **work closely with other Central Asian countries**.
- The SCO could also **facilitate the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline**.

Israel approves reopening of Erez crossing into Gaza

News Excerpt:

Israel said it approved the reopening of the **Erez crossing into northern Gaza** and the temporary use of **Ashdod port in southern Israel**, following U.S. demands to **increase humanitarian aid** supplies into Gaza.

About the news:

- U.S. President Joe Biden demanded "specific, concrete" steps to alleviate the **humanitarian crisis in Gaza**, saying conditions could be placed on U.S. aid if Israel did not respond.



- The growing pressure on Israel came after the **killing of seven aid workers** in an Israeli strike, which triggered global outrage at the continuing problems with aid deliveries into the besieged enclave.
- In addition to reopening the Erez crossing point, Israel also approved increasing Jordanian aid through the **Kerem Shalom crossing point**.
- The decision to reopen the **Beit Hanoon (Erez) crossing**, the main crossing point from Israel into northern Gaza before the war, represented a major shift after Israeli officials previously rejected calls for more entry points into Gaza to be opened up.

India imposes port restrictions on Maldives

News Excerpt:

Amid tensions between **Maldives and India**, the **Directorate General of Foreign Trade (DGFT)** issued a notification imposing **port restrictions for the export of essential commodities** to the island nation during the **fiscal year 2024-25**.

More about News:

- **India's DGFT** has introduced port restrictions on the **export of several prohibited and restricted essential items to the Maldives**.

Directorate General of Foreign Trade (DGFT)

- **Directorate General of Foreign Trade** is a government organization in India responsible for the formulation of **export-import** guidelines and principles for indian importers and indian exporters of the country.
- Before 1991, **DGFT was known as the Chief Controller of Imports & Exports (CCI&E)**.
- **The Directorate General of Foreign Trade (DGFT) organization is an attached office of the Ministry of Commerce and Industry, headed by the DGFT.**
- When liberalization in the economic policies of the Government took place, this organization was essentially involved in the **regulation and promotion of foreign trade through regulation**.
- DGFT has since been assigned the role of "**facilitator**".

There are **four Zonal Offices** in **Delhi, Mumbai, Kolkata, and Chennai**, each headed by the Additional Director General of Foreign Trade.

- **Export of essential commodities** from India to the Maldives will now be permitted only **through four customs stations: Mundra Sea Port, Tuticorin Sea Port, Nhava Sheva Sea Port (JNPT), and ICD(Inland Container Depot) Tughlakabad**.
- On April 5, 2024, India authorized the export of **specific quantities of essential goods to the Maldives** using a **bilateral mechanism** for 2024-25 at the request of the **Maldives government**.
- Earlier, on April 5, India had **removed restrictions on the export of nine products**, including -

- potatoes, onions, eggs, rice, wheat flour, and sugar to the Maldives for 2024-25.

- India had **implemented export bans on wheat in May 2022**, non-basmati rice in July 2023, and onions in December.

UNSC resolution on Gaza ceasefire

News Excerpt:

The **UN Security Council** has demanded an immediate ceasefire between **Israel and Hamas** and the **immediate and unconditional release of all hostages** after the United States, which has repeatedly used its veto to shield its ally Israel, abstained from the vote.

Background of the resolution:

- The UN Security Council has **adopted a resolution** tabled by its **10 non-permanent members (E-10)** demanding a **ceasefire in Gaza** during Ramadan, with a vote of 14 in favor of none against it, with **one abstention (United States)**.
- The resolution also calls for the **immediate release of hostages** and for ensuring **humanitarian access to Gaza**.

Background:



- In **October 2023**, the **Hamas terrorist** group launched a surprise attack of unprecedented scale **on Israel from the Gaza Strip**, killing over 700 people in one day. Israel immediately declared war, and the decades-old conflict with the Palestinians took a turn for the worse.

Is the resolution binding on Israel?

- In general, UN General Assembly resolutions are in the **nature of recommendations**, which **explicate the UN membership's position** on a certain matter. UNSC resolutions are normally seen as somewhat more **prescriptive**.
- However, there is a difference between **UNSC votes under Chapter 6 and Chapter 7 of the UN Charter**, with the **latter considered as binding**.
- **Enforcement of UNSC resolutions:**
 - Options for enforcing a UNSC resolution are limited if the country in question refuses to accept it, as Israel has already done.

- If the UNSC wants to enforce its decision, it can decide to **authorize travel bans, sanctions, or Military action.**

United Nations Security Council (UNSC):

- The United Nations Charter established six main organs of the United Nations, including the Security Council.
- It gives primary responsibility for maintaining international peace and security to the Security Council, which may meet whenever peace is threatened.
- It has 15 Members (5 permanent members with veto and 10 non-permanent members), and each Member has one vote.
- Under the Charter of the United Nations, all Member States are obligated to comply with Council decisions.
- The Security Council determines whether a threat to peace or an act of aggression exists.
- It calls upon the parties to settle a dispute peacefully and recommends methods of adjustment or terms of settlement.
- In some cases, the Security Council can resort to imposing sanctions or even authorizing the use of force to maintain or restore international peace and security.

The city of Quito

News Excerpt:

Mexico has **severed diplomatic relations** with Ecuador after heavily armed police raided the Mexican embassy in Quito in a direct violation of international norms.

Background:

- On April 7, local police **entered the Mexican embassy in Quito**, Ecuador's capital, to arrest former Ecuadorian Vice President **Jorge Glas**, who had requested political asylum in the embassy.
- The violation of the sovereignty of Mexico's Embassy **sets a dangerous precedent**, especially as it involves questioning or rejecting international norms and standards.
- It is a serious violation of the **Vienna Convention on Diplomatic Relations, 1961**. This convention lays down the rules of engagement between countries. **Article 22 states: "The premises of the mission shall be inviolable. The agents of the receiving State may not enter them, except with the consent of the head of the mission."** Here, "mission" refers to the diplomats, the staff and other representatives in a host country.
- It **further states**, "The premises of the mission, their furnishings and other property thereon and the means

of transport of the mission **shall be immune from search, requisition, attachment or execution."**

- The **Vienna Convention on Consular Relations, 1963**, similarly states that the consent of the head of the consular post is required for authorities of the receiving state to enter the consular post.



About the city of Quito:

- Isolated in the **Andes** at 2,818 m. altitude, the city of Quito is spread along the slopes of the **Pichincha Volcano** and is bordered by the hills of Panecillo and Ichimbia.
- Founded by the Spanish in 1534 on the ruins of an **Inca city, Quito** proudly possesses one of the **most extensive and best-preserved historic centres of Spanish America**.
- The city was inscribed as a **UNESCO World Heritage Site in 1978**.
- The city of Quito, the cradle of pre-Columbian cultures and an important witness of Spanish colonization, maintains **unity and harmony** in its urban structure despite centuries of urban development.

India, Mauritius revise tax treaty

News Excerpt:

India has signed a protocol to amend the **Double Taxation Avoidance Agreement (DTAA)** with Mauritius, aiming to prevent treaty abuse for tax evasion or avoidance.

Double Taxation Avoidance Agreement (DTAA)

- It is a **tax treaty** signed between India and another country (or any two or multiple countries) so that **taxpayers can avoid paying double taxes** on their income earned from the source country and the residence country.
- The need for DTAA arises **out of the imbalance in tax collection** on individuals' global income.

Key points:

- The amendment introduces the **Principal Purpose Test (PPT)**, which denies treaty benefits if obtaining such benefits is one of the principal purposes of a transaction or arrangement.
- The **two nations** have revised the treaty preamble to focus on preventing tax avoidance and evasion.
 - The earlier goal of "**mutual trade and investment**" has been changed to "**eliminating double taxation**" without enabling non-taxation or reduced taxation through tax evasion, avoidance, or **treaty shopping for the indirect benefit of third-jurisdiction residents**.
- The **DTAA** was a major reason for a large number of **foreign portfolio investors (FPI)** and foreign entities to route their investments in India through Mauritius.
- Mauritius is India's fourth largest source of FPI investments, following the US, Singapore, and Luxembourg.**

- The recent amendment reflects **India's intent to align with global efforts** against treaty abuse, particularly under the **Base Erosion and Profit Shifting (BEPS)** framework.

Treaty shopping

- Treaty shopping typically involves attempting to indirectly access the benefits of a tax treaty between two jurisdictions without being a resident of one of those jurisdictions.
- There are a wide number of arrangements through which a person who is not a resident of a jurisdiction that is a party to a tax agreement may attempt to obtain benefits that a tax agreement grants to a resident of that jurisdiction.
- Taxpayers engaged in treaty shopping and other treaty abuse strategies undermine tax sovereignty by claiming treaty benefits in situations where these benefits were not intended to be granted, thereby depriving jurisdictions of tax revenues.



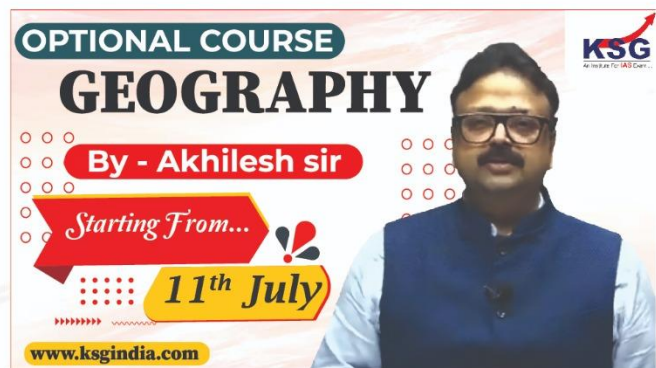
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ENVIRONMENT

Global E-waste Monitor, 2024

News Excerpt:

The 4th edition of the Global E-waste Monitor 2024 was launched.

- It is funded and prepared in partnership with the UNITAR (United Nations Institute of Training & Research) SCYCLE (sustainable cycle) Programme, ITU (International Telecommunication Union) and Fondation Carmignac.

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Background & Objectives:

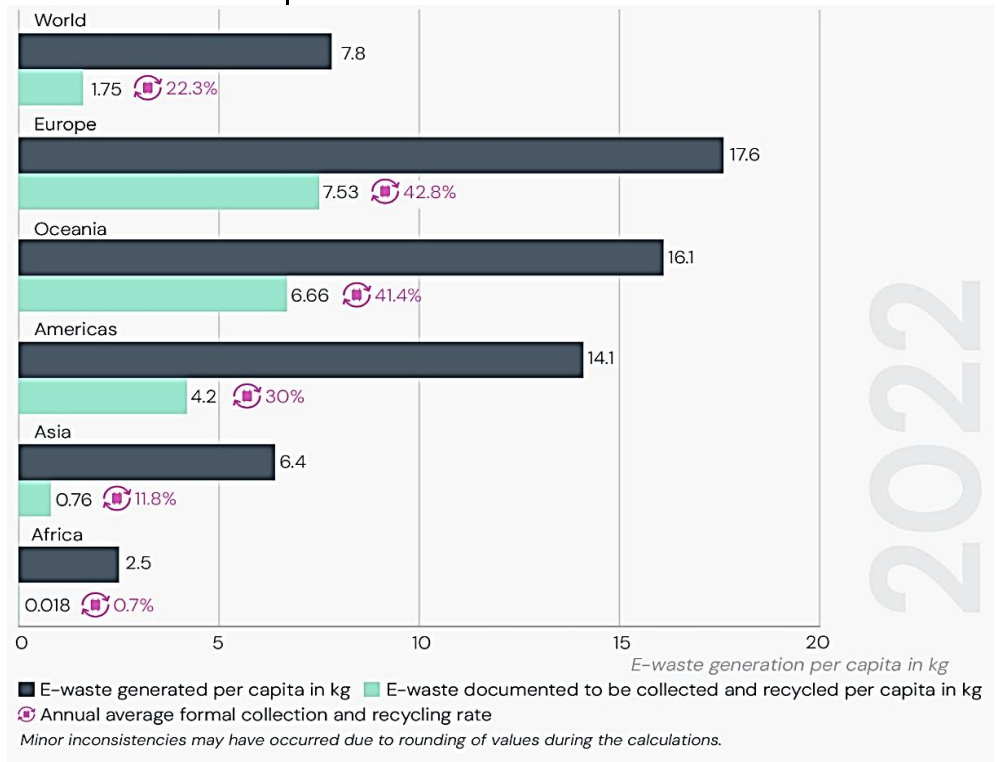
- The world is experiencing significant **electronification and digital transformation**.
 - Many people own multiple electronic devices, and the increasing interconnectivity of urban and remote areas has increased the number of devices and objects linked to the Internet.
- This growth has seen a concomitant surge in the amount of **Electrical and Electronic Equipment (EEE)** and, subsequently, **Waste Electrical and Electronic Equipment (WEEE) or e-waste**.
 - When EEE is disposed of, it **generates a waste stream containing hazardous and valuable materials**, collectively known as e-waste or WEEE.

Key Findings & Statistics:

- In 2022, a record **62 billion kg of e-waste was generated globally** (equivalent to an average of 7.8 kg per capita per year); **22.3 percent of this e-waste mass was documented as formally collected and recycled** in an environmentally sound manner.
- From 2010 to 2022**, both the amount of e-waste generated, and the amount of e-waste documented to be formally collected and recycled have increased from 34 billion kg to 62 billion kg and 8 billion kg to 13.8 billion kg, respectively.
 - Thus, since 2010, the growth of e-waste generation has outpaced formal collection and recycling by almost a factor of 5.
- Documented formal collection and recycling rates vary significantly across regions.**
 - In 2022, **Europe generated the most e-waste (17.6 kg per capita)** and had the highest

documented collection and recycling rate (7.5 kg per capita), recycling 42.8% of the e-waste generated.

- African countries had the lowest rate**, with less than 1% of e-waste being documented as formally collected and recycled.



- The growth rate of countries implementing e-waste policies, legislation, or regulations is decelerating. Of the 81 countries covered by a national e-waste policy, legislation, or regulation, 67 applied the Extended Producer Responsibility (EPR) principle, 46 had enshrined national e-waste collection targets in their regulations, and 36 had done so for e-waste recycling targets at the national level.**
 - It is essential to legislate such targets to monitor progress and stimulate the collection and recycling of e-waste.
- The overall economic impact of e-waste management in 2022 was a loss equivalent to USD 37 billion.**
 - The main costs consist of USD 78 billion in externalized costs to the population and the environment, stemming from lead and mercury emissions, plastic leakages, and contributions to global warming, particularly in cases where hazardous substances are not properly managed.
- Four 2030 projections and future scenarios for e-**

waste management were developed, which include (1) business as usual, (2) progressive, (3) ambitious, and (4) aspirational.

- It is projected that **82 billion kg of e-waste will be generated in 2030**. In a business-as-usual scenario, documented formal collection and recycling rates will decline to 20 percent in 2030.
- With documented formal collection and recycling rates at 22.3 percent in 2022, the world would not be able to meet the 30 percent target for 2023 set by ITU.

Way Forward:

- While regulatory measures are essential, **public awareness and education** are equally crucial components of effective e-waste management.
 - To achieve this, **stricter guidelines and regulations are needed to enhance public understanding.**
- Alternatively, **mandating producers to collaborate with grassroots-level organisations** in conducting awareness campaigns holds the potential for a more profound impact.
- Looking ahead, a **multi-pronged approach** is necessary to combat the e-waste challenge effectively.
- Simultaneously, **focusing on sustainable consumption practices and encouraging manufacturers to produce environmentally friendly products with longer lifespans and recyclable materials** can significantly mitigate the e-waste problem in the long run. **Eg.: E-waste ATMs, E-waste tax Credit for Manufactures**
- Achieving these objectives will require **collaboration and partnerships among various stakeholders**, including the informal sector engaged in e-waste management.

PEPPER IT WITH:
 Extended Producer Responsibility, EEE, Circular economy-RRR approach

India to generate 600 kilotons of solar waste by 2030

News Excerpt:

As India ramps up its renewable energy capacity to achieve **net-zero goals**, the **combined waste generated** from its existing and newly installed solar energy infrastructure could reach up to approximately **600 kilotons by 2030**.

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More about the news:

- The findings were part of the report **'Enabling a Circular Economy in India's Solar Industry - Assessing the Solar Waste Quantum'**, which was conducted by the **Ministry of New and Renewable Energy (MNRE)** and the **Council on Energy, Environment and Water (CEEW)**, a climate think tank.
- India generated about **100 kilotons (kt)** of solar waste in the **Financial Year (FY) 2022-2023**.
- India's **current solar capacity** stands at **66.7 GW** as of **March 2023**.
 - It has increased by **23 times in the past 10 years** — and is slated to jump to **292 GW** of installed solar capacity by 2030.
- Therefore, solar waste management is crucial for **environmental, economic, and social reasons**.



What is solar waste?

- Solar waste refers to the waste generated during **manufacturing solar modules** and **waste from the field (project lifetime)**.
- **Manufacturing** involves two streams of waste, including the **scrap** that's produced and the **waste generated from PV (photo-voltaic) modules failing quality tests**.
- Meanwhile, **waste from the field** involves three streams of waste:
 - **Waste generated during transporting and handling** — the **damaged modules** are considered as waste.
 - Waste produced due to the **damage incurred by solar modules** during **their lifetime**.
 - When the **modules reach their end-of-life** and are **not usable anymore**.
- The study only focused on waste from the field (project lifetime) category and excluded waste generated during manufacturing.

What are the findings of the study?

- By **2030**, India's **current installed solar capacity** will generate about **340 kilotons of waste** — three times more than the present.
 - **Five states, Rajasthan, Gujarat, Karnataka, Tamil Nadu, and Andhra Pradesh, are expected to produce around 67% of this waste.**

- This is because these five states currently have more solar capacity than other states and, therefore, will produce more solar waste.
- Out of India's **500 GW renewable energy target**, most of the GWs will come from these five renewable energy-rich states.
- According to the Report, the **cumulative waste from existing and new capacity** (deployed between FY24 and FY30) will reach about **600 kt by 2030**.
- **By 2050**, it will increase to about **19,000 kt** 77%, of which will be generated from **new capacities**.
- The discarded modules contain minerals such as **silicon, copper, tellurium, and cadmium** — which have been classified as **critical minerals** for the country's **economic development and national security** by the Indian government.
 - The **340 kt waste** expected to be produced by **2030** would consist of **10 kt of silicon, 12-18 tonnes of silver, and 16 tonnes of cadmium and tellurium**.

How to deal with solar waste? (Way Forward)

- Policymakers should maintain a **comprehensive database** of the **installed solar capacity**, which would help **estimate solar waste** in the following years.
- Policymakers should also **incentivize recyclers** and push stakeholders to effectively manage the growing solar waste.
- Policymakers should also introduce a **ban on the dumping of waste modules** by different entities in landfills.
- Industries should invest in the second-life use of sub-standard modules to delay waste creation.
- **Recycling of solar waste**: There are **two broad ways** of recycling solar panels.
 - **Conventional recycling** or **bulk material recycling**, which involves **mechanical processes like crushing, sieving, and shearing of the waste**.
 - While the majority of recycled materials consist of glass, aluminium, and copper, more valuable **materials like silver and silicon cannot be recovered** through this method.
 - **High-value recycling**.
 - It involves the use of a combination of **mechanical, chemical, and thermal processes** to recycle the modules.
 - Unlike conventional recycling, **this method can also recover silver and silicon** with the help of chemical processes.

How are other countries handling solar waste?

- The **EU Waste Electrical and Electronic Equipment (WEEE) Directive** imposes **responsibility for waste**

disposal on manufacturers or distributors who introduce or install such equipment for the first time.

- **Photovoltaic (PV) manufacturers** are **solely responsible** for the **collection, handling and treatment of modules** at the end of their lifecycle, according to the WEEE Directive.
- The UK also has an industry-managed "**take-back and recycling scheme**".
 - All PV producers will need to register and submit data related to products used in the residential Solar (B2C) and non-residential markets.
- Countries such as **Japan and South Korea** have already indicated their resolve to come up with dedicated legislation to address the PV waste problem.
- **India needs a multi-pronged approach to handling the mammoth amount of solar waste it will generate in the next ten years.**

PEPPER IT WITH:

Solar Power Plants, Panch Pran, Mission LiFE, Nationally Determined

WMO State of the Global Climate 2023 Report

News Excerpt:

According to the **World Meteorological Organization's (WMO) State of the Global**

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Climate 2023 report, records for greenhouse gas levels, surface temperatures, ocean heat and acidification, sea level rise, Antarctic sea ice cover and glacier retreat have been broken.

World Meteorological Organization (WMO):

- It is a specialized agency of the **United Nations headquartered in Geneva, Switzerland, and is responsible for promoting international cooperation in atmospheric science and meteorology.**
- WMO **monitors weather, climate, and water resources** and supports its members in forecasting and disaster mitigation.
- The organization is **committed to advancing scientific knowledge and improving public safety and well-being through its work.**

Key highlights of the report:

- **Heatwaves, floods, droughts, wildfires, and rapidly intensifying tropical cyclones caused misery and mayhem**, upending millions' everyday lives and inflicting many billions of dollars in economic losses.
- It confirmed that **2023 was the warmest year on record**, with the **global average near-surface**

temperature at 1.45 °C (with a margin of uncertainty of ± 0.12 °C) above the pre-industrial baseline.

- It was the **warmest ten-year period on record**.
- On an average day in 2023, **nearly one-third of the global ocean was gripped by a marine heatwave**, harming vital ecosystems and food systems.
 - Towards the end of 2023, **over 90% of the ocean had experienced heatwave conditions** at some point during the year.
- The **global set of reference glaciers** has suffered the **largest ice loss on record** (since 1950), driven by **extreme melt in western North America and Europe**.
 - **Antarctic sea ice extent** was by far the **lowest on record**, with the maximum extent at the end of winter at 1 million km² below the previous record year - equivalent to the size of France and Germany combined.
- The number of people who are **acutely food insecure worldwide** has more than doubled, **from 149 million people before the COVID-19 pandemic to 333 million people in 2023** (in 78 monitored countries by the World Food Programme).
- **Weather hazards continued to trigger displacement in 2023**, showing how climate shocks undermine resilience and create new protection risks among the most vulnerable populations.

Key messages from the Report:

- **Greenhouse gases:**
 - Observed **concentrations** of the three main greenhouse gases – **carbon dioxide, methane, and nitrous oxide** – reached record levels in 2022.
 - **CO₂ levels are 50% higher than in the pre-industrial era**, trapping atmospheric heat.
 - The **long lifetime of CO₂** means that **temperatures will continue to rise** for many years to come.
- **Ocean heat:**
 - **Ocean heat content reached its highest level in 2023**, according to a consolidated analysis of data.
 - It is expected that warming will continue, an irreversible change on scales of hundreds to thousands of years.
 - **More frequent and intense marine heatwaves negatively affect marine ecosystems and coral reefs.**
 - The **global ocean experienced an average daily marine heatwave** coverage of 32%, well above the previous record of 23% in 2016.

Issues with Climate Financing

In 2021/2022, **global climate-related finance flows reached almost USD 1.3 trillion**, nearly doubling compared to 2019/2020 levels.

Large financing gap: In an average scenario, **for a 1.5°C pathway, annual climate finance investments need to grow by more than six times**, reaching almost USD 9 trillion by 2030 and a further USD 10 trillion through 2050.

Cost of inaction is even higher: Aggregating over the period 2025-2100, the **total cost of inaction is estimated at USD 1,266 trillion**; that is, the difference in losses under a business-as-usual scenario and those incurred within a 1.5°C pathway. This figure is, however, likely to be a dramatic underestimate.

Adaptation finance continues to be insufficient: Though adaptation finance reached an all-time high of **USD 63 billion in 2021/2022**, the global adaptation financing gap is widening, falling well short of the estimated **USD 212 billion per year needed up to 2030 in developing countries alone**.

- At the end of 2023, most of the **global ocean between 20° S and 20° N had been in heatwave conditions** since early November.
 - The Mediterranean Sea experienced near complete coverage of strong and severe marine heatwaves for the twelfth consecutive year.
- **Ocean acidification has increased due to absorbing carbon dioxide.**
- **Sea level rise:**
 - In 2023, the **global mean sea level reached a record high** in the satellite record (the highest since 1993), reflecting continued ocean warming (thermal expansion) and melting glaciers and ice sheets.
- **Cryosphere:**
 - **Antarctic sea-ice extent reached an absolute record low** for the satellite era (since 1979) in February 2023 and remained at a record low from June until early November.
 - **Ice sheets:**
 - There are **two principal ice sheets**: the **Greenland Ice Sheet** and the **Antarctic Ice Sheet**.
 - Combining the two ice sheets, the seven highest melt years on record are all since 2010, and average mass loss rates increased from 105 Gigatonnes per year from 1992–1996 to 372 Gigatonnes per year from 2016–2020.

- This is **equivalent to about 1 mm per year of global sea level rise** attributed to the ice sheets in the latter period.
- **Glaciers:**
 - Preliminary data for the hydrological year 2022-2023 indicate that the **global set of reference glaciers suffered the largest loss of ice on record (1950-2023)**, driven by the extremely negative mass balance in both western North America and Europe.
 - **Glaciers in the European Alps experienced an extreme melt season.**
 - In **Switzerland, glaciers have lost around 10%** of their remaining volume in the past two years.
 - Western North America suffered record glacier mass loss in 2023, at a rate five times higher than the rates measured for the period 2000-2019.

Way Forward:

- One essential component for **reducing the impact of disasters is having effective multi-hazard early warning systems.**
 - The **Early Warnings for All initiative** seeks to ensure that early warning systems protect everyone by the end of 2027.
 - **Development and implementation of local disaster risk reduction strategies** have increased since adopting the **Sendai Framework for Disaster Risk Reduction.**
- **Renewable energy generation**, primarily driven by the dynamic forces of solar radiation, wind, and the water cycle, has **surged to the forefront of climate action due to its potential to achieve decarbonization targets.**
 - In 2023, renewable capacity additions **increased by almost 50% from 2022, for a total of 510 gigawatts (GW) – the highest rate** observed in the past two decades.

PEPPER IT WITH:

Naming of Cyclones, Cryosphere, Sendai Framework for DRR

Nuclear Energy Summit

News Excerpt:

Nuclear energy was presented as an important solution to global problems like climate change and energy security at the first-of-its-kind **Nuclear Energy Summit** that was hosted in **Brussels, Belgium.**

Nuclear Energy Summit:

- The summit was organized by **The International Atomic Energy Agency (IAEA)** in **Brussels.**

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- It is being lauded as a **“landmark initiative”** and a **“turning point”** in the efforts to expand the **use of nuclear energy for generating clean electricity.**
- The meeting **was not meant to produce any decisions** or finalize any agreement. Rather, it was another attempt to **build momentum** for a greater **acceptance of nuclear energy**, which many countries are apprehensive about.
 - Such apprehensions were aggravated by the **Fukushima accident (Japan)** in 2011.
 - The continuing crisis at the **Zaporizhzhya nuclear power plant** in **Ukraine**, the first nuclear facility to have been caught in a **dangerous armed conflict**, has also been a source of grave concern.
- **India also took part in the summit.**

IAEA initiatives to promote nuclear power:

- IAEA is an **intergovernmental organization** that works for the **safe and peaceful use of nuclear science and technology.**
- The IAEA has launched an **‘Atoms4Climate’** initiative to talk about nuclear energy and has begun an engagement with the climate community, especially at the COPs or the annual year-ending climate conferences.
 - At **COP27 in Sharm el-Sheikh**, the IAEA set up a **pavilion for the first time**, and at **COP28 in Dubai last year**, about **20 countries** pledged to work towards **tripling global nuclear energy installed capacity by 2050.**

A COP outreach programme of IAEA:

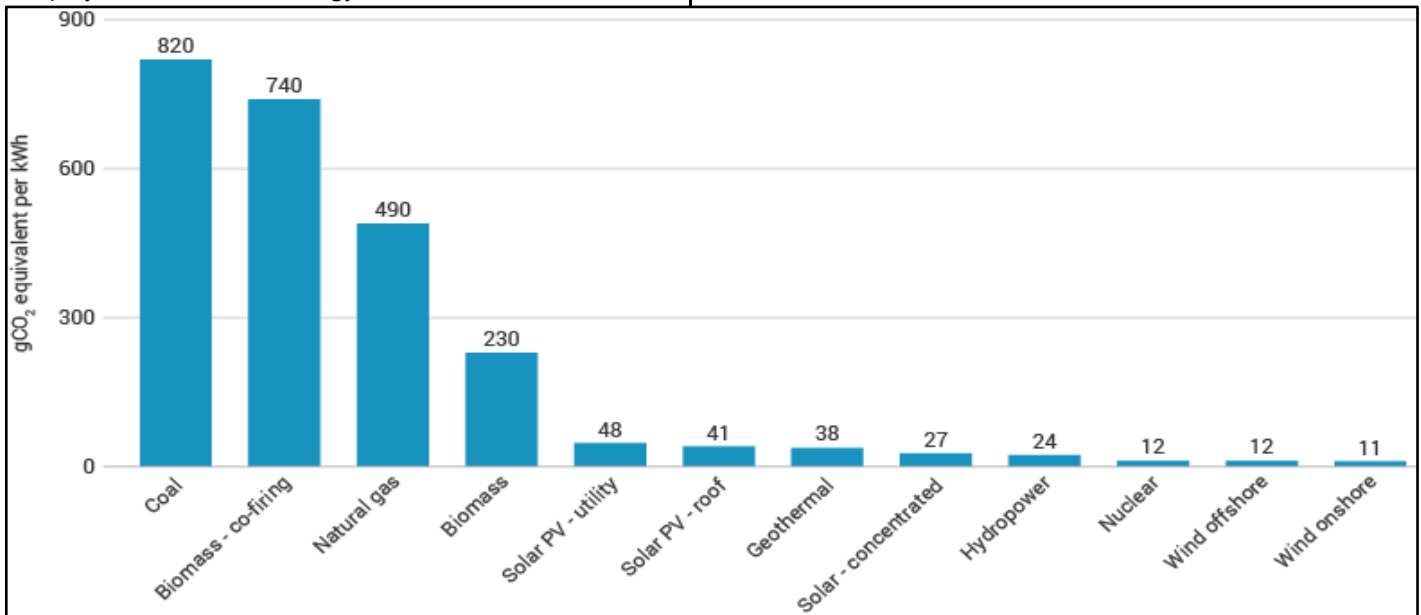
- In the last **five years**, nuclear energy has progressively gained visibility at **climate conferences**, including the **Conference of Parties of the United Nations Framework Convention on Climate Change (UNFCCC).**
- **IAEA** has now begun participating in these events as an **observer**, organizing side events and talks on the potential of nuclear energy.
 - The **COP 28**, which was held in **Dubai**, was particularly eventful for Nuclear Energy.
 - Representatives from **22 countries committed** to working together to **triplicate global nuclear energy installed capacity by 2050 from 2020 levels** and achieve global **net-zero emission levels by 2050.**
 - **The final outcome from Dubai formally acknowledged nuclear energy as one of the zero, or low-emission technologies**, that needed to be accelerated to achieve rapid and deep decarbonization.
 - This was the **first time that nuclear energy was mentioned in any COP outcome.**

Poor adoption and growth of Nuclear Power:

- However, despite these advantages, there has been a **serious lack of enthusiasm** for the accelerated deployment of nuclear energy.

constraints, making them unattractive for countries wanting to quickly ramp up their electricity generation in an affordable manner.

- **Nuclear power is also the costliest electricity right**



- Only **31 countries** in the world **use nuclear energy** for generating electricity. And barely **seven more** are **working towards joining this club**.
- The number of **operational nuclear reactors** has actually **come down** in the last 20 years, from **437 in 2003 to 411 now**.
- The **average life** of these reactors is **more than 31 years**, which highlights the fact that few new reactors have come onboard in the last decade.
- The **total installed electricity generation** capacity has shown **only a marginal increase** during this period, from about **360 GW in 2003 to 371 GW now**.
- Nuclear energy accounts for **less than 10% of global commercial electricity** generation, and its share has been **declining for almost three decades now**.

Reasons:

- There are **safety concerns** concerning nuclear power, particularly after the Fukushima accident.
- Nuclear reactors **require high investments** and **technology base, take years to build**, and have to operate under a **variety of regulations** and

Merits of Nuclear power as a clean energy source

Clean source of energy with a **minimal carbon footprint**.

There is negligible release of emissions during the electricity generation process using nuclear energy.

Greenhouse gas (GHG) emissions from Nuclear energy are only in the range of **5 to 6 grams per kilowatt hour (IAEA) and 12 grams per kilowatt hour (IPCC)**.

This is more than **100 times lower than coal-fired electricity**, and about **half the average of solar and wind generation**.

Nuclear power has perennial availability, unlike wind or Solar which are season or time-dependent.

Nuclear Energy already contributes very significantly to reducing GHG emissions.

Nuclear power generation results in avoiding emissions of more than **1 billion tonnes of CO₂ equivalent every year**.

- Nuclear energy accounts for **less than 10% of global commercial electricity** generation, and its share has been **declining for almost three decades now**.
- The kind of technology breakthroughs that have driven down the costs of solar and wind in the last decade, thus enabling rapid adoption, have not happened in the nuclear sector.
 - The technology of **small modular reactors** is far from being mature.

Nuclear energy in India:

- India, which currently has **23 operational nuclear reactors**, acknowledges the role of **nuclear energy in**

its **decarbonization plan** and is planning a **rapid expansion in the coming years**, even though the share of nuclear energy in electricity generation is likely to remain extremely modest in the foreseeable future.

- The currently operational reactors have a combined installed electricity generating capacity of **7,480 MW (about 7.5 GW)**. At least **ten more reactors** are **under construction**, and the capacity is supposed to **triple to 22,480 MW** by 2031-32.
- The share of nuclear energy in total electricity generation capacity is just about 3.1%, among the lowest in countries that do use nuclear energy.

Way Forward:

Government should invest heavily in the field of nuclear energy to ensure its clean energy pledge. With proper safety measures, nuclear energy should be prioritized at the global level.

PEPPER IT WITH:

Fast Reactors, Fission vs Fusion, India's 3-stage nuclear programme

Plastic Waste Management (Amendment) Rules, 2024

News Excerpt:

The Plastic Waste Management (Amendment) Rules 2024 were introduced by the Ministry of Environment, Forest and Climate Change (MoEFCC).

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- These rules aim to strengthen the regulation and management of plastic waste in India by **amending the existing Plastic Waste Management Rules, 2016**.

India's Plastic Situation:

- **Current Situation:**
 - Single-use plastics are defined as items intended for one-time use before being disposed of or recycled.
 - They contribute significantly to plastic waste, with **India ranking third globally in single-use plastic waste production and mismanaging 85% of its plastic waste** (Report released at UNEA-6 regarding single-use plastics (SUP)).
 - India announced plans to phase out single-use plastics by 2022.
 - **A ban on identified single-use plastic items came into force on July 1, 2022, covering 19 selected items.**

Key provisions in recent rules:

- **Definition of Biodegradable Plastics:** The rules redefine "**biodegradable plastics**" to specify that they should undergo degradation by biological processes in specific environments without leaving any harmful residues.
 - Microplastics are solid plastic particles insoluble in water, with dimensions between 1 micron and 1,000

microns. (**Section 2: Definitions, Sub-section (ac): Defines "Biodegradable plastics"**).

What is Microplastic?

- The term microplastics is used to describe plastic particles that measure less than **5 mm** in size.
- Some microplastics are intentionally produced at that size for specific applications, like **microbeads** in personal care products, or secondary microplastics, which result from the **degradation and fragmentation of larger plastic items** and can also originate from sources like synthetic fibres from clothing and the abrasion of car tyres.

- **Registration Requirements:** Sellers of plastic raw materials and intermediate materials used in plastic packaging must register with the State Pollution Control Board or Pollution Control Committee concerned (**Section 4: Prohibition on sale, stock, distribution, etc., Sub-section (4B):** Registration requirement for sellers of plastic raw material or intermediate material used for plastic packaging).
- **Extended Producer Responsibility (EPR):** Producers, importers, brand owners, and manufacturers are held responsible for managing the plastic waste generated from their products.
 - They are required to collect and manage the plastic packaging introduced into the market (**Section 9: Extended Producer Responsibility, Sub-section (2A):** Obligations of producers, importers, brand owners, manufacturers, and manufacturers of commodities made from compostable plastics or biodegradable plastics.).
- **Labelling and Marking Requirements:** Plastic packaging and commodities made from compostable or biodegradable plastics must be labelled appropriately to indicate their compostability or biodegradability.
 - Certification from the **Central Pollution Control Board** is required for marketing or selling such products (**Section 11: Recycling of plastic packaging and commodities, Sub-section (3):** Labeling requirements for plastic packaging made from compostable plastics, **Sub-section (4):** Labeling requirements for plastic packaging made from biodegradable plastics).

About the Central Pollution Control Board (CPCB):

- It is a **statutory organization** constituted in September 1974 under the **Water (Prevention and Control of Pollution) Act 1974**. Further, CPCB was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981**.
- It serves as a field formation and also provides technical services to the **Ministry of Environment and Forests** of the provisions of the **Environment (Protection) Act, 1986**.

- **Local Body Responsibilities:** Local bodies and panchayats are tasked with assessing plastic waste generation, managing infrastructure, and preventing the use of prohibited single-use plastic items in their jurisdictions (**Section 7: Duties of Local Bodies, Sub-section (1):** Assessment of plastic waste generation by local bodies).
- **Reporting Requirements:** Stakeholders, including recyclers, manufacturers, and urban and rural local bodies, must submit regular reports on their activities to relevant authorities. These reports are subject to auditing and monitoring (**Section 17, Sub Section 1-7**).
- **Annual Reporting:** Detailed annual reports must be submitted by various stakeholders, including recyclers, manufacturers, and urban and rural local bodies, to monitor compliance and assess the effectiveness of plastic waste management efforts (**Section 17: Annual reports**).

Way Forward:

- Strengthen enforcement by upgrading the capacity of government officials and providing necessary tools for inspections.
- Mandate public disclosure of fines and enforcement actions taken by authorities.
- Implement a complete ban on all carry bags, regardless of thickness, as successfully done in some other countries and states.
- Recognize the full cost of plastic across its lifecycle and invest in alternatives to single-use plastics.
- Promote alternative industry through subsidies, reduced tax rates, and supportive infrastructure.

These amendments aim to address the environmental challenges posed by plastic pollution by introducing stricter criteria for biodegradable plastics and expanding the scope of regulations to cover a wider range of plastic-related materials and activities.

Is natural gas cleaner than coal?

News Excerpt:

A new research indicates that natural gas, which has long been hailed as a good stepping stone for a world looking to replace coal with renewable energy, isn't as climate-friendly as once thought.

About Natural Gas:

- Natural gas is a **fossil fuel** energy source. It contains many different compounds. The largest component of natural gas is **methane (CH₄)**.
 - Methane is a **highly flammable gas**; it **burns easily** and **almost completely** and **emits little air pollution**.

PEPPER IT WITH:

Single-use plastic Footprint, Great Pacific Garbage Patch

- Natural gas is **neither corrosive nor toxic**, its **ignition temperature is high**, and it has a **narrow flammability range**, which makes it an **inherently safe fossil fuel** compared with other fuel sources.
- In addition, because of its **specific gravity (density of a substance in comparison to the density of water) (0.60)**, which is **lower than that of air (1.00)**, natural gas **rises if escaping**, and thus **dissipates from the site of any leak**.

Natural gas as a 'bridge fuel':

- Natural gas has been called a **'bridge fuel'** for countries looking to **transition away from coal and oil dependency** and as they pursue a pathway towards renewable energy.
 - As solar arrays and wind farms are being built, natural gas can be a **stand-in for "dirtier" fuels**, like **coal** and, in some cases, **oil**.
- It is **hailed as a cleaner energy source** than other fossil fuels, especially coal.
 - Natural gas has a **lesser climate impact** than coal because it emits **50% less CO₂ into the atmosphere**.

Coal vs Natural Gas:

- From a climate standpoint, coal and gas are compared by assessing their **life cycle greenhouse gas (GHG) emissions**.
 - A **"life cycle assessment"** evaluates all the emissions throughout the coal and gas supply chains from **extraction, processing, and transportation** to end use.
 - Comparisons based **only on end-use combustion** might be **limited** in their **purview and paint an incomplete picture of the total GHG emissions**.
- Carbon emissions from power plants:
 - A **coal-fired power plant** in Europe emits GHG emissions of **970 tonnes of carbon dioxide equivalent (CO₂e) per gigawatt-hour** of electricity over its lifecycle.
 - An **oil-fired** power plant emits **720 tonnes of CO₂e per gigawatt-hour**.
 - A **gas-fired** power plant emits **440 tonnes of CO₂e per gigawatt-hour** of electricity over its lifecycle.

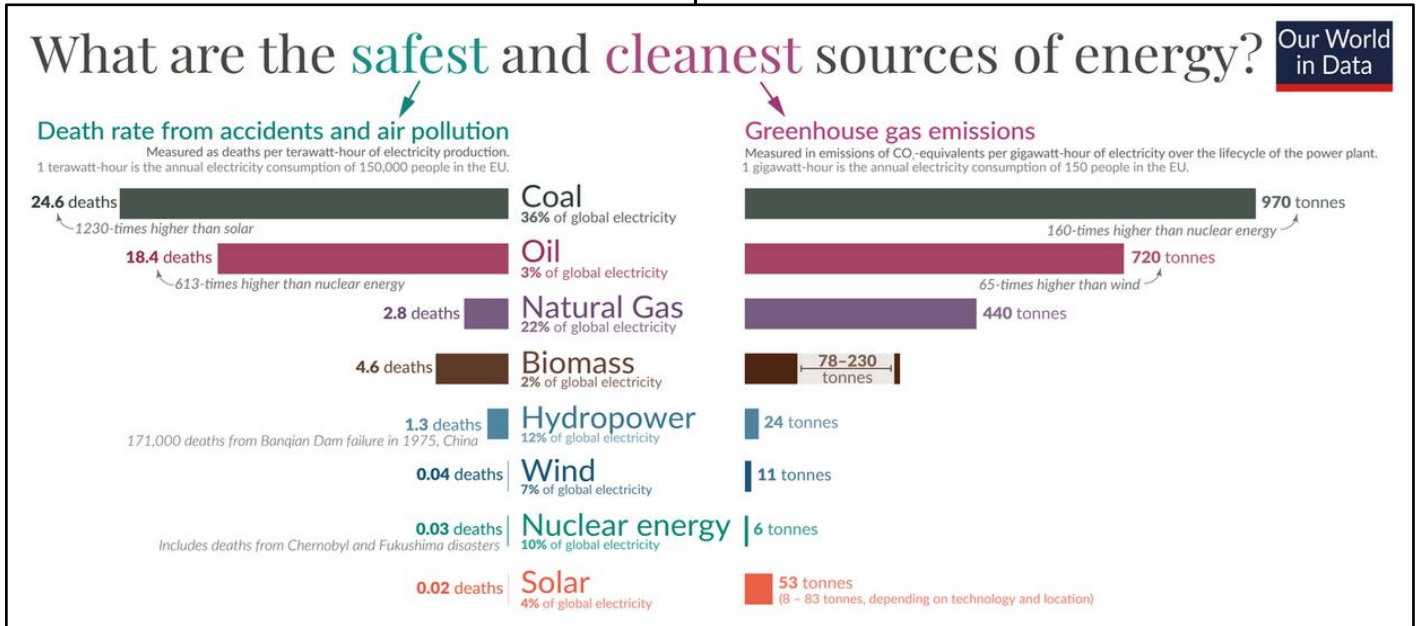
Methane:

- Methane is an **invisible but strong greenhouse gas**.
 - **A critical driver of climate change:** When it comes to trapping heat inside Earth's atmosphere, **methane is over 28 times more powerful than carbon dioxide**.
 - **Methane** is the **second-most abundant GHG after CO₂**. Although methane dissipates faster than CO₂ in the atmosphere, it has a much **stronger planetary warming effect**.

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- According to the **UNEP**, methane has **80 times the warming power of carbon dioxide** during the first 20 years after it is released into the atmosphere.

(about half compared to the best coal technology), however, research shows that methane emissions during extraction and transport diminish its climate-friendly reputation. Therefore, labelling it as "cleaner" might not be accurate.



- Methane is responsible for **30% of global heating since the Industrial Revolution.**
- **Methane** has a **strong near-term warming effect**, unlike the **long-term potency of CO₂**. Traditional climate models measuring the effects of methane over 100 years could end up overlooking its immediate heat-trapping potential, possibly skewing policy conclusions of natural gas versus coal emissions.

Methane Leaks and Climate Change: Methane leaks can occur unintentionally during drilling and well completion, as well as from faulty gas equipment during production and processing. On the other hand, intentional methane releases happen through venting and flaring.

- **Flaring** involves burning off excess natural gas at the production well, releasing methane and CO₂, while **venting** directly releases small quantities of natural gas into the atmosphere. Both practices can lead to pollution and resource wastage.
- Estimates of methane leaks vary depending on measurement methods, but even a small leakage rate, such as 0.2% of gas, can have a more significant impact on the climate than coal in terms of net greenhouse gas emissions. The global average natural gas leak rate is reported to be between 2% and 3%.

Is natural gas a cleaner alternative to coal or oil in terms of emissions?

While natural gas burns cleaner than coal or oil, producing fewer conventional air pollutants like **sulphur dioxide** and **particulates** and less carbon dioxide per unit of energy

Isn't some improvement over coal better than nothing?

While some improvement over coal is indeed better than none, to limit the rise in global temperatures to 1.5°C as outlined in the 2015 Paris Climate Agreement, emissions must reach net zero by 2050, leaving little room for fossil fuel use. Emissions globally need to decrease by approximately 7.6% annually until 2030 to meet the 1.5°C target. However, the natural gas industry's rapidly growing emissions present a significant challenge in addressing climate change. According to a U.N.-backed team of researchers, the world is projected to produce 70% more natural gas in 2030 than is compatible with the 1.5°C goal.

Way Forward:

- The oil and gas industry emissions can be **cost-effectively mitigated** through **"ready-to-implement"** measures which include **tackling methane emissions, eliminating all non-emergency flaring, and electrifying upstream facilities with low-emissions electricity**, among others.
- A report by the **Climate Policy Initiative** highlights that the **fossil fuel sector**, particularly oil and gas, holds the **highest methane abatement potential (34 metric tonnes of CH₄ per year)** through **cost-effective measures**, yet it receives less than 1% of tracked methane abatement finance.

PEPPER IT WITH:
Carbon Offsetting, Global warming potential, Carbon footprint, Emissions Gap Report

- In the pursuit of cleaner energy, evaluating the true climate impacts of natural gas and coal remains crucial for informed decision-making in the transition away from fossil fuels.

PRE-SHOTS

Southern Ocean has Earth's cleanest air

News Excerpt:

The **Southern Ocean** is renowned for having the **cleanest air on Earth**. But the precise reasons why have remained a mystery until now.

About Southern Ocean:



- The Southern Ocean (also known as the **Antarctic Ocean**) is one of Earth's five great ocean basins.
 - It was formed around **34 million years ago** when Antarctica and South America drifted apart, creating the **Drake Passage**.
 - This makes it **the youngest ocean basin on Earth**.
- Today, it is the only ocean **that flows around the globe uninterrupted by land, encircling Antarctica** like a moat.
- Around the **Southern Ocean's** northern limit is a natural, biological boundary called the **Antarctic Convergence**, or Polar Front.
 - North of the convergence**, the water temperature near the surface sits at around **42.1°F (5.6 °C)**, ideal for marine species adapted to the subantarctic climate.
 - South of the convergence**, the **water temperature drops dramatically** to below

36 °F (2 °C), creating the perfect conditions for uniquely Antarctic wildlife to flourish.

- As the **primary mixing zone** between the world's major oceans, the Southern Ocean plays an important role in the circulation of water around the globe.
 - It also plays a **key role in regulating the Earth's climate** through its **currents** and **seasonal sea ice** and by **absorbing heat and carbon dioxide** from the atmosphere.
- The Southern Ocean is known for **its strong winds, intense storms, dramatic seasonal changes and cold temperatures**.
- The Southern Ocean is dominated by the **Antarctic Circumpolar Current (ACC)**: the longest, strongest, deepest-reaching current on Earth.
 - The **ACC circulates clockwise around the continent, carrying more water around the globe than any other current**.
- Powerful currents, cold temperatures and nutrient and oxygen-rich waters make the **Southern Ocean one of Earth's most productive marine ecosystems**.

What are the factors contributing to the clean air over the Southern Ocean?

- Minimal human activity** resulting in **fewer industrial emissions and less burning of fossil fuels**.
- Aerosol levels** are influenced by seasonal variations, such as the amount of salt spray and the **growth of phytoplankton**, which are a source of airborne sulfate particles.
 - The **Southern Ocean** experiences fewer sulfates during winter.
- Distinctive **honeycomb-shaped cloud patterns** in the region influence the amount and **distribution of rainfall**.

About Honeycomb Cloud:

- Easily spotted by their honeycomb shape, open-cell clouds are one of the most common cloud formations,
- It is found on the **backside of low-pressure systems skirting the edges of every continent**.
- Also called "**Open-cell clouds**"; they are low, flat clouds that resemble a quilt to someone peering down from an airplane.
- The honeycomb is created by a simple form of convection, air movement caused by warm air rising and cold air falling (the same phenomenon that happens in a pot of boiling water).**



- Clouds and rain play a crucial role in scrubbing the atmosphere clean.
 - Research indicates that **open honeycomb-shaped clouds** are **prevalent in the Southern Ocean**,
 - It generates **intense rain** showers that effectively wash aerosol particles out of the air.
- These **open honeycomb clouds** are more prevalent during **the winter months**, coinciding with the period when the Southern Ocean's air is at its cleanest.

National Information System for Climate and Environment Studies (NICES)

News Excerpt:

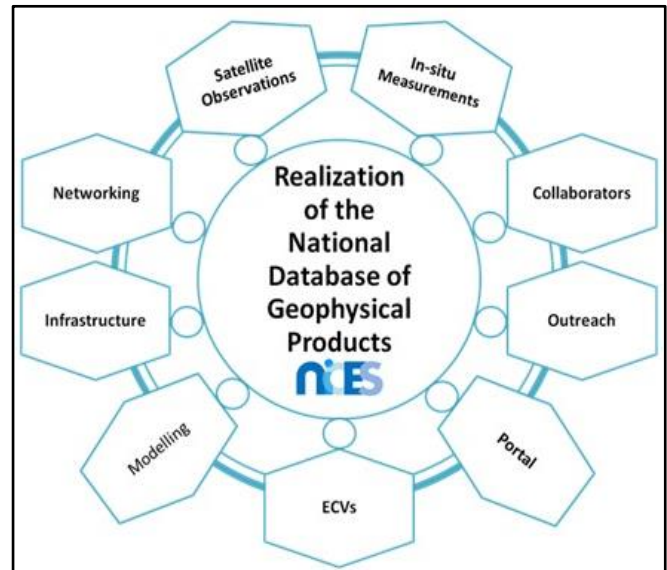
The **NICES** programme invites **Indian researchers** to join the **fight against climate change**.

About NICES Programme:

- The **National Information System for Climate and Environment Studies (NICES)** programme is operated by the **Indian Space Research Organisation (ISRO)** and other **ministries** and **institutions under the Department of Space**.
- It operates within the **National Action Plan on Climate Change (NAPCC)** framework.
 - The NAPCC outlines a **national strategy** that aims to enable the country to adapt to **climate change** and enhance **the ecological sustainability of India's development path**.
- NICES envisages the realization of **national-level accurate, consistent, and long-term climate database generation** derived from **Indian** and other **Earth Observation (EO)** satellites from both **polar and geostationary missions** for **climate change impact assessment and mitigation**.
- NICES generates and disseminates long-term **essential climate variables (ECVs)** derived from **Indian** and other **Earth observation satellites**.
 - **ECVs** are critical to the characterization of the **Earth's climate** as **they track climate change at a global scale**.

Aims of NICES:

- The **NICES program** aims to enhance the **participation of academia and research institutions** in addressing **climate change-related challenges** through dedicated multidisciplinary scientific investigations.
 - Project proposals are invited from **individuals or groups of scientists, academicians, and researchers** affiliated with various Indian government organizations, government-recognized institutions, universities, and departments in India.
 - Projects are expected to be completed **within 3 years** from the date of sanction," states ISRO.



- The NICES Program seeks project proposals in areas like **Space-based ECVs**, Climate Indicators, Climate Change Challenges, Weather Extremes, and Climate Services.

Achievements:

- Developed and made accessible over **70 geophysical variables** related to **terrestrial, oceanic, and atmospheric conditions**.
 - Contributed to documenting climate change and its impacts by utilizing geophysical datasets derived from satellites and other sources.

Captive Elephant (Transfer or Transport) Rules, 2024

News Excerpt:

The Centre has introduced the **Captive Elephant (Transfer or Transport) Rules, 2024**, aiming to liberalize the conditions surrounding the transfer of elephants within or between states.

What are the Circumstances for Captive Elephant Transfer:

- **Inadequate Maintenance by Owners:** Captive elephants can be transferred when owners are unable to maintain them adequately, ensuring their welfare and proper care.
- **Better Care Elsewhere:** If it is determined that captive elephants would receive better care in a different environment or under different ownership, transfers may be authorized.
- **State Chief Wildlife Wardens:** The responsibility for sanctioning transfers lies with the **State Chief Wildlife Wardens**.
 - They have the authority to approve transfers based on the specific conditions outlined in the rules, ensuring proper oversight and adherence to welfare standards.

What are the Rules Governing Captive Elephant Transfer?

- **Pre-Transfer Procedures:** Elephant transfers require an application, which must be submitted to the **Deputy Conservator of Forests (DCF)**, who oversees the region where the elephants are registered.
 - After receiving the application, **DCF** must:
 - Obtain a **veterinarian's certificate**.
 - Investigate and physically inspect the facility where the elephant is being held and where it is proposed to be housed.
 - Submit the application and Report to the **Chief Wildlife Warden (CWW)** within **fifteen days**.
- **Conditions for Transfer:** Transfers of captive elephants are permitted under specific circumstances, such as when the current owner is unable to adequately care for the elephant or when better upkeep is available elsewhere, as determined by the State **Chief Wildlife Warden**.
 - Additionally, **no transfer is allowed unless the animal's genetic profile** has been entered into the **Ministry of Environment, Forest and Climate Change's (MoEFCC) electronic monitoring application**.
- **Interstate Transfers:** Transfers across state borders require registration of the elephant's genetic profile with the **MoEFCC**.
- **Transportation Guidelines:** During transport, elephants must be accompanied by a mahout and an assistant. **A health certificate from a veterinary practitioner**, adherence to quarantine periods for contagious diseases, provision of adequate food and water, and use of **tranquillizers under veterinary guidance if necessary are essential**.
- **Legislative Context:** The Wildlife Protection Act was amended to allow for the transfer of captive elephants, albeit with limitations on the movement of elephants to those with existing certificates of ownership.

What are the Shift in the Legislative Landscape?

- **Previous Prohibitions:** Until August 2022, the **Wildlife Protection Act** strictly prohibited the trade of both wild and captive elephants.
- **Introduction of Exemption:** Subsequent amendments to the

Indian Elephant:

- **Scientific Name:** *Elephas maximus*
- **Habitat:** Dry-thorn forests, moist and dry deciduous forests, tropical evergreen and semi-evergreen forests.
- As per the 2017 Elephant Census, Assam has the second-highest number of elephants after Karnataka.

Conservation status:

- **IUCN status:** Endangered
- **CITES status:** Appendix I
- **WPA, 1972 Schedule**

Act introduced an exemption, permitting the transfer of captive elephants for the first time.

Controversy and Recommendations:

- **Debate Over Exemption Clause:** Despite the amendments, controversy ensued over the exemption clause, particularly its implications for elephant welfare and conservation efforts.
- **Parliamentary Committee Involvement:** A Parliamentary Committee led by Congress Rajya Sabha recommended the deletion of the exemption clause, highlighting the need for a careful balance between tradition and conservation.
- **Retention of Exemption:** Ultimately, the final version of the amended Act retained the exemption clause. However, limitations were imposed on the movement of elephants, allowing transfers only to those with existing certificates of ownership.

Gape Limitation

News Excerpt:

In ecology, the term '**gape limitation**' stands for the idea that a predator can only eat things that fit in its mouth.

What is a Gape Limitation?

- Imagine a **snake trying to eat a rabbit**. If the rabbit is too big to fit in the snake's mouth, gape limitation says the latter won't be able to eat it.
- It specifies **which animals can eat which other animals**.
 - For example, **small predators can only eat small prey, while bigger predators can also eat bigger prey**.
- From the prey's point of view, if a predator's mouth isn't big enough to devour it, perhaps those animals are safe from that predator.

Why is it important to study Gape Limitation?

- Predicting how **changes in predator or prey populations, changes in habitats, and/or environmental disturbances** could affect the structure and function of ecosystems.
- Understand the **intricate dynamics of animal interactions** and the cascading effects they have on **biodiversity**.

World Air Quality Report, 2023

News Excerpt:

According to the latest Report, the World Air Quality Report 2023, released by the **Swiss organization IQAir, Delhi** was the most polluted capital city in the world last year and the third most polluted city in India in terms of PM (Particulate Matter) 2.5 levels.

Key highlights of the Report:

- In 2023, **Delhi's annual average PM 2.5 level** was **92.7 µg/m³**, placing the Indian national capital at the top of a list of 114 capital cities worldwide.
 - This was followed by **Dhaka in Bangladesh**, with a PM 2.5 level of 80.2 µg/m³.
 - Delhi's most polluted month in 2023 was November, with a PM 2.5 level of 255.1 µg/m³, followed by December, with an average of 210 µg/m³ and the cleanest month was August – with an average PM 2.5 concentration of 34.8 µg/m³.
- **Begusarai in Bihar and Guwahati in Assam** fared **worse than Delhi** in terms of annual average **PM 2.5 levels**.
 - While Begusarai recorded an average of **118.9 µg/m³ in 2023, Guwahati recorded 105.4 µg/m³**.
- Out of a total of 134 countries, **India ranked third with an annual average PM 2.5 level of 54.4 µg/m³**, after Bangladesh and Pakistan, both of which had levels over 70 µg/m³.
- The Report estimates that 1.36 billion people in India experience **PM 2.5 concentrations exceeding the WHO recommended annual guideline level of 5 µg/m³**.
 - Furthermore, 1.33 billion, or **96% of the population**, experience PM 2.5 levels **more than seven times the WHO annual PM 2.5 guideline**.
 - This trend is reflected in city-level data, with **more than 66% of the country's cities reporting annual averages greater than 35 µg/m³**.
- Data in the Report also shows that **Delhi spent 56% of its annual hours in 2023 at a PM 2.5 level that exceeds WHO guidelines by over 10 times**.
- **Australia, Estonia, Finland, Grenada, Iceland, Mauritius, and New Zealand** met the World Health Organization **annual PM 2.5 average of 5µg/m³ or less**.

Whales & dolphins get 'personhood' status

News Excerpt:

Indigenous leaders of the **Pacific Islands of New Zealand, Tonga, Tahiti, and the Cook Islands** have signed an **international treaty** granting **legal personhood to cetaceans like whales, dolphins, and porpoises**.

More about the news:

- The treaty signed allows **large marine animals the right to freedom, life, and movement, freedom of natural behaviour, and freedom to live in a healthy environment**.
- These animals are protected not only for **their high cognition and complex thinking** but also for **their importance to ecosystems**. Such efforts focus **mainly**

on animals of high intelligence and the "self-aware" ones.

- The **island nations are not the first to make legal changes** to give more rights to animals.

In India's Context:

India was among **the first countries** to declare **dolphins and whales as "non-human persons" in 2013**.

- In India, the declaration supplements protections accorded to cetaceans under the **Wild Life (Protection) Act of 1972**.
- The **Ministry of Environment, Forest and Climate Change (MoEFCC)** recognizes cetaceans' high levels of intelligence and complexity of life and has prohibited their shows in water parks, dolphinariums, or aquariums since the 2013 declaration.
 - **Project Dolphin** was announced in 2020 to boost marine and freshwater river dolphin populations.
 - Last year, the **Ganges river dolphin** was declared **India's official aquatic animal**.

Different states have attempted to provide these rights to different animals:

- The **Federation of Indian Animal Protection Organisations (FIAPO)** has been pressuring courts to give **personhood status to elephants**, among the most intelligent animals on the planet.

About FIAPO:

It is India's apex animal rights organization. FIAPO is registered under the Indian Trust Act 1882 and enjoys tax exemption as a charity under Section 12A of the Income Tax Act.

- The **Uttarakhand High Court** noted in 2018 that **"the entire animal kingdom, including avian and aquatic, are declared as legal entities** having a distinct persona with corresponding **rights, duties, and liabilities** of a living person."
- In 2019, the **Haryana High Court** ruled that **animals in India** are entitled to the **"Fundamental Right to Freedom" under Article 21 of the Constitution**.

Personhood for plants, water bodies, and nature:

- In 2017, the **Uttarakhand High Court** recognized **rivers as legal, living persons with human rights, the Punjab and Haryana High Court** bestowed **personhood on the Sukhna Lake, and the Madras High Court** ruled that **nature and the environment have rights**.
- While the above judgments are **binding at the state level, no countrywide legal personhood law exists for animals, plants, water bodies, or nature**.

Biomining

News Excerpt:

Delhi's biomining project to clear landfill sites is likely to miss the 2024 deadline.

More about the news:

- According to **Municipal Corporation of Delhi (MCD)** officials, the ongoing biomining project at two of the Capital's three landfill sites **Ghazipur and Bhalswa** are likely to miss the latest deadline of 2024 to clear the sites.
 - **The addition of fresh waste and weather challenges** at the Ghazipur and Bhalswa sites is slowing down the biomining process.
- MCD launched the biomining project to clear its **three oversaturated landfill sites in July 2019 on directions of the National Green Tribunal (NGT)**.
- The Ghazipur landfill, notorious for its immense size and environmental impact, caught fire on April 21, 2024. The incident blanketed parts of Delhi in toxic smoke, raising health concerns for residents.

What is Biomining:

- Biomining is a process of **separating various components of legacy waste such as plastic, paper, cloth, sand, and bricks** by passing them through trommel machines, which act as cylindrical rotating sieves.
- It is the process of using microorganisms (microbes) to extract metals of economic interest from rock ores or mine waste.
 - Biomining techniques may **also be used to clean up sites** that have been **polluted with metals**.

What metals are currently biominced?

- Most current biomining operations target **valuable metals like copper, uranium, nickel, and gold that are commonly found in sulfidic (sulfur-bearing) minerals**.
- **Microbes are especially good at oxidizing sulfidic minerals**, converting metals like iron and copper into forms that **can dissolve more easily**.
 - Other metals, like **gold, are not directly dissolved** by this microbial process, but are made more accessible to traditional mining techniques because the minerals surrounding these metals are dissolved and removed by microbial processes.

What are the environmental risks of biomining?

- Most current biomining operations **use naturally occurring microbial communities**.
 - The risks from the release of the microbes themselves into the local environment are **considered to be relatively small**.

- The **leakage and treatment of the acidic, metal-rich solution** created by the microbes, which is similar to the acid mine drainage from some abandoned mines.
 - This risk can be managed by ensuring that biomining is conducted under **controlled conditions with proper sealing and waste management protocols**.

Significance of Biomining:

- Biomining holds significant promise for **sustainable resource recovery** and environmental remediation.
- It offers a **more environmentally friendly alternative to traditional mining**, reducing the need for extensive excavation and minimizing environmental disruption.
- Biomining can help **recover valuable metals from low-grade ores** or mine waste that would otherwise be uneconomical to extract, thus contributing to resource efficiency and conservation.
- **Biomining can be used to clean up sites contaminated with metals, offering a cost-effective and efficient solution for environmental remediation**.

United Nations World Water Development Report 2024

News Excerpt:

The United Nations World Water Development Report 2024 highlights that tensions over water are exacerbating conflicts worldwide. To preserve peace, States must boost international cooperation and transboundary agreements.

More about the UN World Water Development Report 2024:

- The United Nations World Water Development Report 2024 was published by **UNESCO** on behalf of **UN Water** on **World Water Day (March 22, 2024)**.
- **Theme: Water for Prosperity and Peace**.

Key highlights of the Report:

- The Report highlights **how developing and maintaining water security and equitable access to water services** is essential to **ensuring peace and prosperity** for all.
- Equitable access to water resources, safe and affordable water supply and sanitation services, and the multiple benefits they generate are essential to building and maintaining prosperous and peaceful societies.
- Recent events, from global epidemics to armed conflicts, have emphasized that the socio-political conditions under which water is supplied, managed, and used can change rapidly.

- Water management needs to consider new economic and social realities, including climate change and geopolitical changes, and their implications for our water resources.
- Leveraging water for prosperity and peace, therefore, requires actions beyond the water domain.

- **Some facts about water scarcity from the Report:**
 - **2.2 billion people** had **no access to safely managed drinking water in 2022.**
 - About **80% of jobs** are **water-dependent** in low-income countries where agriculture is the main source of livelihood.
 - **72% of freshwater** withdrawals are used by **agriculture.**
 - **US\$832 billion** in economic losses were caused by **floods in 2002–2021.**
 - **1.4 billion people** were affected by **droughts in 2002–2021.**
 - A **10% increase in global migration** between **1970–2000** was linked to **water deficits.**

World Water Day:

- **World Water Day** is held every year on **22nd March.**
- It is a **United Nations (UN) day** focused on raising awareness of the importance of freshwater.
- **The theme of World Water Day 2024 is Water for Peace.**
- The aim is to highlight the tensions that can emerge over resources like water, leading to potential instability and conflict, as well as the role that water can play, if carefully managed, in promoting peace.

- Water and the Sustainable Development Goals:**
- Sustainable Development Goal (SDG) 6 is to “**Ensure availability and sustainable management of water and sanitation for all**”.
 - The targets cover **all aspects of both the water cycle and sanitation systems**, and their achievement is designed to contribute to progress across a range of other SDGs, most notably in **health, education, economics, and the environment.**

Facts and Figures:

- Developing and maintaining a secure and equitable water future underpins prosperity and peace for all.
- The relationship also works in the opposite direction, as poverty and inequality, social tensions, and conflict can amplify water insecurity.



Upcoming Batches

CENTRES	FOUNDATION COURSE	ADVANCE FOUNDATION COURSE <small>2 YEARS PROGRAM</small>	Contact
DELHI (R.N)	21st June	24th June	📞 98112 93743
DELHI (V.N)	5th July	26th July	📞 97173 80832
JAIPUR	24th June	23rd June	📞 82908 00441
BHOPAL	26th June	25th June	📞 75099 75361
INDORE	28th June	27th May	📞 9893 772941
HYDERABAD	20th May	10th June	📞 79960 66663
BENGALURU	30th June	Admission Open	📞 76191 66663
KOLKATA	1st July	Admission Open	📞 90077 09895
<small>On Campus Centre</small> IMPHAL WEST	7th June	24th June	📞 965084 5599

KSG Online Learning (KOL)
Quality of Physical Classes with Convenience of Online

ADVANCE FOUNDATION COURSE
24th June

FOUNDATION COURSE
7th June (Online Batch) | 21st June (Physical Batch)

FOUNDATION COURSE WEEKEND BATCH
Starting From... 29th June

OPTIONAL COURSE

PSIR 8 th July	GEOGRAPHY 11 th July
SOCIOLOGY 16 th July	RECORDED HISTORY 24 th June

NEEV
Foundation for UPSC starts with NCERT
Admission Open

AWSDP+
ANSWER WRITING SKILL DEVELOPMENT PROGRAM
Starts From 7th May

📞 9990 999707 / 96543 76543 | www.ksgindia.com

SCIENCE AND TECHNOLOGY

Science Based Targets Initiative (SBTi)

News Excerpt:

A **disputed recent decision** by the Science Based Targets Initiative (SBTi) to **allow carbon offsetting for Scope 3 emissions** of enterprises with SBTi-based climate targets has sparked **debate** and **scepticism**.

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About Science Based Targets Initiative (SBTi):

- SBTi is essentially a **standards-setting body for corporate climate targets**.
- It also **reviews climate targets** that large companies have set against its given framework and validates those that meet its stringent criteria.
- It **guides businesses in setting greenhouse gas (GHG) emission reduction targets** through what is called '**Science-Based Targets**' (SBT), which are based on the standards, tools, and guidance developed by the initiative.
- Over **4,000 global big and small companies** have set SBTs based on **SBTi's guidance**, including **Indian companies** such as those in the **Tata Group, Mahindra Group, Adani Group and Wipro**.
- SBTi's frameworks have evolved into the most widely adopted standard for corporate climate action over the years.

What is the issue?

- The SBTi board of trustees recently announced its plan to **expand** the use of '**environmental attribute certificates**' (EAC) to **reduce Scope 3 emissions**.
 - SBTi defines **EACs** as including **emission reduction credits** (or carbon credits) and **energy certificates**.
- **CDP's (Carbon Disclosure Project)** analysis of emissions across all sectors revealed that **Scope 3**

Carbon Disclosure Project:

- **CDP** was established as the '**Carbon Disclosure Project**' in **2000**, asking **companies to disclose their climate impact**.
- It is a **not-for-profit charity** that runs the global disclosure system to **help investors, companies, cities, states, and regions manage their environmental impacts**.
- The **world's economy looks to CDP** as the **gold standard of environmental reporting**, with the richest and most comprehensive dataset on corporate and city action.
- Since its inception, it has broadened the scope of **environmental disclosure** to incorporate **deforestation** and **water security**.

emissions, on average, account for 75 per cent of Scope 1+2+3 emissions.

- A new analysis, '**The Corporate Climate Responsibility Monitor (CCRM) 2024**', by the New Climate Institute and Carbon Market Watch, reveals that **Scope 3 emissions could go up to as much as 99%, as seen in the automobile sector**.
 - This makes measuring, reporting, and reducing Scope 3 emissions incredibly important for companies.
- In **SBTi's Corporate Net-Zero Standard Criteria**, the standard does **not permit the use of carbon credits to count as emission reductions** toward a company's near-term or long-term SBTs.
 - Instead, they are **only to be considered as an option for neutralising 'residual emissions'**, which are emissions that persist after a company has achieved its long-term SBTs.
 - **Or** they can be **used to finance additional climate mitigation efforts** beyond their science-based emission reduction targets, extending beyond their value chain.

The controversy:

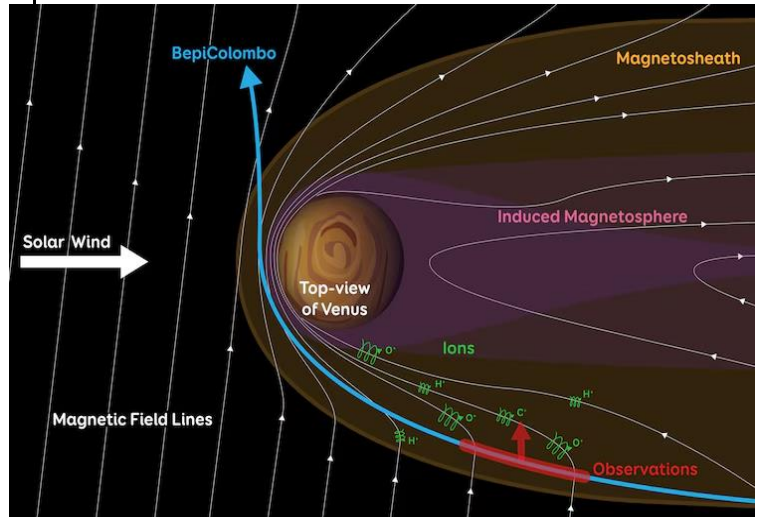
- In recent years, **investing in carbon offset projects** has **allowed** some **companies to claim 'net-zero' or 'carbon-neutrality' without reducing their own emissions**;
 - In some cases, they also increase **emission-intensive activities** while relying on carbon offsets.
- The **Corporate Climate Responsibility Monitor (CCRM) 2024** highlights the potential consequences of allowing carbon offsets for Scope 3 emissions.
 - It argues that **such a practice could effectively absolve companies of accountability for a significant portion of their emissions**, focusing attention primarily on Scope 1 and 2 emissions, which constitute a smaller share of a company's total emissions.
- In 2023, submissions were solicited for a call to evidence on the effectiveness of EACs, such as carbon offsets, which were being reviewed by a technical council.
 - This new decision to allow offsetting has led to accusations against the SBTi board of sidestepping the process by not informing the technical council.
- There has been a **growing push for using carbon offsetting to address businesses' Scope 3 emissions**.
 - The **Voluntary Carbon Market Initiative (VCMI)**, formed to guide corporate buyers on

using high-integrity carbon credits, launched a “Beta Scope 3 Flexibility Claim” recently, allowing carbon credits to offset up to 50 per cent of Scope 3 emissions.

- The **Integrity Council for the Voluntary Carbon Market (ICVCM)**, a body set up to ‘validate’ high integrity carbon credits, welcomed SBTi’s decision.
- **Carbon market participants** have also welcomed the announcement with renewed hopes of a boost in demand for offsets in the voluntary market.
- **The New Climate Institute’s analysis** shows that if the **Beta Scope 3 Flexibility Claim** is considered, companies like **Apple and H&M Group** would only need to **reduce emissions** by **20% and 2%**, respectively.
- **Other companies** would **no longer need to reduce emissions**; companies like Mercedes-Benz, Volkswagen Group, and Deutsche Post DHL could increase their emissions covered by Scope 3 targets by 20 per cent, 40 per cent, and 50 per cent, respectively.

PEPPER IT WITH
Scope 3, CDP, CCRM, SBTi, EAC

- But it exhibits stark differences, notably in its **lack of liquid water on the surface due to its extreme temperatures** and thick carbon dioxide-rich atmosphere.
- However, evidence suggests that Venus might have hosted liquid water in the distant past.



Bepi Colombo Mission Revelations:

- In 2021, the **BepiColombo mission** made significant discoveries during its **Venus fly-by**, about atmospheric escape mechanisms and Venus's evolutionary trajectory.

Understanding Venus's Evolution:

- Insights gleaned from studying atmospheric escape mechanisms are crucial for comprehending Venus's evolution and its transition to a water-deprived world.
- These findings offer valuable clues about the planet's climatic history and habitability potential.

Solar Wind Interaction and Atmospheric Loss:

● Venus's absence of a strong magnetic field exposes its upper atmosphere to the solar wind, resulting in atmospheric escape.

- The interaction between **charged particles emitted by the Sun and Venus's upper atmosphere** leads to the **gradual loss of ions**, such as hydrogen and oxygen, into space, contributing to the planet's atmospheric erosion over time.

BepiColombo

- A collaborative effort between the **European Space Agency (ESA)** and the **Japan Aerospace Exploration Agency (JAXA)**, embarked on its journey to Mercury in October 2018.
- Comprises two spacecraft, the **Mercury Planetary Orbiter (MPO)** provided by ESA and the **Mercury**

Scope 3

Its emissions are all the **indirect emissions stemming from a company's value chain**, including **emissions from suppliers and customers**.

While **excluding direct emissions from the company's own operations**, which are **Scope 1** emissions, and **indirect emissions from purchased electricity**, which are **Scope 2** emissions.

For example, **automobile industry, emissions from the production of components by suppliers, transportation of raw materials, vehicle use by customers, and disposal of end-of-life vehicles.**

Its emissions are **difficult to measure**; their nature varies widely from sector to sector, making it often **challenging to measure and report all relevant emissions**.

Its emissions disproportionately **represent the largest quantity of a company's emissions**.

Did you know Venus is leaking?

News Excerpts:

Recent studies have suggested that gases are escaping from Venus which explains the possible phenomenon of how the planet lost its water.

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More About the News:

- Venus, often referred to as **Earth's "sister planet,"** or **Earth's "evil twin,"** shares similarities in size and composition.

Magnetospheric Orbiter (MMO) provided by JAXA.

- **Aim:**
 - Orbit Mercury from the end of 2025 onwards,
 - Provide unprecedented insights into the innermost planet,
 - Deepen our understanding of Mercury's origin, composition, geophysics, atmosphere, magnetosphere, and history.

Implications for Venus's Atmospheric Evolution:

- The study highlights the importance of characterizing the escape of ions from Venus for understanding the planet's atmospheric evolution, particularly regarding the loss of water from its surface.
- These insights offer valuable perspectives on the general climate and habitability evolution of terrestrial planets and exoplanetary systems.

Future Exploration of Venus:

- Several upcoming spacecraft missions aim to investigate Venus and its environment further, promising to fill in many gaps in our understanding, including the
 - **Indian Space Research Organisation's Shukrayaan orbiter,**
 - **European Space Agency's Envision mission,**
 - **NASA's VERITAS orbiter and DAVINCI probe.**

PEPPER IT WITH
BepiColombo, Venus's Evolution, Earth evolution

India second highest in hepatitis B & C after China

News Excerpt:

According to a WHO's 2024 Global Hepatitis Report, **India has the second-highest cases of hepatitis B and C after China, with 3.5 crore cases in 2022.**

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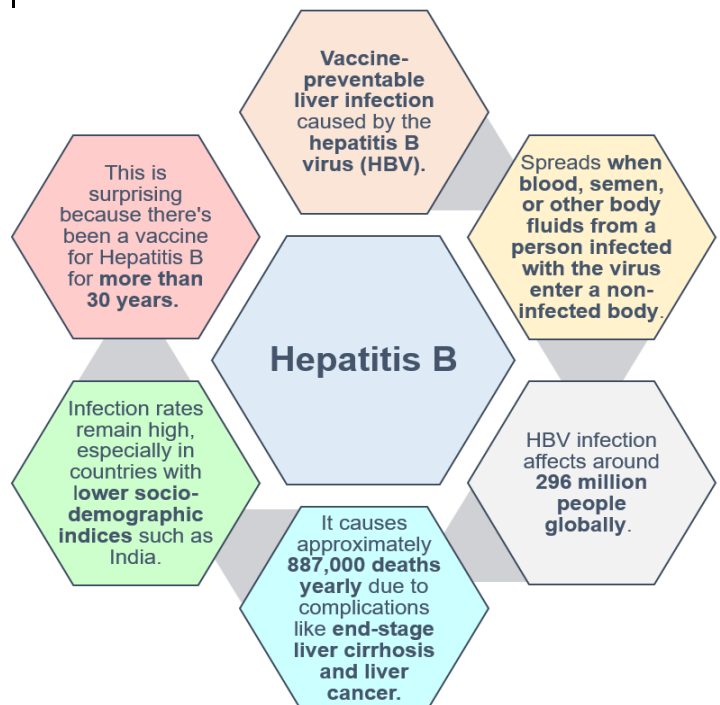
Hepatitis:

- Hepatitis is an **inflammation of the liver** that is caused by a variety of infectious viruses and non-infectious agents leading to a range of health problems.
- It is the **second-leading infectious cause of deaths globally** — with 1.3 million deaths per year, the same as **tuberculosis, a top spreadable killer.**
- There are **five main strains** of the hepatitis virus, referred to as types **A, B, C, D and E.**
 - While they **all cause liver disease**, they **differ in important ways** including **modes of transmission, severity of the illness, geographical distribution and prevention methods.**

- **Hepatitis B and C are responsible for 96% of overall hepatitis mortality.**
- **Hepatitis B and C** are transmitted by **unsafe injection practices** and through **contaminated syringes and needles, infected blood and blood products, sexual transmission, from infected mother to child.**

Key highlights of the report:

- India was second only to China in the viral hepatitis burden.
- It registered **2.98 crore hepatitis B cases** in 2022 while the number of **hepatitis C infections** stood at **55 lakhs.**
- The number of **deaths globally** from viral hepatitis increased from **1.1 million in 2019 to 1.3 million in 2022.**
 - **83% deaths** were caused by **hepatitis B**, and **17% by hepatitis C.**
 - Every day, there are **3,500 people dying globally** due to hepatitis B and C infections.
- WHO estimates indicate that 254 million people lived with hepatitis B and 50 million with hepatitis C in 2022.
- **Half the burden of chronic hepatitis B and C infections** is among people between **30 and 54 years old**, with **12%** among children **under 18 years.**
 - **Men** account for **58%** of all cases.
- **Bangladesh, China, Ethiopia, India, Indonesia, Nigeria, Pakistan, the Philippines, the Russian Federation and Vietnam,** collectively contribute **nearly two-thirds** of the global burden of **hepatitis B and C.**



India's hepatitis challenge:

- In India **98,305 people died** due to **hepatitis B** while **26,206 succumbed to hepatitis C in 2022.**
 - Only **2.4%** of those infected in the country had received **diagnosis coverage.**

- **Chronic hepatitis B** infection, which is **vaccine preventable**, accounts for **40 to 50% of hepatocellular carcinoma** (a type of liver cancer) and **20 to 30% of cirrhosis** cases in India.
- The **hepatitis B vaccination** was first introduced in India in **2002–2003** as part of the Centre’s **Universal Immunisation Programme**.
 - The vaccine was then **expanded throughout the nation in 2010**.
 - It is now provided as part of the **pentavalent vaccine** at **6, 10 & 14 weeks** apart from the **birth dose of hepatitis B vaccine**.

Way Forward:

- Emphasize targeted public health interventions to **enhance awareness and increase vaccination coverage** among **vulnerable populations**, including women, older individuals, those with lower education levels, and rural residents.
- Focus **educational campaigns on the general public**, with specific attention to the aforementioned groups, aiming to raise awareness about **Hepatitis B transmission**, its impact, and the critical need for vaccination.
- **Ensure people understand the importance of completing the full vaccination schedule** for optimal protection against Hepatitis B, emphasizing the necessity for adherence to the recommended vaccination regimen.
- Implement **comprehensive strategies that integrate efforts to improve health literacy** and enhance vaccination coverage,
- Recognize the importance of these measures in achieving both **national and global targets for Hepatitis B control**.

PEPPER IT WITH
Hepatitis A, B and C, World Hepatitis Summit, WHO

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

THE ABCDE OF VIRAL HEPATITIS

HEPATITIS	How it spreads	Prevention	Treatment
A	Feces Contaminated food or water	<ul style="list-style-type: none"> • Vaccine • Practice good hygiene 	No specific medication available Treated through supportive care (rest, adequate nutrition, and fluids) to help relieve symptoms
B	Through contact with the blood or bodily fluids of an infected person	<ul style="list-style-type: none"> • Vaccine • Practice safe sex • Blood screening 	Combination antiviral therapies (with Tenofovir or Tenofovir derivatives plus lamivudine)
C	Blood-to-blood contact	<ul style="list-style-type: none"> • Practice safe sex • Avoid sharing needles, toothbrushes, razors or nail scissors 	Combination therapies with direct acting antivirals (DAAs)
D	Contact with infected blood (only occurs in people already infected with hepatitis B)	<ul style="list-style-type: none"> • Hepatitis B vaccine • Avoid sharing needles, toothbrushes, razors or nail scissors 	Interferon
E	Feces Contaminated food or water	<ul style="list-style-type: none"> • Practice Good Hygiene • Avoid drinking water that has come from a potentially unsafe source • Cook food well 	No specific medication available Supportive Care

World Hepatitis Summit (WHS) 2024:

- WHS 2024 is being hosted in **Lisbon, Portugal**.
- WHS is bringing together global experts to discuss the latest advances in hepatitis **prevention, diagnosis, and treatment**.
- Theme of the 2024 summit is **“Integrate, Accelerate, Eliminate”**.

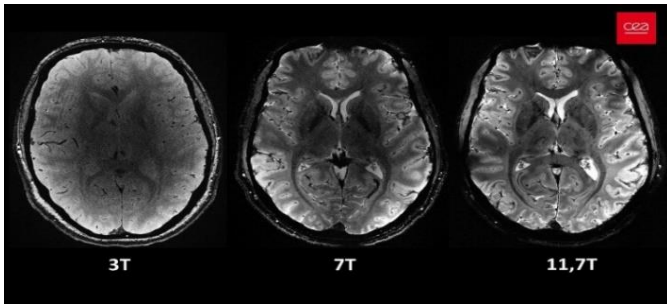
WHS 2024 was organised by the **World Hepatitis Alliance** with the support of the **Ministry of Health of Portugal**.

World's most powerful MRI machine unveiled

News Excerpt:

The world's **most powerful MRI scanner** has produced its initial images of human brains, achieving an unprecedented level of precision expected to illuminate more about our enigmatic minds and the ailments that afflict them.

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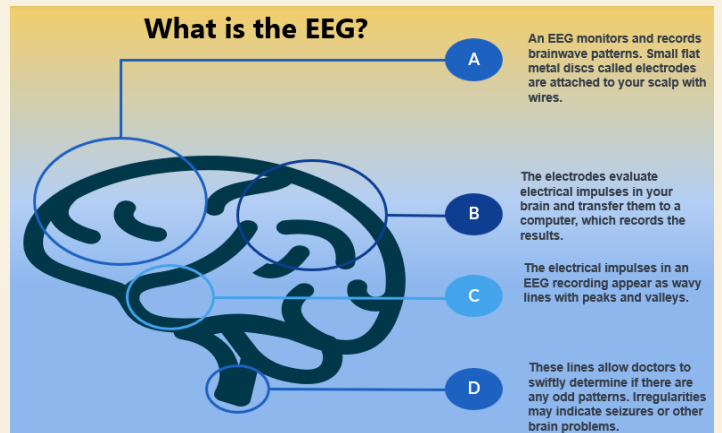


More About the News:

- The machine was developed by **France's Atomic Energy Commission (CEA)** situated in the **Plateau de Saclay region south of Paris**, known for its concentration of technology firms and academic institutions.
- The scanner generates a **magnetic field of 11.7 teslas**, a measurement unit named after inventor **Nikola Tesla**.
- This capability enables the machine to capture images with tenfold greater precision compared to the commonly used hospital MRIs, typically with a power of up to 3 teslas.
- The researchers previously utilized the machine to scan a pumpkin in 2021. Recently, health authorities authorized the scanning of humans.
- This Machine has observed an **unprecedented level of precision**, we can **visualize the minuscule vessels supplying the cerebral cortex** or discern details of the cerebellum that were previously nearly invisible, which will enable improved detection and treatment of brain pathologies.
- Objective:** To enhance our comprehension of brain anatomy and the specific brain regions activated during various tasks.
 - Utilizing MRIs, scientists have already demonstrated that the brain's cerebral cortex exhibits distinct patterns of activation when recognizing specific stimuli such as faces, locations, or words.

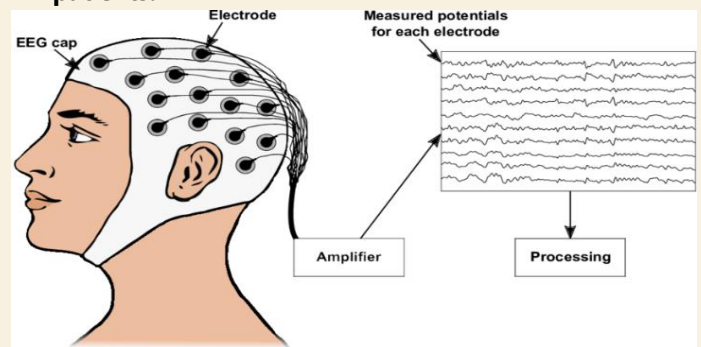
PEPPER IT WITH
EEG, ECG, Atomic Energy Commission (CEA)

Electroencephalography (EEG) remains a crucial tool for understanding the brain



How do electrical patterns arise in the brain?

- Electrical patterns arise in the brain due to the natural **repetitive activity, or oscillations, of neurons**.
 - This oscillatory activity is a result of the way **neurons are connected** and how they interact through **excitation and inhibition, creating push-pull effects**.
- These local oscillations serve as **fundamental building blocks**, contributing to the overall **EEG (electroencephalogram)** activity across the brain.
- Interestingly, these oscillations can **synchronize, or coalesce**, into a common **rhythm**, leading to patterns observed in EEG, including **seizure-like patterns in patients**.



Junk DNA led to humans being tailless

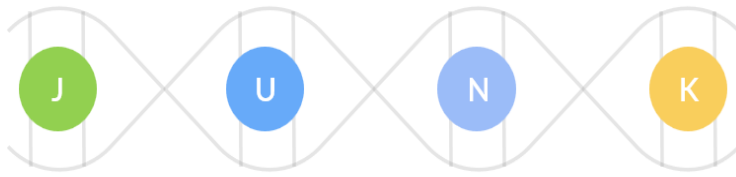
News Excerpt:

According to new research, a genetic change in our ancient ancestors may partly explain why humans don't have tails like monkeys.

More about the research:

- Scientists have traced our tail loss to a short sequence of genetic code that is abundant in our genome but had been dismissed for decades as junk DNA, a sequence that seemingly serves no biological purpose.

Junk DNA



In genetics, the term junk DNA refers to regions of DNA that are noncoding.

DNA contains instructions (coding) that are used to create proteins in the cell. 'junk' DNA is responsible for various functions including controlling when to make a protein and when not to.

However, the amount of DNA contained inside each cell is vast and not all of the genetic sequences present within a DNA molecule actually code for a protein.

A significant fraction of the 'junk' also contains transposable elements. These are pieces of DNA that can shift their positions within the genome.

- Bacterial genomes exhibit a **tandem arrangement** of genes, where **one gene end, another begins**.

Alu Element:

- One such **transposable element**, called **Alu**, is unique to **primates (both apes and monkeys)**.

PEPPER IT WITH
Gene, DNA, RNA, Genome, Human genome project, Junk DNA

- It is **tiny**, being made up of **around 300 base-pairs** (the **human genome** is approximately **3 billion base-pairs**), but has the ability to **copy** itself and **'jump'** within the genome.

- They identified the snippet, known as **Alu element**, in the regulatory code of a gene associated with tail length called **TBXT**.

About TBXT (T-box transcription factor T) gene:

- The **TBXT gene** provides **instructions for making a protein called brachyury**.
- Brachyury** is a member of a protein family called **T-box proteins**, which play critical roles **during embryonic development**.
- T-box** proteins **regulate the activity of other genes by attaching (binding) to specific regions of DNA**.
- On the basis of this action, T-box proteins are called **transcription factors**.

What is a gene?

- A gene is a **segment of DNA** that contains **sequences of many bases**, varying in **size from a few hundred to 2 million**.
- Parents pass on their genes to their **biological children**. As a result, each person has **two copies of each human gene — one from each parent**.

What is a genome?

- Every cell of an organism contains a **full copy of that organism's DNA**, called the **genome**.
- The genome contains the information that the cell uses to make proteins, the workhorses of the cell.
- Genome refers to **all the genetic material in an organism**. The human genome consists of around **3 billion DNA base pairs**.
 - Almost **every cell** in the body contains a **complete copy of the organism's genome**, tightly packaged inside its chromosomes.

Compact Genome:

- Scientists in the mid-1990s observed that simple organisms like **bacteria** maintain **highly compact genomes**.

3-D map of the universe hints about dark energy

News Excerpt:

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Scientists have known that our universe is expanding at an increasingly faster pace. They believed that 'dark energy' is causing this expansion, but little is known about it. This may change soon.

Key points about the Dark Energy Spectroscopic Instrument (DESI):

- DESI is a unique instrument with 5,000 robotic 'eyes', i.e. the capability to observe 5,000 galaxies simultaneously, each capable of separately capturing and processing light from galaxies.
- It is mounted on the Nicholas W. Mayall 4-meter Telescope at the Kitt Peak National Observatory in Arizona, USA.
- It has been operating for **three years** and is scheduled to **continue for at least two more years**.
- Data from **the first year of DESI observations**:
 - It captures light from 6 million galaxies, some of which existed as far back as 11 billion years ago,
 - It has been used to create the most comprehensive **three-dimensional evolutionary map of the universe to date**.
- Using **the first year's observational data**:
 - The DESI collaboration has calculated that the **speed of expansion of the universe is increasing** at a rate of 68.5 km per second after **every 3.26 million light-years of expansion**.
 - Some of the calculated values from DESI's observations are not consistent with current well-established theoretical models that describe the universe very well.

Dark energy intensity:

- Dark energy is causing **the universe to expand more rapidly over time**.

- It is considered a constant in the leading model of cosmology.
- The confidence level of these observations is currently around **2.5 sigma, or 95% confidence**, which is not enough for a scientific discovery of such magnitude and implications.
 - A higher confidence level of 6 sigma, or near certainty, is required.
- If the **changes in dark energy density are confirmed**, it could lead to a complete overhaul of our current understanding of the universe.
 - It would provide the **first glimpse into the nature of dark energy**, which is currently unknown.
- Speculations about the nature of dark energy include it being a **new invisible field (like electric, magnetic, or gravitational)** or a new particle.
 - The scientific community is keenly observing the **DESI data for further insights**.
- It accounts for approximately **68% of the total energy content of the universe as:**
 - Astronomers have observed other galaxies getting farther away from us over time, they know the universe is expanding.
 - The pull of gravity implies this expansion should be slowing down—but over the past 7.5 billion years, it's been getting faster.
- The new research culminated in a **3D map measuring how the universe has expanded over the past 11 billion years**.
 - The data was collected by the **Dark Energy Spectroscopic Instrument (DESI)**
- The **DESI collaboration plans to analyze data** from subsequent years of observations immediately to further investigate the potential changes in dark energy intensity.
- The key points focus on the theoretical implications of **constant versus changing dark energy density**, the initial hints from DESI data,
 - The required confidence levels for scientific discovery, and the potential for new physics if changes are confirmed.

PEPPER IT WITH
DESI, 3-D Map

India's PRATUSH

News Excerpt:

Astronomers are looking forward to opening a new window on the universe by posting high-resolution telescopes on the moon, and in orbit around it.

- One of the proposals is from India called PRATUSH.

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Shortcomings of Earth based telescopes:

- On the earth, **optical telescopes (which collect visible light at longer wavelengths)** and **radio telescopes (which collect radio waves with the shortest wavelengths)** have to peer through layers of the **planet's atmosphere**.
- While it is becoming increasingly difficult for optical instruments to see through the **polluted skies**, radio telescopes also contend with **radio and TV signals** adding to the cacophony of the **electromagnetic 'hiss' from the communications** channels used by **radar systems, aircraft, and satellites**.
- It also does not help that the earth's **ionosphere blocks radio waves** coming from outer space.

Concept of Lunar orbit telescope:

- Scientists tried to find a way out of this by launching radio telescopes into orbit around the earth. But this only made the problem worse, as **orbiting telescopes** started receiving **radio noise from the whole planet** along with signals from outer space.
- So, astronomers are now considering placing **optical and radio telescopes** on the **far side of the moon**, which **always faces away from the earth**.
- The **pristine, airless desolation** of the moon provides **optical telescopes crystal-clear seeing conditions** throughout the **two-week-long lunar night**.
- Radio telescopes on the lunar far side will also be **protected by the moon (it will blot out radio transmissions from the earth and electrically charged plasma winds blowing from the Sun)**.
- Moon promises to open up **"the most radio-quiet location in the solar system"**.

About PRATUSH (Probing ReionizATIOn of the Universe using Signal from Hydrogen)

- PRATUSH is a **future radiometer in lunar orbit** that will reveal the **Cosmic Dawn of our Universe**.
- It is being built by the **Raman Research Institute (RRI)** in Bengaluru with active collaboration from the **Indian Space Research Organisation (ISRO)**.
- **ISRO will place PRATUSH into orbit around the earth**. After some fine-tuning, the space agency will launch it moonwards.
- Although earth orbit will have significant **radio frequency interference (RFI)**, it will have advantages compared to ground-based experiments, such as operating in free space and lesser ionosphere impact.
- PRATUSH in lunar orbit will have the **ideal observing conditions operating in free space** with **minimal RFI** and **no ionosphere** to speak of.
- It will carry a **wideband frequency-independent antenna**, a **self-calibrating analog receiver** and a **digital correlator** to **catch radio noise** in the all-important signal from the Dark Ages.

Significance of PRATUSH:

- PRATUSH will **answer the question** of when the **first stars formed** in our universe, the **nature of the first stars**, and **what was the light from the first stars** or, in other words, **the colour of the light of Cosmic Dawn**.
- PRATUSH will be the **pioneering space telescope** that will reveal, for the first time, the **history of our infant Universe** as it **transformed after the Big Bang - from cold gas into stars and galaxies** and the universe as we know it today.
- PRATUSH will inform us of the first rays of the first Sun in the infant universe.

PEPPER IT WITH
ESA, ISRO, RFI, PRATYUSH,
Lunar Probe

'Artificial Sun' reaches a temperature of 100 million Celsius

News Excerpt:

Scientists from South Korea have been able to produce heat of 100 million Celsius from their reactor for a record period of 48 seconds.

More About the News:

- The **Korea Institute of Fusion Energy's (KFE) Korea Superconducting Tokamak Advanced Research (KSTAR)** fusion reactor has achieved a groundbreaking milestone by **reaching temperatures seven times hotter than the Sun's core**.
 - During testing between December 2023 and February 2024, the KSTAR reactor sustained temperatures of **180 million degrees Fahrenheit (100 million degrees Celsius) for 48 seconds**, surpassing previous records.
 - This accomplishment demonstrates progress towards **sustaining high-temperature plasma, which is crucial for nuclear fusion reactions**. Maintaining the **high confinement mode (H-mode) for over 100 seconds** further showcases KSTAR's capabilities.
 - **H-mode** provides a **stable plasma state** essential for efficient fusion reactions. By employing tungsten diverters instead of carbon, the KSTAR team successfully extended plasma stability.
- **Nuclear Fusion:**
 - Process where **two atomic nuclei combine to form a heavier nucleus**, releasing a significant amount of energy in the process.
- **Tokamak:**
 - A tokamak is a **device used to confine and control hot plasma in the process of nuclear fusion**. It

consists of a **torus-shaped chamber surrounded by magnetic coils**.

International Thermonuclear Experimental Reactor (ITER)

The International Thermonuclear Experimental Reactor (ITER) is a major international nuclear fusion research and engineering project. It aims to demonstrate the feasibility of generating energy through nuclear fusion on a commercial scale.

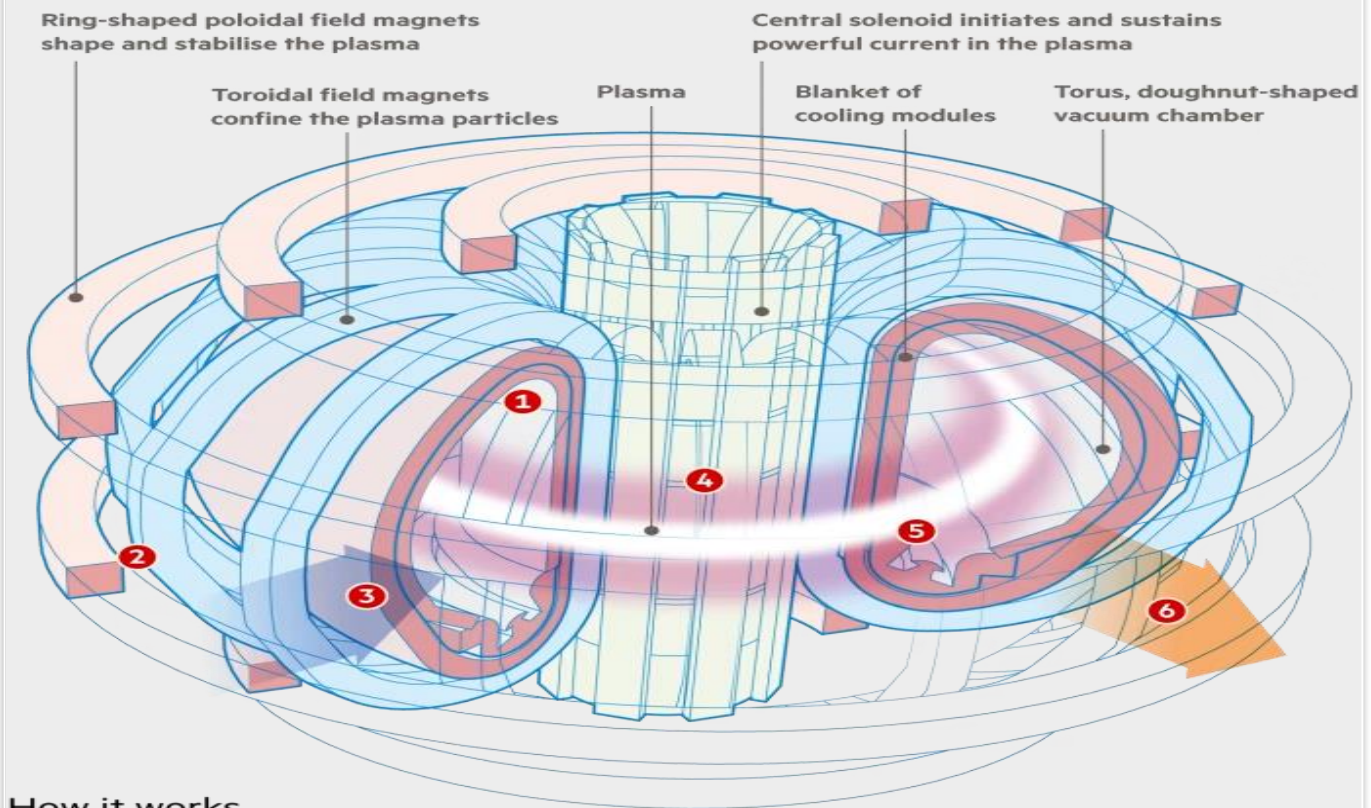
ITER is a collaborative effort of members of the European Union (EU), the United States, China, Russia, India, Japan, and South Korea, with its headquarters located in France.

ITER's design is based on a concept known as magnetic confinement fusion, where the plasma is heated to temperatures exceeding 100 million degrees Celsius, allowing hydrogen isotopes to fuse and release energy.

- Inside the chamber, **hydrogen isotopes are heated to extremely high temperatures, forming a plasma**. Magnetic fields generated by the coils confine the plasma, preventing it from contacting the walls of the chamber.
- This confinement allows the plasma to reach the temperatures and densities necessary for nuclear fusion reactions to occur.
- **Tungsten diverters** are critical components in fusion reactors, as they expel waste gases and impurities while enduring high surface heat loads.
 - Earlier the Carbon diverters were used but with the coming of tungsten diverters there **is a 25% increase in Surface temperatures** ultimately enhancing the reactor's operational capabilities.
 - Tungsten has one of the highest melting points of all metals, making it capable of withstanding the intense heat generated in fusion reactions.
- **Artificial Sun:** The term is used to **describe tokamak reactors because they replicate the conditions found in the Sun's core where nuclear fusion naturally occurs**.
 - By creating a controlled fusion reaction on Earth, scientists aim to unlock a nearly limitless source of clean energy that could help address the world's energy needs while reducing reliance on fossil fuels and mitigating climate change.

PEPPER IT WITH
ITER, Plasma, Isotopes,
Uranium

Magnetic confinement fusion (the tokamak)



How it works

- 1 Air is extracted from the vacuum chamber, the torus
- 2 The magnets are charged up
- 3 Fuel is introduced, typically deuterium and tritium
- 4 Current is run through the torus, stripping electrons from the fuel and forming a plasma
- 5 The energised plasma particles collide and begin to heat up. Helped by auxiliary heating and confined by the magnets, they reach a condition where fusion can occur
- 6 The heat can be transferred out for electricity generation, typically using steam turbines

Graphic: Ian Bott

Negative Leap Second

News Excerpt:

The melting of **polar ice** due to global warming is affecting Earth's rotation and could impact **precision timekeeping**, according to a paper in the journal Nature.

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Making the leap:

- The establishment of **two versions of time — astronomical and atomic** came more than **55** years ago when **atomic clocks were adopted as the official time standard**.
- In atomic time, a second is defined as **9,192,631,770** oscillations of a Cesium atom and thus, **these clocks do not slow down**.
- In the early **1970s**, Earth was slowing down in its rotation, and a gap formed between atomic time and astronomical time. **Astronomical time fell behind atomic time by 2.5 milliseconds every day**.

- Thus, the "leap second" was born to adjust that the "day" was **getting longer**.

What is a Leap Second?

- Coordinated Universal Time (UTC) is based on International Atomic Time (TAI) but is adjusted by seconds to **account for the difference between the definition of the second and the rotation of the Earth**.
- Occasionally, 1s is added to the UTC time scale. **This second is called a leap second**.
- Its purpose is to keep the UTC time scale **within ±0.9 s of the Universal Time (UT1) time scale**, which changes slightly due to variations in the rotation of the Earth. **UT1 refers to astronomical time**.
- Twenty-seven leap seconds have been added** to Universal Coordinated Time since 1972. The addition of a leap second happens at the last tick of the clock on the night of Dec. 31 or June 30.
- In a **leap second**, instead of 11:59 and 59 seconds turning to midnight, there is another second at 11:59 and 60 seconds.

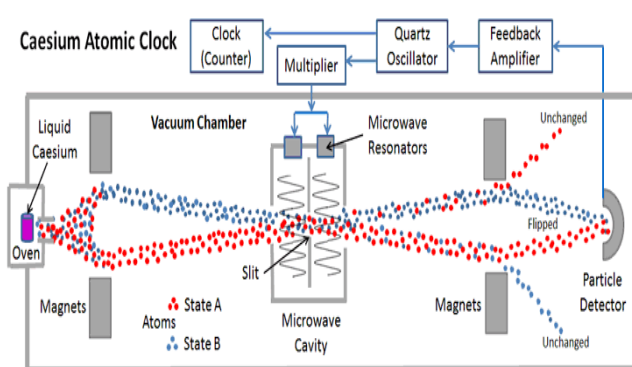
India is deploying atomic clocks across the country to ensure that the **time shown in our digital watches, smartphones, and laptops** is truly based on **Indian Standard Time (IST)**.

Background:

- Currently, most **software operating modules in India** rely on **US-based Network Time Protocol servers**.
- The Indian government wants **all software to be synchronised with indigenous atomic clocks** instead, both for **uniformity in time** and as a **defence mechanism, especially in times of war**.
- The **Consumer Affairs Ministry's Legal Metrology Department** and the **National Physical Laboratory**, or NPL, the nation's timekeeper, are installing the atomic clocks.
- So far, **India** has **atomic clocks** in **Ahmedabad and Faridabad**, and more are being installed in Bhubaneswar, Jaipur, and Hyderabad.
- **Only four** other countries - **the US, the UK, Japan, and Korea** - have their **own atomic clocks**.

About Atomic Clock:

- An **atomic clock works like a conventional clock**. Still, the **time-base of the clock**, instead of being an oscillating mass as in a pendulum clock, is **based on the properties of atoms** when **transitioning between different energy states**.
 - An atom, when excited by an external energy source, goes to a higher energy state. Then, from this state, it goes to a lower energy state. In this transition, the atom releases energy at a very precise frequency, which is characteristic of the type of atom.



Need of the adjustment:

- **Timekeeping is an exact science** in a highly technological society, which is why a need was felt to invent the concept of the "leap second" and "negative leap second".
- **Global Positioning System (GPS) as well as Stock Trading** requires split-second accuracy thus, this new difference of a leap second could impact them vastly.

Now:

- But now, the Earth is not slowing down anymore. **There hasn't been a leap second added since the end of 2016.**
- Earth's rotation has been speeding up, overtaking atomic time. This means that to bring the two measurements in sync, timekeepers may have to introduce the first-ever negative leap second.
- The melting of the ice caps in **Antarctica and Greenland** shifts mass (i.e. all that extra liquid is **redistributing weight across the planet**) toward the equator. That process increases the equatorial bulge of the planet.
- **A negative leap second would go from 11:59 and 58 seconds directly to midnight, skipping 11:59:59.**
- Overall, the Earth's rotation is too unpredictable to definitively say when (or if) we'll need that negative leap second in 2026, 2029, or anytime soon.

PEPPER IT WITH
IST, UTC, GPS, Atomic clock

Small-scale LNG as fuel for India

News Excerpt:

Recently, the Union Ministry of Petroleum and Natural Gas dedicated to the nation India's **first small-scale liquefied natural gas (SSLNG) unit at GAIL (India) Ltd's Vijaipur complex in Madhya Pradesh.**

Why small-scale LNG?

- The government **aims** to increase the **share of natural gas in its primary energy mix to 15% by 2030** from a little more than 6% at present.
- Natural gas is **far less polluting** than conventional hydrocarbons like coal and oil.
- It is also **cheaper than oil**, more than 85% of India's requirement for which is met through costly imports.
- Natural gas is seen as a **key transition fuel** in India's journey **towards green energy and future fuels**.

Why is the use of LNG in long-haul trucks and buses attractive?

- **LNG is significantly cleaner** than diesel- with **reduced carbon dioxide emissions and negligible amounts of particulate matter, nitrogen oxide, and sulphur dioxide emissions.**
- **LNG offers a slightly longer range to vehicles than diesel** with similar-sized fuel tanks and is usually **cheaper than crude oil**, from which diesel is derived.
- Although **India imports around half of its natural gas requirement, this dependency level is much lower than that for crude oil.**
 - Replacing a major chunk of India's diesel consumption by LNG could lead to **substantial foreign exchange savings.**

- LNG has been **used successfully and aggressively in medium and heavy commercial vehicles in many countries, most notably in China.**

market is due to a lack of clear demand signals to the vehicle manufacturers.

- Demand aggregation would help optimize the cost of LNG HDV and further improve its adoption.

What is SSLNG?

SSLNG refers to the liquefaction and transportation of natural gas using unconventional means in a significantly smaller-scale operation than the usual large-scale liquefaction, regasification, and transportation infrastructure and processes.

LNG - gas in its liquid or super-chilled form - is supplied in specialised trucks and small vessels to industrial and commercial consumers in regions that are not connected by pipelines.

The **SSLNG chain can start** from a large-scale LNG import terminal from where the LNG can be transported to consumers by cryogenic road tankers or small vessels instead of being regasified and supplied through pipelines.

- The chain can also start at locations with ample natural gas supply or production, where small liquefaction plants can be set up.

- Non-fiscal incentives for demand creation:** A procurement policy could be formulated to adopt LNG HDVs in PSUs for transportation service contracts.

- Non-fiscal incentives play a key role in signalling the government's push for adopting a certain alternative fuel.

- Such incentives for LNG could lead to the private sector getting involved in the market development for the alternative fuel.

- Regulatory interventions -** Regulations for mobile refuelling of LNG

Challenges:

- A major challenge in scaling up gas consumption lies in **transporting gas to places that are not connected by India's natural gas pipeline grid.**
 - This problem also hinders the direct use of LNG as fuel for long-haul trucks and inter-city buses.
- Large-scale pipeline projects** that are in the works **will take years to be completed;** even so, **last-mile delivery challenges may persist** in many parts of the country.
- The **challenges in India** include -
 - Lack of easy availability of LNG-powered vehicles,
 - The higher initial cost of these vehicles compared with diesel,
 - Absence of an LNG vehicle financing ecosystem,
 - The virtually non-existent LNG retail network.

HDV are to be approved to alleviate fuel availability concerns, which have been raised by fleet operators.

- Signalling and outreach -** A "Natural Gas Mobility Dashboard" must be created with information on LNG refuelling stations, locations, and retail prices for fleet operators to plan and deploy LNG HDVs accordingly.

PRE-SHOTS

SPACE

First tidally locked super-Earth exoplanet confirmed

News Excerpt:

An international team of astronomers and astrophysicists has confirmed the first known observance of a tidally locked super-Earth exoplanet.

More about the news:

- Scientists have confirmed the existence of a **super-Earth exoplanet**, named **LHS 3844b**, that is **tidally locked to its star.**
- This means that **one side of the planet is always facing its star**, while the other side is perpetually turned away.
- The team's innovative approach to studying the planet's characteristics has shed light on a phenomenon that, while suspected in exoplanets, had not been conclusively proven until now.

Tidal Locking:

- Tidal locking happens when an **object's orbital period matches its rotation period**, leading to the **same side always facing the planet or star it orbits.**

Way Forward:

- Road toll-free exemption for LNG HDV:** Fiscal incentive in the form of toll-free exemption to LNG HDV will reduce the total cost of ownership and could incentivize adoption.
- Reduction of VAT on LNG sale to HDV and natural gas to be under GST -** A reduction of VAT to 5 percent on the sale of LNG to HDV will help in LNG price harmonization across states and further bring down the LNG HDV operating costs. In addition, natural gas should come under GST to ensure the availability of input tax credits.
- Demand aggregation model for LNG HDV adoption -** Currently, the unavailability of LNG HDV models in the

PEPPER IT WITH
LNG, CNG, EV vehicles,
Global Fuel Economy
Initiative

- Tidal locking is a natural consequence of the **gravitational distortions** induced by a body on another.
- The **Moon is tidally locked to the Earth** because **it rotates** in exactly the **same time as it takes to orbit the Earth**. That is why we **only see one side of the Moon**.
 - For this reason, the Moon has what is commonly described as a "**far side**"—the side we never see.

LHS 3844b:

- **LHS 3844b** is a **super Earth exoplanet** that orbits an **M-type star**.
- Its mass is **2.25** times that of **Earth**, it takes 0.5 days to complete one orbit of its star, and is 0.00622 AU from its star.
- Its **discovery** was announced in **2019**.

What is an Exoplanet?

- An exoplanet is any **planet beyond our solar system**.
- Most exoplanets orbit other stars, but free-floating exoplanets, called **rogue planets**, orbit the galactic center and are untethered to any star.

Tiantong Satellite

News Excerpt:

Chinese scientists have developed the world's first satellite capable of enabling smartphone calls directly **without the need for ground-based infrastructure such as mobile towers**.

About the news:

- The deployment of the Tiantong-1 series involves launching **three satellites orbiting synchronously at an altitude of 36,000 kilometers**. This has the potential to revolutionize communication across the Asia-Pacific region, from the Middle East to the Pacific Ocean.
- However, the realization of direct satellite connectivity for mobile phones posed **formidable technical challenges**, particularly concerning **passive intermodulation (PIM) interference**.
- PIM has **plagued commercial communication satellite networks**, hindering further technological advancements. In response, Chinese scientists spearheaded groundbreaking research to mitigate PIM effects.

Background:

- Named after the Chinese term for "**connecting with heaven**," reminiscent of the **biblical Tower of Babel**, the project symbolized a commitment to enhancing communication resilience in the face of adversity.

What is PIM?

- Interference resulting from the nonlinear mixing of two or more frequencies in a passive circuit. If the interference coincides with a network's base receive frequencies, it can cripple network performance.
- Lowers the reliability, capacity and data rate of cellular systems.
- Issue for cellular network operators: PIM issues may occur as existing equipment ages, when co-locating new carriers, or when installing new equipment. PIM is a particular issue when overlaying (diplexing) new carriers into old antenna runs.
- PIM can create interference that will reduce a cell's receive sensitivity or even block calls.

- The **idea** is, that in the case of an emergency where **mobile connectivity may be severely impacted because of a natural calamity or any other disaster**, people can call for help directly, by connecting to an overhead communication orbiter.
- The idea for such a satellite came about after **2008**, when Sichuan, a province in southwestern China, was struck by a **devastating magnitude-8 earthquake**, resulting in the tragic loss of over 80,000 lives.
- What made the situation far worse back then was the **communication breakdowns in affected areas**, which in turn severely hindered rescue operations, thus compounding the crisis.
- In response to this disaster, the **Chinese government started the Tiantong Project, a satellite communication system**.
- The purpose of the satellite is to provide **universal access to communication** services irrespective of socio-economic status.

Europa Clipper Mission

News Excerpt:

The **National Aeronautics and Space Administration (NASA)** is preparing the **Europa Clipper spacecraft** for a mega launch in October this year.

More about Europa Clipper mission:

- Europa Clipper is a **robotic solar-powered spacecraft** built to conduct the first **detailed investigations of Jupiter's icy moon Europa**.
- It is **NASA's Largest Planetary Mission Spacecraft**.
- The spacecraft will arrive at **Jupiter in 2030**. Once in orbit around Jupiter, it will conduct nearly **50 flybys of Europa**.



- Europa Clipper will launch in **October 2024** on a **SpaceX Falcon Heavy rocket** from Kennedy Space Center in Florida.

What will Europa Clipper do?

- Europa Clipper’s main science goal is to determine whether there are places below the **surface of Jupiter’s icy moon, Europa, that could support life.**
- The mission’s **three main science objectives** are to understand the **nature of the ice shell** and the **ocean beneath it**, along with **Europa’s composition** and **geology.**
- Europa Clipper will perform 50 flybys of Europa to gather measurements of the **internal ocean, map the surface composition and geology,** and **hunt for plumes of water vapour** that may be venting from the icy crust.

- Scientists predict that there is a **probable sea on Europa** containing twice as much water as all of Earth’s oceans combined.
- It also has the **right chemical elements** – the building blocks of life.
- All lifeforms need **energy** to survive. On Earth, most of that energy comes from the Sun.
 - **Europa’s surface** is blasted by **radiation from Jupiter.** That’s a bad thing for life on the surface – it couldn’t survive. But the **radiation may create fuel for life in an ocean below the surface.**

SAKHI App

News Excerpt:

The Vikram Sarabhai Space Centre (VSSC), the Indian Space Research Organisation (ISRO) facility at Thumba in Thiruvananthapuram, has developed a **multi-purpose app** that will **help astronauts on the Gaganyaan space flight mission.**

About Space-borne Assistant and Knowledge Hub for Crew Interaction (SAKHI) app:

- It can carry out a range of tasks such as looking up vital technical information or communicating with one another.
- It will **monitor the astronauts’ health,** help them **stay connected with Earth,** and even **alert them about their dietary schedules.**
- The **astronauts may need to look up technical documents** and training manuals at short notice during the mission.

Europa Clipper has three main science objectives:

<p>Determine the Thickness of Europa’s Icy Shell & How the Ocean Interacts With the Surface</p>	<p>Scientists aim to determine the thickness of Europa’s icy shell – the moon’s outer layer that includes its surface. They will discover whether there’s liquid water within and beneath the shell. Researchers will estimate the size, saltiness and other qualities of Europa’s ocean. They also will determine how the ocean interacts with the surface: Does anything in the ocean rise up through the shell to the top? Does any material from the surface work its way down into the ocean?</p>
<p>Investigate Europa’s Composition</p>	<p>Scientists will investigate the composition of Europa’s ocean to determine if it has the ingredients to permit and sustain life.</p>
<p>Characterize the Geology of Europa</p>	<p>Scientists will study how Europa’s surface features formed and locate any signs of recent activity such as sliding crust plates or plumes that are venting water into space.</p>

Europa:

- Europa is the **sixth-largest moon in the Solar System** and **Jupiter’s fourth-largest satellite.**
- Despite its cracked and discoloured appearance, it is the **smoothest solid object** in the **Solar System.**

Potential for life:

- Europa is considered one of the **"most promising potentially habitable environments"** in the solar system.
- Life as we know it seems to have **three main requirements: liquid water, certain chemical elements, and an energy source.**
- **Astrobiologists** – scientists who study the origin, evolution, and future of life in the universe – believe Europa has the **essential elements to support life.**

- SAKHI will **ensure that they have all the required data at their fingertips.**
- The astronauts can use the app to **maintain a log on the mission in multiple formats,** including **voice records, texts, and images.**
- This comprehensive system **provides information on key parameters** like **blood pressure, heart rate, and oxygen saturation,** providing invaluable insights into the crew’s physical condition throughout their mission.
- SAKHI will **keep the crew connected with the onboard computer and ground-based stations,** guaranteeing a seamless communication link.
- The app will also **remind them about their hydration, dietary schedules, and sleep patterns.**

NASA's SOHO Mission

News Excerpt:

NASA's SOHO mission celebrates a milestone as it captures the 5,000th comet on its journey around the Sun.

About SOHO Mission:

- SOHO, the **Solar & Heliospheric Observatory** was launched on **December 2, 1995** with a package of **12 instruments onboard**.
 - The mission has 12 instruments, including **telescopes and spectrometers**, which observe the Sun in various wavelengths of light, **from ultraviolet to visible X-rays**.
- A joint project of the **European Space Agency (ESA) and NASA**. It is designed to **study the Sun, its atmosphere, and the solar wind**.
- It has provided knowledge into **the structure of the Sun, including its magnetic field, solar flares, coronal mass ejections (CMEs), and solar variability**.
- SOHO monitors the effects of space weather on our planet, and it plays a vital role in forecasting potentially **dangerous solar storms**.

Latest Findings:

- Now, the SOHO mission has **achieved a milestone in its journey by capturing its 5,000th comet** as it traverses around the solar star in our cosmic neighborhood.
- These observations help **scientists better understand solar phenomena** and their impact on space weather, which can affect satellites, power grids, and communication systems on Earth.
- The latest comet, named **SOHO-5000**, belongs to the **Marsden group**.
 - It is a part of the **larger comet 96P/Machholz**.
- SOHO shows no signs of slowing down.
- SOHO has provided information about **its core and outer atmosphere**.
 - Notable achievements include the **first-ever images of the Sun's convection zone and sub-surface sunspots**, as well as **detailed measurements of rotation and temperature**.
- It has also pinpointed the origins and acceleration mechanisms of the **solar wind**, particularly in **magnetically "open" polar regions**
 - while uncovering **novel solar phenomena** like **coronal waves and solar tornadoes**.

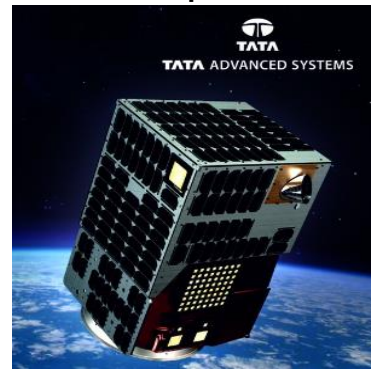
TSAT-1A Satellite

News Excerpt:

TASL announces successful deployment of **sub-metre resolution** optical satellite TSAT-1A.

Key points about Tata Advanced Systems' TSAT-1A satellite deployment:

- **Tata Advanced Systems Limited (TASL)** successfully deployed its **sub-metre resolution optical satellite, TSAT-1A, in space**.
- The satellite was launched aboard **SpaceX's Falcon 9 rocket** as part of the **Bandwagon-1 mission** from Kennedy Space Center, Florida, U.S.
- The **Bandwagon-1 mission** was SpaceX's first dedicated **rideshare mission** launched into a **mid-inclination orbit**, offering a higher revisit rate for satellite imaging.
- The deployment is a result of TASL's collaboration with **Satellopic**, leveraging their expertise in developing and **integrating earth observation satellites**.



Applications:

- In addition to TSAT-1A, the mission carried **11 other spacecraft**, including those from **Korea, HawkEye 360, Tyvak International, iQPS, and Capella Space**.
- TSAT-1A will deliver **high-resolution optical satellite images** with **increased collection capacity, dynamic range, and low-latency delivery** through its **multispectral and hyperspectral capabilities**.

Military applications:

- Delivers **high-resolution imagery with precision less than 1 meter per pixel**, suitable for military/defence applications.
- Primary customers are the government and **armed forces**.
- India possesses a limited number of military spy satellites developed by ISRO.
- TASL intends to establish a constellation of similar satellites in the future, with its manufacturing facility

**SpaceX's
Falcon 9
rocket**

Two-stage rocket designed and manufactured by SpaceX for the reliable and safe transport of people and payloads into Earth orbit and beyond.

World's first orbital class reusable rocket. Reusability allows SpaceX to reflly the most expensive parts of the rocket, which in turn drives down the cost of space access.

primed to produce up to **25 low earth orbit (LEO)** satellites for military purposes.

- The necessity for high-resolution imagery has heightened following conflicts with China along the **Line of Actual Control (LAC)**.
 - This implies that TSAT-1A's capabilities are intended to support India's military and defence operations in regions of heightened tensions or conflicts.
- The satellite was assembled at TASL's Assembly, Integration, and **Testing plant in Vemagal, Karnataka**.

Ozone on Jupiter's moon Callisto

News Excerpt:

Strong evidence of ozone's presence on **Jupiter's moon Callisto** has been found by a team of scientists.

Key Highlights of the study:

- Study outlines the researchers' investigation into the chemical evolution of "**SO₂ astrochemical ice**", which is ice primarily composed of **sulfur dioxide (SO₂)** in the presence of **ultraviolet irradiation**.
- This shed light on the chemical processes and composition on the surface of Callisto. By analyzing the **UV absorption spectra** of the irradiated ice samples, Scientists identified a distinct signature indicating **the formation of ozone**.
- They corroborated their findings by comparing them with data from the **Hubble Space Telescope** to understand **Callisto's environment** and the potential habitability of **icy moons** in the Solar System.

Callisto and its unique environment:

- After **Saturn**, **Jupiter** has the **most moons** in the **Solar System**.
 - **Callisto** is one of **Jupiter's largest moons** and the **third-largest moon** in the Solar System after **Ganymede and Titan**.
- Despite being as big as the planet Mercury, it has **less than half as much mass**.
 - Callisto is primarily composed of **water ice, rocky materials, sulphur dioxide**, and some **organic compounds**.

- These substances make the moon a **potential candidate for supporting life** in the Solar System beyond **the earth**.
- Callisto's surface is heavily cratered, **indicating a long history of being struck by asteroids and comets**. (It may have the **oldest surface in the Solar System**).
 - It also lacks the extensive seismic activity seen on some of Jupiter's other moons, such as Io and Europa.
- The presence of relatively few geological features suggests Callisto's surface is geologically inactive.
 - Its surface has likely been relatively **stable for a long time**.
- This stability could be vital to preserve any **subsurface ocean** or **potential habitats beneath the icy crust**.
- The detection of **sulfur dioxide on Callisto's surface** has encouraged the scientists to conduct **spectroscopic observations** to gain a better understanding of **the moon's surface composition and formation**.

Gaia mission

News Expert:

Astronomers have detected the largest stellar black hole in the Milky Way galaxy, with a **mass 33 times that of the Sun**. It is also the **second closest black hole to Earth**, sitting just **2,000 light years** away from the planet.

About the newly discovered stellar black hole "Gaia BH3":

- "Gaia BH3" stellar **black hole** has dethroned **Cygnus X-1**, which is **21 times as massive as the Sun**, to become the most massive black hole of stellar origin in the Milky Way.
- It sits in the **Aquila constellation**. Gaia is a Latin word that means "**the eagle**".
- Nearly all **stellar black holes** were found because they **exist in binaries** or pair up with a **companion star**.
 - The **more massive of the two likely evolves into a black hole**, with its companion orbiting it.
 - **Gaia BH3** was observed, causing an **odd 'wobbling' motion on the companion star orbiting it**.



- Researchers used data from ground-based observatories, including from the **Ultraviolet and Visual Echelle Spectrograph (UVES)** instrument on **ESO's VLT located in Chile's Atacama Desert**.
 - These observatories studied key properties of the companion star, which allowed astronomers to measure the mass of BH3 precisely.

About Gaia mission:

- Gaia was **launched in 2013** from the **European Spaceport in Kourou, French Guiana**, on a Soyuz-STB/Fregat-MT launch vehicle.
- Its **goal** was to **build our galaxy's largest, most precise three-dimensional map** by **surveying nearly two billion objects**.
 - The mission also involves studying more than one million distant quasars and providing stringent new tests of Albert Einstein's General Theory of Relativity.
- Gaia **monitors each of its target stars about 14 times per year**.
 - It is precisely charting their positions, distances, movements, and changes in brightness.
- Gaia is creating an extraordinarily **precise three-dimensional map of nearly two billion objects throughout our Galaxy** and beyond, mapping their **motions, luminosity, temperature and composition**.
 - This huge stellar census is providing the data needed to tackle an enormous range of important open questions relating to the **origin, structure and evolutionary history of our Galaxy**.
 - **For example**, Gaia is identifying which stars are relics from smaller galaxies long ago 'swallowed' by the Milky Way.
 - By watching for the large-scale motion of stars in our Galaxy, it is also probing the distribution of dark matter, the invisible substance thought to hold our Galaxy together.
- Gaia is achieving its goals by repeatedly **measuring the positions of all objects down to magnitude 20 (about 400,000 times fainter than can be seen with the naked eye)**.
- For all objects brighter than magnitude 15 (4000 times fainter than the naked eye limit), Gaia is measuring their positions to an accuracy of 24 microarc seconds.
 - This is comparable to measuring the diameter of a human hair at a distance of 1000 km.
- At its heart, **Gaia contains two optical telescopes** that **work with three science instruments to determine the location of stars** and their velocities precisely and to split their light into a spectrum for analysis.

Reusable Launch Vehicle (RLV) "Pushpak"

News Excerpt:

The **Indian Space Research Organisation (ISRO)** has reached a significant milestone in Reusable Launch Vehicle Technology with the successful landing experiment of the **RLV LEX-02**.

Key Points:

- The **RLV LEX-02 mission** demonstrated the autonomous landing capability of the reusable launch vehicle from challenging initial conditions after release from a helicopter.
- The experiment, conducted at the **Aeronautical Test Range in Chitradurga, Karnataka**.
- It marks a crucial step forward in the development of reusable launch vehicles (RLVs).

About Pushpak:

- The **Pushpak RLV** is designed as an all-rocket, **fully reusable single-stage-to-orbit (SSTO)** vehicle, incorporating several major elements such as the **X-33 advanced technology demonstrator**.
 - The **X-34 testbed technology demonstrator**, and the upgraded DC-XA flight demonstrator.
- Pushpak demonstrated **autonomous landing capability** from off-nominal initial conditions at release from a helicopter.
- It performed difficult **manoeuvres with dispersions**, correcting both **cross-range** and **downrange** to precisely land on the runway.

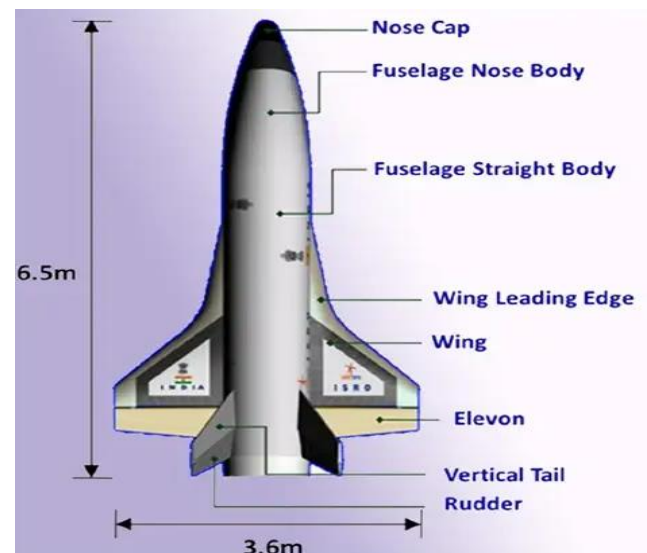


FIGURE: PUSHPAK

- Pushpak was released from a height of **4.5 km by an Indian Air Force Chinook helicopter**, and it autonomously approached the runway from a **distance of 4 km**.

- The mission successfully simulated the approach and high-speed landing conditions of an **RLV returning from space**.
- The endeavour to launch RLV requires several **state-of-the-art technologies**. That also includes **accurate navigation hardware and software**, a **Pseudolite system**, **Ka-band Radar Altimeter**, **NavIC receiver**, **indigenous Landing Gear**, **Aerofoil honey-comb fins**, and **brake parachute system**.
- The **winged vehicle** and all flight systems used in **RLV-LEX-01** were reused in the **RLV-LEX-02 mission** after proper certification/clearances, demonstrating the reuse capability of flight hardware and flight systems.
 - Based on observations from **RLV-LEX-01**, the airframe structure and landing gear were strengthened to **tolerate higher landing loads**.
- The mission was accomplished by **Vikram Sarabhai Space Centre (VSSC)**, **Liquid Propulsion System Centre (LPSC)**, and **ISRO Inertial Systems Unit (IISU)**, with collaboration from various agencies including the **Indian Air Force (IAF)**, **Aeronautical Development**.

What is RLV?

- An RLV is a vehicle that is launched into **space many times**. As the vehicle can be used for many relaunches, it goes a long way in mitigating costs.
- The idea of a **re-usable landing vehicle** was mooted to regain super expensive rocket boosters that are used for launching spacecraft. It could be later used to refuel and reuse in space flights.

How are RLV LEX-01 and RLV LEX-02 similar to and different from each other?

- The flight systems and the wing body used in the first leg of **RLV LEX** were reused for RLV LEX-02.
- After evaluating the results of the first experiment, ISRO made some improvements such as strengthening the **airframe structure** and landing gear so that **Pushpak** can tolerate higher landing loads during **RLV LEX-02**.
- The difference between **RLV LEX-01** and **RLV LEX-02** is that in the first leg of the autonomous landing mission, **Pushpak was released mid-air after** certain predetermined conditions were achieved. Meanwhile, for RLV LEX-02, Pushpak was subject to off-nominal conditions.
- Therefore, not only did ISRO successfully accomplish the **autonomous landing of a reusable launch vehicle prototype**, but also demonstrated reuse capabilities of flight hardware and flight systems.

GENERAL SCIENCE

India elected as Co-chair of ITU's Digital Innovation Board

News Excerpt:

India led a high-level delegation to Geneva for a series of crucial meetings at the International Telecommunication Union (ITU) Headquarters.

- The visit **focused on fostering collaboration and exploring innovative initiatives** in the telecommunications and information and communication technology (ICT) sectors.

The key highlights of the visit include:

- International Telecommunication Union (ITU) has started the **Innovation and Entrepreneurship Alliance for Digital Development** to respond to significant unmet needs of ITU Membership in the area of innovation, as articulated in the **Kigali Action Plan adopted at the World Telecommunication Development Conference 2022 (WTDC-22)**.
- The Outcomes of the **ITU Plenipotentiary Conference 2022 (PP-22)**. The Alliance has **three main vehicles**:
 - **Digital Transformation Lab**
 - **Network of Acceleration Centres**
 - **Digital Innovation Board**
- The Alliance establishes the Digital Innovation Board to provide **strategic guidance, expertise and advocacy regarding its mission of building critical local enablers and fostering innovation and entrepreneurship in digital development** to create a more inclusive and equitable digital future for all.

How do mosquito bats work?

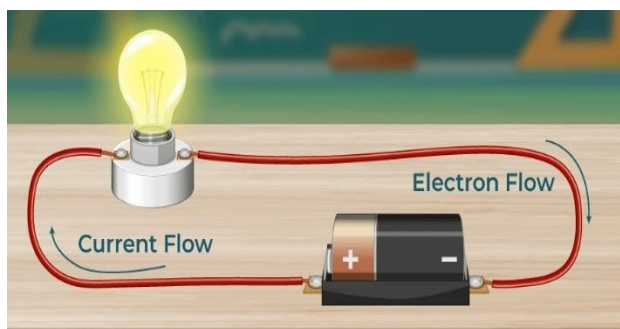
News Excerpt:

Among all the electronic and chemical technologies humans have developed to battle the mosquitoes, the most impressive is the '**electric tennis bat**'.

About Mosquito bats:

- The bat's working principle is **simple**.
 - There are **three metal meshes**. The one at the **center is positively charged** and the **outer ones are negatively charged**.
 - When the **layers don't touch each other, current can't flow**. But when a **mosquito connects them, a current pass through and kills the insect**.
- Essentially the mosquito receives an **electric shock as the circuit for the flow of current gets completed**.
- The current generated in the bat is around **1,400 V, which is equivalent to about a thousand regular batteries**.

- This voltage drives a powerful electric current through the mosquito while also **creating sparks**.



Scientific Principle:

- Electric current is the flow of electrons through a complete circuit of conductors. **When the negative and the positively charged meshes get in touch through the mosquito, the circuit gets completed.**
- Electric current is carried by **electrons**, the **negatively charged** fundamental particles that usually revolve around **positively charged protons** in **every atom**.
 - Every atom has an **equal number of protons and electrons**, rendering them electrically neutral.
- A battery generates electric force. How much electric force is generated depends on the battery's voltage value. The higher the voltage, the greater the force.
 - **For example**, the pencil battery that powers our wall clocks is usually 1.5 V. A phone battery has a comparable range.
- These are strong enough to drive currents through **clocks and phones** but not strong enough to give **humans electric shocks**.
- The current supplied to our household appliances comes with a voltage of **220V**, which is enough to **electrocute us**.

HEALTH

Project ANAGRANINF

News Excerpt:

The **Technology Development Board (TDB)** has signed an agreement with **Peptris Technologies** and the **Foundation for Neglected Disease Research (FNDR)**, for the development of the project "**ANAGRANINF**"- (a **novel class of Antibiotics Against Gram-Negative Bacterial-Infections**).

Gram-negative bacteria:

- These are a type of bacteria characterized by the **structure of their cell walls**.
- These bacteria have a **thin peptidoglycan** layer sandwiched between two membranes, with an **outer membrane containing lipopolysaccharides**.

- This double-membrane structure makes them **more resistant to certain antibiotics** and contributes to their pathogenicity.
- They are **harder to kill** because of their **harder cell wall**.
- When their cell wall is disturbed, gram-negative bacteria **release endotoxins** that can make the symptoms worse.
- They are found in various environments, **including soil, water, and within the bodies of humans and animals**.

E.g.- **Escherichia coli (E. coli), Salmonella spp., Pseudomonas aeruginosa, and Neisseria gonorrhoeae.**

About Project ANAGRANINF:

- The Project is a collaborative endeavour to foster innovation in the field of healthcare.
 - It is a joint effort between **Indian and Spanish companies**, led by the **Department of Science & Technology** and the **Centre for the Development of Technology and Innovation, E.P.E. (CDTI)**.
 - The bilateral programme aims to drive **market-driven research and technology development** while fostering partnerships and **business-led collaborative projects** between the two nations.

Objectives of Project ANAGRANINF:

- Create a **novel lead compound**, particularly an **antibiotic** which is capable of **inhibiting the FabI enzyme** and effectively **fighting against gram-negative pathogens**.
- Produce a series of compounds that exhibit enhanced efficacy for tackling Antimicrobial Resistance (AMR) infections, by harnessing the power of proprietary AI tools and adhering to stringent guidelines such as the entry rules.
- The selected hit **molecule MMV1578564** has exhibited promising activity against gram-negative pathogens, serving as a foundation for further research and development efforts.
- Identify a candidate that meets WHO's **innovation criteria**, ensuring a **new chemical structure, no cross-resistance** with existing commercial classes, a novel target, and a novel mechanism of action.

WHO launches 'CoViNet'

News Excerpt:

The World Health Organization (**WHO**) has established a new network called **CoViNet**, aimed at enhancing global capacities for the detection, monitoring, and assessment of coronaviruses.

About the news:

CoViNet expands upon the **groundwork laid by the WHO COVID-19** reference laboratory network established in

January 2020, broadening its **focus beyond SARS-CoV-2** to include other coronaviruses such as **MERS-CoV** and potential novel coronaviruses of public health importance.

What is CoViNET?

- The CoViNet initiative underscores a **comprehensive One Health approach**, which integrates expertise from various sectors including human, animal, and environmental health.
- **By pooling resources and expertise**, CoViNet seeks to effectively monitor and assess the evolution and spread of coronaviruses.
- **Why it came into the picture?**
 - The WHO SARS-CoV-2 **Reference Laboratory Network**, established in 2020, initially aimed to provide confirmatory testing to countries with limited testing capacity for **SARS-CoV-2**.
 - However, as the pandemic progressed, the **need to monitor the virus's evolution**, the spread of variants, and their impact on public health became increasingly apparent.

CoViNet's core objectives include:

- Early and accurate detection of SARS-CoV-2, MERS-CoV, and other novel coronaviruses of public health importance.
- **Surveillance and monitoring of the global circulation and evolution** of these coronaviruses, adopting a One Health approach that includes expertise in animal health and environmental surveillance.
- **Timely risk assessment** to inform WHO policies related to public health and medical countermeasures.
- **Support for capacity building of laboratories**, particularly in low- and middle-income countries, to address the needs of WHO and CoViNet.
- Data generated and synthesized through CoViNet will **support WHO decision-making**, particularly through Technical Advisory Groups on Viral Evolution (TAG-VE) and Vaccine Composition (TAG-CO-VAC).

S.A.R.A.H

News Excerpt:

The World Health Organization (WHO) has announced the launch of **S.A.R.A.H.**, a digital health promoter prototype.

More about S.A.R.A.H

- **S.A.R.A.H.** is a **Smart AI Resource Assistant for Health** that represents an evolution of AI-powered health information avatars, using new language models and cutting-edge technology.
 - It can engage users **24 hours a day in 8 languages** on multiple health topics, on any device.

- **It is trained to provide information on major health topics**, including **healthy habits and mental health**, to help people optimize their health and well-being journey.
- **S.A.R.A.H.** can support people in **understanding risk factors** for leading causes of death like **cancer, heart disease, lung disease, and diabetes**.
- It can provide **up-to-date information** on **quitting tobacco**, being active, eating a healthy diet, and **de-stressing**, among other things.
- **S.A.R.A.H.** is powered by generative AI, it can provide more **accurate real-time responses**, engage in dynamic personalized conversations,
 - It provides **nuanced, empathetic responses in a judgment-free environment**.
- **S.A.R.A.H.** is a continuous learning and development project, aiming to inspire **reliable, responsible, and accessible information**.
- Previous iterations of S.A.R.A.H. were used during the **COVID-19 pandemic** under the name **Florence**.

Introducing "nitroplast" - The first nitrogen-fixing organelle

News Excerpt:

An international team of researchers has discovered the "nitroplast" — the first known **nitrogen-fixing organelle within a eukaryotic cell**.

More About News:

The **nitroplast organelle** discovery marks the **fourth instance of primary endosymbiosis** in history, a process where a **prokaryotic cell** is engulfed by a **eukaryotic cell** and evolves into an **organelle**.

Significance of Nitroplast discovery:

- Organelles rarely arise from these types of things.
- The first time an organelle arose was the event that gave rise to all complex life, referring to the origins of mitochondria.
- Everything more complicated than a bacterial cell owes its existence to that event, referring to the origins of the mitochondria.
- This is the second time an organelle arose around a billion years ago with the chloroplast, which gave rise to plants.

Implications for ocean ecosystems and agriculture:

- The discovery of the **nitroplast** provides new **insights into ocean ecosystems**.
 - UCYN-A is **globally important for its ability to fix nitrogen** from the atmosphere, and researchers have found **it in various locations, from the tropics to the Arctic Ocean**, where it fixes a significant amount of nitrogen.
- The nitroplast also has **the potential to revolutionize agriculture**.

- The **Haber-Bosch process**, which synthesizes **ammonia fertilizers from atmospheric nitrogen**, allowed **agriculture and the world population to take off** in the early 20th century.
- However, it also creates **enormous amounts of carbon dioxide**, accounting for about **1.4% of global emissions**.

Nitroplast evolution from symbiosis to organelle:

- Initially, scientists considered UCYN-A as an endosymbiont closely associated with an alga.
 - However, two recent papers suggest that **UCYN-A has co-evolved with its host beyond symbiosis and now meets the criteria for an organelle**.
- A study published in March 2024 in Cell showed that the **size ratio between a specific group of nitrogen-fixing cyanobacteria and their marine haptophyte algal hosts remains consistent across** various species of **Braarudosphaera bigelowii** algae.
- The findings indicate that **UCYN-A** has evolved from being a symbiotic partner to meeting the criteria for an organelle, similar to **how mitochondria and chloroplasts evolved**.

Rollout of Men5CV vaccine in Nigeria

News Excerpt:

Nigeria has become the **first country in the world** to roll out a new vaccine (called **Men5CV**) recommended by the **World Health Organization (WHO)**, which protects people against **five strains of the meningococcus bacteria**.

About the news:

- The new vaccine offers a powerful shield against the **five major strains of the meningococcal bacteria (A, C, W, Y, and X) in a single shot**. This provides broader protection than the current vaccine used in much of Africa, which is only effective against the A strain.
- The vaccine and emergency vaccination activities are funded by **Gavi, the Vaccine Alliance**, which funds the global meningitis vaccine stockpile and supports lower-income countries with routine vaccination against meningitis.
- Nigeria is one of the 26 meningitis **hyper-endemic countries of Africa**, situated in the area known as the **African Meningitis Belt**.
- Nigeria's rollout moves the world one step closer to **WHO's goal of defeating meningitis by 2030**.

About Meningitis:

- Meningitis is a **serious infection** that leads to the **inflammation** of the membranes (meninges) that surround and protect the **brain and spinal cord**.

- There are multiple causes of meningitis, including **viral, bacterial, fungal, and parasitic pathogens**.
- **Bacterial meningitis** is the **most serious** among the five.
- **Symptoms-** fever, headache, stiff neck, sensitivity to light (photophobia), nausea, vomiting, confusion, altered mental state, etc.
- Although meningitis affects all ages, **young children are most at risk** with around half of cases and deaths occurring in **children under 5 years of age**.

Whooping cough outbreak

News Excerpt:

Whooping cough outbreak has left **health authorities** across different countries worried. Apart from **several deaths** reported in **China**, cases have also been reported in the **US, UK, Philippines, Czech Republic and the Netherlands**.

What is whooping cough?

- **It is also called pertussis.**
 - It is a highly **contagious bacterial infection**, caused by **bacteria Bordetella pertussis**, and is common in **infants and young children**.
 - It usually causes lengthy and repeated **bouts of coughing**.
 - These coughing episodes can continue for **weeks or even months** after first developing symptoms of the illness.
 - The infection transmits easily from **person to person** mainly through **respiratory droplets** produced by the **infected person while coughing or sneezing**.

How's it diagnosed?

- Diagnosis is usually based on coughing fits in presence of known exposure to disease.
 - Laboratory tests, such as **polymerase chain reaction (PCR)** or **culture of respiratory secretions**,
- It can confirm the diagnosis by detecting the presence of **Bordetella pertussis bacteria**.

Prevention:

- **Vaccination** is the most **effective measure to prevent this infection**.
 - **DTaP (Diphtheria, Tetanus, and acellular Pertussis)** vaccine is recommended for **children**.
 - **Tdap (Tetanus, Diphtheria, and acellular Pertussis) vaccines** can be given to **adults that provide protection against pertussis**.
 - Adults between **the ages of 19 and 64** should receive a **one-time booster pertussis vaccine called the Tdap vaccine**.

- "Preventing whooping cough is essential using **DTaP vaccine**, which is recommended for children at **2, 4, 6, and 15-18 months of age**, with a **booster dose at 4-6 years old**.
 - In addition, **good hand hygiene, covering face while coughing/sneezing and avoiding close contact** with sick individuals can help **reduce the spread**,
- The DTaP vaccine is routinely **administered to infants and young children** in multiple doses,
 - **Starting at 2 months of age as it protects against diphtheria, tetanus, and pertussis.**
 - Boosters are recommended for **adolescents and adults.**
- **Pregnant women also** can receive the **Tdap (Tetanus, Diphtheria, and acellular Pertussis) vaccine**, which provides **additional protection against pertussis.**
 - **Pertussis-containing vaccines** are safe even for **expectant mothers.**
 - Pregnant women are advised to receive the **whooping cough vaccination between 20 and 32 weeks** to boost their protection against whooping cough.

Prostate Cancer

- Prostate Cancer and most other cancers can be called a **lifestyle disease.**
- It is common for elderly men to have **Lower Urinary Tract Symptoms (LUTS)** which includes **urgency, frequency of micturition, difficulty in passing urine and incomplete bladder evacuation.**
- These symptoms require testing for enlarged prostate which mostly is non-cancerous (Benign Prostatic Hypertrophy or BPH).

- **Deaths from prostate cancer have seen a decline in most high-income countries (HICs) since the mid-1990s.**
- Prostate cancer is a significant contributor to **mortality and disability, accounting for 15% of all male cancers globally.**
 - In the United Kingdom, it ranks as the **second most common cause of cancer deaths among men**, while in more than half of the world's countries, it stands as the most prevalent form of male cancer.

Causes of Prostate Cancer:

- **Genetic Factors:**
 - **Family History** like number of affected relatives.
 - **Genetic Mutations:** Certain inherited gene mutations, such as **BRCA1** and **BRCA2**, which are linked to breast Cancer and ovarian cancers, also increase the risk of prostate cancer in men.
 - **Race and Ethnicity:** More prevalent in African-American men and less common in Asian and Hispanic men.
- **Age and Hormonal Factors:**
 - Risk increases after the **age of 50 and continues to rise with age.**
 - **Hormonal Imbalances:** Testosterone, the male sex hormone, may promote the growth of prostate cancer cells.
- **Environmental Factors:**
 - Diets high in red meat and high-fat dairy products and low in fruits and vegetables.
 - Sedentary lifestyles and obesity.
- **Medical Factors:**
 - **Chronic inflammation of the prostate**, often seen in conditions like prostatitis.
 - **Sexually Transmitted Infections**

Global Prostate Cancer Crisis

News Excerpt:

A report on prostate cancer by **the Lancet Commission** has unveiled a looming global crisis in the fight against the disease.

Key findings of the report:

- **Cases of prostate cancer are set to double from 1.4 million annually in 2020 to a staggering 2.9 million per year by 2040.**
- It will be the low- and middle-income countries (LMICs) that will see the surge in these cases.
- The Commission estimates an **85% increase in annual deaths** worldwide over the same 20-year period, soaring from **375,000 deaths in 2020 to nearly 700,000 deaths by 2040.**

INTERNAL SECURITY

Digital financial frauds in India

News Excerpt:

A report by the **Indian Cyber Crime Coordination Centre** has revealed that digital financial frauds accounted for a staggering ₹1.25 lakh crore over the last three years.

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Key points of Report:

- According to the **National Crime Records Bureau (NCRB)**, cybercrimes in India in 2023 resulted in a staggering loss of ₹66.66 crore, with 4,850 reported cases.
- According to the **National Cybercrime Reporting Portal (NCRP)**, in 2023, at least ₹10,319 crore was reported to be lost by **victims of digital financial fraud**.
 - According to the report, **the number of complaints received in 2023 alone was 6.94 lakh**.

Modus operandi of the digital financial frauds:

- Convincing the victim to send money, either by **impersonation** (fake WhatsApp/FB/Insta, social media profiles) or by **giving them a false promise of greater return** (investment, crypto, held up custom package, etc.)
- By taking credentials such as **Unified Payments Interface ID (UPI), Personal Identification Number (PIN), One-Time Password (OTP) or Internet banking ID/password** from the victim.
- The scammers can also **convince the victims to give out those details over the phone**. When these details are used on **official banking apps**, this gives the **fraudsters access to even Fixed Deposits/Recurring Deposits**, which are also **siphoned out** in most cases.
- By taking card details and convincing the **victim to share OTP**.

Hindrances faced by the enforcement agencies in tracing money trails:

- Rapid movement of siphoned-off funds** across multiple bank accounts and digital wallets impedes tracking efforts.
- Supervised entities such as **banks, NBFCs, and wallets** often struggle to promptly provide necessary details to law enforcement.
- Crimes are generally reported after **24 hours of occurrence**, delaying investigative action.
- Victims' actions**, such as **deleting evidence** from their devices due to stress and trauma, further hinder the investigation.

- By the time a money trail is established, the funds are typically withdrawn from the system, making it challenging to identify perpetrators or recover the money.

How can certain basic changes to the form of data provided to enforcement agencies help in minimizing delays?

- Banks, NBFCs, and SEs** must be mandated to provide data in a predetermined format with all the terms explained. **The data must be given in a CSV or XLSX file**. For example, the CDR (Call Data Record) shared with enforcement agencies has a fixed format and fixed file types, such as CSV or XLSX.
 - Currently, banks give the statement either in printed hardcopy or PDF format, **which causes huge inconveniences to the investigating officers**.
- The **International Mobile Equipment Identity (IMEI)** must be recorded.
 - All banking and financial apps** must be **mandated to save the IMEI details** of the device being used. Fraudsters use **fake mobile numbers and fake bank accounts** across different States to add layers to **increase anonymity and prevent agencies from prosecuting them**.
 - Thus, the **IMEI becomes crucial evidence** in determining the device and its location.
 - Recording IMEI** will provide **stronger evidence for establishing a device** and its connection to **fraudsters in a court of law**.

Way Forward:

- The **Bhartiya Nagarik Suraksha Sanhita, 2023**, which is set to replace the **Indian Penal Code of 1861**, recognizes **organized crime** as a "**continuous unlawful activity**." This definition covers digital financial fraud.

PEPPER IT WITH:
 NCRB, NCRP, Bhartiya Nagarik Suraksha Sanhita, 2023
- Law enforcement agencies face a lot of difficulties in conducting interstate raids and arrests.
 - It requires a large team and coordinated effort**.
 - The fintech and telecom industries must be mandated to take certain preventive steps in their technology and provide data in a manner that enables speedier investigation. This will make **prevention, detection, recovery, and conviction** much more effective.
 - Faster availability of data will make it easier to identify and convict pan-Indian gangs**.

Suspension of Operations pact with Kuki-Zo insurgent groups

News Excerpt:

Two months after the Manipur government refused to send a representative to a meeting called by the Centre to extend the **Suspension of Operations (SoO)** pact with **Kuki-Zo insurgent groups**, there is a “**status quo**” on the agreement on the ground.

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Suspension of Operations (SoO) pact:

- The Suspension of Operations (SoO) pact is a **tripartite agreement** signed between the **United Peoples' Front (UPF)** and the **Kuki National Organization (KNO)**, an umbrella of 25 insurgent groups, the **Union Ministry of Home Affairs (MHA)** and the **Manipur government**.
 - Of these insurgent groups, 17 come under the **Kuki National Organization (KNO)**, and 8 belong to the **United People's Front (UPF)**.
- The agreement was signed in the wake of the **Kuki-Naga clashes in the 1990s** when hundreds were killed. The insurgent groups demanded an independent land for the **Kuki-Zo**.



What are the terms of the SoO pact?

- The **Suspension of Operation agreement is for one year**, but it is **extendable** according to the progress of its implementation.
- To oversee the effective implementation of the SoO pact, a committee called the **Joint Monitoring Group (JMG)**, with representatives from all the signatories, has been formed.
- According to the pact, the Centre and state governments agreed that the **security forces would not launch any operations against these groups**. In return, the **insurgent groups will also not launch any such operation**.

- The pact also requires these groups to **abide by the Indian Constitution**, the **laws of the land**, and the **territorial integrity of Manipur**.
- The SoO pact further bars these groups from committing any activity that amounts to **atrocities or, extortion**, or any other **unlawful operation**.
- The militant cadres are to be confined to **designated camps** identified by the government. **Arms are deposited** in a safe room under a double-locking system. The groups are given arms only to guard their camps and protect their leaders.
- As part of the **rehabilitation package**, the cadres living in the designated camps are given a **monthly stipend of 6000 Rs**. Financial assistance is also being provided to maintain the designated camps.

Demand for suspension of the Pact:

- After **ethnic violence between the Kuki-Zo people and the Meitei people** erupted in the State in **May 2023**, there were strong **demands** from the Valley areas to **abrogate the SoO agreement**.
- The **Manipur government** had claimed that **SoO groups violated ground rules and instigated the violence**.
- Meitei civil society groups** have also demanded that the MHA not extend the pact.
- The **Manipur Assembly** has also **passed a resolution** to urge the Central government to **abrogate the SoO pact** with Kuki-Zo insurgent groups.

Current Status:

- The **Manipur government did not send its representative** to the last meeting, which was held in February, to discuss the extension of SoO.
- Without the participation of the Manipur government, the **SoO pact could not be extended** on paper. As of now, the **status quo exists**.

PEPPER IT WITH:

UAPA, North East States Peace Pacts, PVTGs

Strategic military infra upgrade for A & N Islands

News Excerpt:

The **Andaman and Nicobar (A & N) Islands** are undergoing a **significant upgrade** in military infrastructure.

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Key points regarding the infrastructure upgrade in the A & N Islands:

- The **enhanced infrastructure aims** to facilitate the deployment of **additional military forces, larger warships, aircraft, missile batteries, and troops**.

- The upgrade includes the modernization of airfields and jetties, enhancement of logistics and storage capacities, improvement in troop accommodations, and establishment of a strong surveillance system.
- The ongoing construction activities come **amid growing Chinese attempts to expand its influence in the region**, including constructing a military facility at **Myanmar's Coco Islands**, which are 55 km north of the **A & N Islands**.
- There are plans to significantly **enhance the surveillance infrastructure** at one of the **northern islands** and construct a **permanent habitat for troops** there.
- The **length of an airstrip** at a vital naval air station is being increased to enable the landing of larger aircraft like **P8Is and fighter jets**, and its **jetty is also being expanded** for use by larger ships.
- There are **836 Islands** in A&N, of which only **38 are inhabited**.
- The **Andaman and Nicobar Command (ANC)**, established in **2001**, is the first and only **tri-service command** in the islands.



Other major infrastructure upgrades:

- The **Andaman and Nicobar Command (ANC)**, established in **2001**, is the first and only **tri-service command** in the islands.
- The **Chief of Defence Staff (CDS)** and the **Navy Chief** have inaugurated various facilities to enhance the **operational capability of the ANC**, including:
 - a **modern hangar and dispersal system** at **INS Utkrosh in Port Blair**,
 - a **Precision Approach Radar (PAR)**
 - an **Integrated Underwater Harbour Defence and Surveillance System**,
 - **Naval Communication Network (NCN) Centres**
- The Ministry of Home Affairs (MHA) held a **Multi-Agency Maritime Security Group (MAMSG) Policy meeting** with officials of coastal security of A&N and

Lakshadweep, the Navy, and NRSC to discuss the surveillance of uninhabited islands.

What is the strategic importance of the Andaman and Nicobar Islands?

PEPPER IT WITH:

UNCLOS, Theatre Commands, Shaheed Dweep & Swaraj Dweep

- The island chain is located **700 nautical miles (1,300 km)** southeast of the **Indian mainland**.
- The **Malacca Strait**, the main waterway that connects the Indian Ocean to the Pacific, is less than a day's steaming from Port Blair.
- The islands share **four of India's international maritime zone delimitations** with **Myanmar, Thailand, Indonesia, and Bangladesh**.
- They also give India **substantial ocean space** under the **United Nations Conference on the Laws of the Sea (UNCLOS)** in terms of **exclusive economic zone and continental shelf**.

PT-SHOTS

Doxxing

News Excerpt:

Doxxing allows abusers and criminals who are thousands of miles away to target victims by putting their private details online for others to exploit.

What is Doxxing?

- Doxxing is the intentional revelation of a **person's private information online without their consent, often with malicious intent**.
- It includes **sharing phone numbers, home addresses, identification numbers, and essentially any sensitive and previously private information**.
- E.g., Personal photos could make the victim identifiable and potentially exposed to further **harassment, humiliation and real-life threats, including stalking and unwanted encounters in person**.
- Doxxing can also expose the people who live or work near the victim, increasing the affected person's chances of being evicted or fired.

Doxxing directly attacks a person's physical, digital, and emotional security.	A person who has been doxxed may have to flee their physical location, remain calm, clarify the situation with their employers, secure their leaked finances, file a report with the police all at once.	Doxxing can also expose the people who live or work near the victim, increasing the affected person's chances of being evicted or fired.
Impact of Doxxing on the Victim		

Legal provisions against Doxxing in India:

- In India, there is **no law in place** to prevent and/or punish doxxing directly, though there are laws in place against voyeurism (Section 354C IPC and IT Act), divulging sexually explicit content (The IT Act) and

obscene content (Section 292 IPC), defamation (Section 499 IPC) and online stalking (Section 354D IPC).

- **Doxing** violates the victim's **Right to Privacy (A Fundamental Right)** and **threatens their Right to Dignity (Article 21 – Constitution of India)**.
- The Digital Personal Data Protection (DPDP) Act, 2023, which is intended to protect citizens' data privacy, specifically states that it does not apply to "personal data that is made or caused to be made publicly available."
- But if a person is affected by doxing, then he/she can register a complaint at his/her nearest cybercrime police station or register an online complaint on cybercrime.gov.in.

Patriot Air-Defense System

News Excerpt:

Germany has agreed to send Ukraine a **Patriot air defence system** and missiles for existing systems.

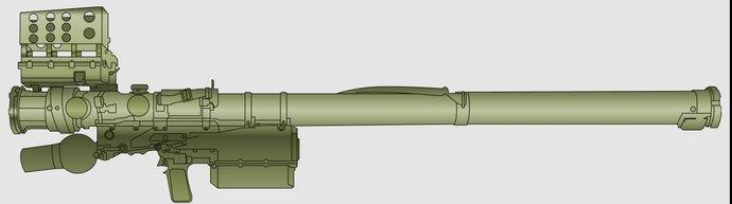
About Patriot air-defence system:

- **PATRIOT (Phased Array Tracking Radar to Intercept on Target)** is a theatre-wide **surface-to-air missile defence system** built by **Raytheon Technologies Corp.**
- It is considered one of the **most advanced air defence systems in the U.S. arsenal.**
- The system was first used in combat during the **1991 Gulf War**, with batteries protecting **Saudi Arabia, Kuwait and Israel**, and later used during the **U.S. invasion of Iraq in 2003.**
- Its latest modification, **PAC-3**, is designed to engage and intercept targets at up to 24 km altitudes.
 - **Newer variants of Patriot** are capable of **engaging ballistic and cruise missiles, loitering munitions, and aircraft.**
 - A typical **Patriot battery** includes a **radar set, engagement control station, power generation and other support vehicles**, and several launch stations.
- The main feature of the latest **PATRIOT modification** is its ability to shoot down **ballistic missiles** (including Iskanders, which Russia uses to attack Ukraine), as well as **Kinzhals (Russian hypersonic air-launched missiles)** and **Zircons** (a Russian **hypersonic anti-ship missile**)
- The average effective range of a **PATRIOT launcher is 150 km.**
- The air defence system can track targets moving at speeds of up to 2,200 m/s at a distance of up to **180 km.**
- The system has different capabilities depending on the **type of interceptor used.**

- The PAC-2 interceptor uses a **blast-fragmentation warhead**,
- while the newer PAC-3 missile uses more **advanced hit-to-kill technology.**

Igla-S portable anti-aircraft missile system

Designed to engage all types of aircraft and helicopters, as well as small airborne targets such as cruise missiles, at any time of day in visible conditions on collision and pursuit courses against background and artificial thermal interference.



500 to 6,000 m
Firing range

10 to 3,500 m
target altitude

no more than 12 s.
mobile-to-combat position
transition time

no more than 5 s.
ready to start time
from activation

Target speed:

up to 400 m/s
on collision courses

up to 320 m/s
on catch-up courses

Homing head type:

● tracking ● passive ● thermal ● bispectral

Igla-S

News Excerpt:

The Indian Army has received the first batch of **Igla-S Man Portable Air Defence Systems (MANPADS)** from Russia.

More about the news:

- The Igla-S Air defence systems will be deployed at the China and Pakistan borders.
- These systems enhance the Army's **Very Short-Range Air Defence (VSHORAD)** capabilities, particularly in high mountainous terrain along the northern border.
- The procurement **includes domestic production in India**, with one regiment already deploying the systems.
- This acquisition **replaces outdated Igla-1M systems** and aligns with plans for future indigenous VSHORAD advancements.

Capabilities of Igla-S:

- The Igla-S is a **hand-held defence system** that can be operated by an individual or crew.

- It is designed to **bring down low-flying aircraft and can also identify and neutralize air targets** such as cruise missiles and drones.
- The Iglá-S systems are **intended for new air defence formations for high mountainous terrain along the northern border.**

- **MANPADS** are **portable surface-to-air missile** systems.
- The air defence units in high mountainous regions use MANPADS to neutralize low-altitude aerial threats such as aircraft, drones, and missiles.

Russian Contract and Indigenous Production:

- India signed a contract with Russia in November last year for 120 launchers and 400 missiles. While the first batch came from Russia, an Indian company will make the rest of these systems in India through a Transfer of Technology (ToT) from Russia.

India- Russia Defence relation:

- India enjoys friendly relations with Russia, including notable **deals about arms and weapons, among other bilateral agreements.**
- In a report, the Stockholm International Peace Research Institute (SIPRI) revealed that **India's arms imports increased by 4.7 per cent between 2014–2018 and 2019–2023, with Russia retaining main arms supplier status, accounting for 36 per cent of its arms imports.**

C-DOME Naval Area Defense System

News Excerpt:

Israel, for the first time, has deployed its ship-mounted defence system, called the **C-Dome**, against a "suspicious" target that entered the country's airspace.

More about C-Dome:

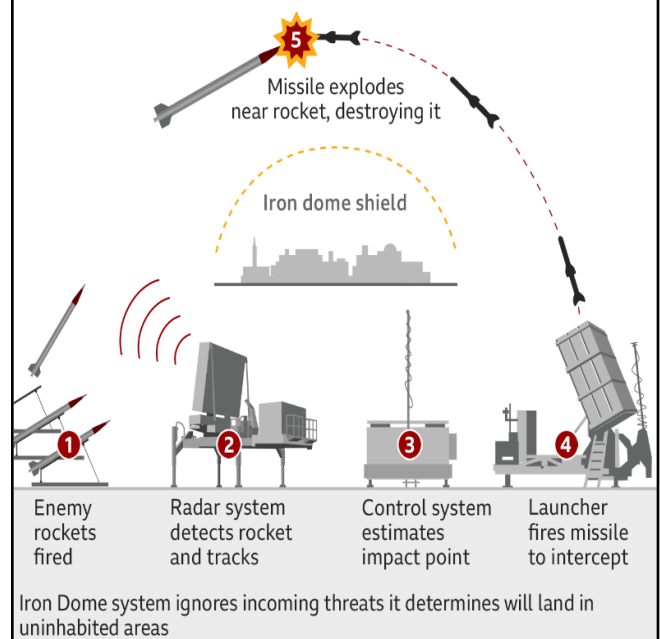
- The **C-Dome** is a **naval version of the Iron Dome air defence system, which shields against rocket and missile attacks.**
- It is mounted on **Sa'ar 6-class corvettes**, German-made warships, and uses the **same interceptor as the Iron Dome.**
- C-Dome has three components:
 - **TAMIR interceptors**
 - **A modular Vertical-Launch Unit (VLU)**
 - **A Command & Control (C2) component.**
- **C-Dome does not require dedicated radar** and uses the **ship's surveillance radar** to detect and track threats.
- A highly advanced air defence system ensures **high kill probability** against a wide range of targets.

- The C-Dome interceptor is extremely agile and has a **high rate of turn, enabling the interception** of even the **most maneuverable targets.**

Iron Dome air defence system:

- Iron Dome is a **short-range anti-rocket, anti-mortar, and anti-artillery system** with an **intercept range of 4-70 KMS.**
- It was developed by the **Rafael Advanced Defence Systems of Israel.**
- Israel has put Iron Dome's **interception rate** at as high as **97%.**

How Israel's Iron Dome defence system works



Parivartan Chintan

News Excerpt:

The heads of **all tri-service Armed Forces** gathered in **New Delhi** for the first-ever tri-service planning conference called the '**Parivartan Chintan**'.

Key highlights:

- This pioneering **tri-service conference aims to generate** new and fresh ideas, **initiatives and reforms** to propel **jointness and integration efforts.**
- The conference was to be chaired by the **Chief of Defence Staff (CDS).**
- It took place against the backdrop of the three services planning to establish **Integrated Theatre Commands (ITC)**, which would contain elements of the **Army, Navy, and Air Force.**
- This was the **first-ever conference of the Heads of all Tri-Services Institutions, the Department of Military Affairs, Headquarters Integrated Defence Staff,** and the three **Services**, recommending measures to swiftly achieve the desired "**Joint and Integrated**" end state.

What are Integrated Theatre Commands (ITC)?

- A theatre command deploys elements of the **three services (Air, Navy, and Land)** under a single, unified command structure.
- India created its first tri-service command—the **Andaman and Nicobar Command** in 2001.
- In the **United States and China**, the theatre commands are based on the **region of operation**, but India is taking a different approach.
- In an integrated theatre command, **one commander** will take unified command of the three services for security concerns in a **particular geographical theatre**.
 - The commander of ITC has the power to **efficiently and quickly deploy all the military resources that are at his disposal**.
- **According to initial plans:**
 - The **Army's South Western Command (SWC) in Jaipur** will serve as the **headquarters of the integrated theatre** command that will counter **Pakistan**.
 - The **Central Command, based in Lucknow**, will serve as the headquarters of the **integrated theatre command** that will safeguard the borders with **China**.
 - The theatre commanders will be **four-star rank officers**, equivalent to the Chiefs of Army, Navy, and Air Force, with the CDS commanding all six.
 - All the theatre commanders and the commanders of new commands will report to the **Department of Military Affairs (DMA)**, which is **headed by the CDS himself**.
- The **Defence Minister** had earlier urged the armed forces to be prepared to meet **the challenge of warfare's fast-changing nature** and stressed the present **complex world situation, which affects everyone globally**. He focused on how:
 - **Unconventional and asymmetric warfare**, including **hybrid war**, will be part of the **future conventional wars**.
 - **Cyber, information, trade and finance** have all become an inseparable part of future conflicts.

Sittwe Port Agreement

News Excerpt:

After the Chabahar Port in Iran, India has gained the right to operate a **second overseas port, Sittwe**, in **Myanmar**.

About the news:

- The **Ministry of External Affairs (MEA)** has approved a proposal for **India Ports Global (IPGL)** to take over the operations of the **Sittwe port** located on the **Kaladan River**.
- **IPGL is 100 per cent** owned by the Ministry of Ports, Shipping and Waterways, Government of India.

Significance of the decision:

- **Kaladan project** is aimed at connecting the **port of Kolkata** with the **port of Sittwe** in **Rakhine or Arakan State** which would then be connected to **Mizoram by road** and the Kaladan river which flows by Paletwa.
- The **Kaladan Multi Modal Transit Transport Project** was jointly identified by India and Myanmar to create a **multi-modal mode of transport** for shipment of cargo from the eastern ports of India to Myanmar as well as to the North-Eastern part of India through Myanmar.
- This project, which will connect Sittwe Port in Myanmar to the India-Myanmar border, is expected to contribute to the **economic development of the North-Eastern States of India** by opening up the sea route for the products.
- It also provides a strategic link to the North-East, thereby **reducing pressure on the Siliguri Corridor**.
- In the absence of an alternate route, the development of this project not only serves the **economic, commercial and strategic interests of India**, but also contributes to the development of Myanmar, and its economic integration with India.



- Since the project is of **political and strategic significance**, it was decided to execute this project through India's grant assistance to Myanmar.

Akashteer Command and Control Systems

News Excerpt:

The Indian Army has initiated the induction of control and reporting systems under 'Project Akashteer' to enhance its air defence capabilities.

About the news:

- The **Indian Army** has declared **2024 as the 'Year of Technology Absorption'** and is undertaking various initiatives to **induct niche technology and systems** into its inventory.

Project Akashteer

- 'Project Akashteer' is a cutting-edge initiative designed to **automate air defence control and reporting processes** by **digitizing them**.
- It was developed by **Bharat Electronics Limited (BEL)** as part of the '**Aatmanirbhar Bharat**' initiative.
- This project is poised to significantly enhance the **operational efficiency and integration of the Army's air defence mechanisms**.
 - 'Project Akashteer' will empower the **Air Defence units** of the Indian Army with an **indigenous, state-of-the-art capability**, to effectively operate in an integrated manner.
 - Akashteer will enable **monitoring of low-level airspace** over the battle areas of the Indian Army and effectively control the **Ground Based Air Defence Weapon Systems**.
 - This will enable the Indian Army to **respond swiftly to hostile threats** while minimizing the risk of friendly fire incidents.
 - 'Akashteer' integrates **radar and communication** systems into a unified network, providing the Indian Army with unprecedented situational awareness.
 - This will enable them to **detect and engage hostile targets** more effectively, ensuring the **safety of friendly aircraft** in contested airspace.
- The system's **vehicle-based and mobile Control Centers** are designed to maintain **operational capabilities** even in challenging communication environments.
- Overall, the deployment of 'Akashteer' signifies a leap towards complete **automation** of air defence operations.

CBI, Europol sign Working Arrangement

News Excerpt:

The **Central Bureau of Investigation (CBI)** and the **European Union Agency for Law Enforcement Cooperation (Europol)** have signed a **Working Arrangement**, establishing cooperative relations between the law enforcement authorities of India and the Europol.

Details of the Working Arrangement:

- This Working Arrangement is comprehensive and **includes 26 detailed articles** enumerating the modalities for wide-ranging cooperation in over **30 different crime categories**.
- The cooperation, in addition to the **exchange of information**, may include the **exchange of specialist knowledge, general situation reports, results of strategic analysis**, participation in **training activities**, and the **provision of advice and support in individual criminal investigations**.

Significance of the Working Arrangement:

- This arrangement promotes **direct cooperation between both organizations** to build on their respective mandates, strategies and to explore the potential for synergies.
- The Working Arrangement underscores the **interconnected nature of security threats** and the **necessity of international cooperation** to effectively address them.
 - It will **enhance cooperation** in jointly tackling various forms of crime inter alia, including **organized crime, financial crimes, frauds, corruption, terrorism, cybercrime, human trafficking, drug trafficking, money laundering, environmental crimes, illicit trafficking in cultural goods, including antiquities and works of art, etc.**
- The arrangement also enables wide cooperation among all the law enforcement agencies in India and **27 European countries** that **Europol represents**, as well as **third countries and organizations associated with Europol**.

The European Union Agency for Law Enforcement Cooperation (Europol):

- Europol is the **EU's law enforcement agency**, whose mandate is to help make Europe safer by **assisting law enforcement authorities in EU member countries**.
- It is based in **The Hague (Netherlands)**.
- The Treaty provisions on Europol fall under the Treaty on the Functioning of the **European Union (Article 88- Area of freedom, security and justice)**.



OPERATION "INDRAVATI"

News Excerpt:

India launched 'Operation Indravati' to evacuate its nationals from **violence-torn Haiti** to the **Dominican Republic**.



Operation Indravati:

- **India doesn't have an embassy in Haiti**, and the situation in the country is being monitored by the Indian mission to **Santo Domingo**, the capital of the **Dominican Republic**.
- 12 citizens have been successfully rescued to the **Caribbean nation Dominican Republic** by the **government of India**.

About Haiti:

- Located between the **Caribbean Sea** and the **North Atlantic Ocean**, Haiti occupies the western one-third of the island of Hispaniola.
- The **Dominican Republic** borders **Haiti** on the eastern side of the island. **Haiti's closest neighbours include Jamaica to the west and Cuba to the northwest**.
- Hayti means "**land of the mountains**" in the Indigenous, or native, Taïno language.
- The **country's highest peak, Pic la Selle**, is part of the Massif de la Selle range located in southeastern Haiti and reaches nearly 9,000 feet (2,715 meters).

OPERATION ATALANTA

News Excerpt:

A compliance operation of **Op-Atlanta** has revealed that **Somali pirates** used an Iranian fishing vessel to hijack the **MV Ruen** vessel off the coast of Yemen.

OPERATION ATALANTA

- **Operation Atalanta**, which was earlier known as the **European Union Naval Force for Somalia**, is an ongoing **counter-piracy military operation** at sea off the **Horn of Africa** and in the **Western Indian Ocean**.
- The operation was launched in **2008** by the **European Union** to support the **Coastal States** in the combined effort for **peace, stability and Maritime security**.
 - With up to **95% of EU Member States' trade (by volume)** transported by sea and **20% of global trade passing through the Gulf of Aden**, EU NAVFOR makes considerable effort to **safeguarding trade and freedom of navigation** through this strategic area.

Exercise Gagan Shakti

News Excerpt:

Indian Air Force (IAF) conducted its 10-day Gagan Shakti war drill to test its capabilities.

About the exercise Gagan Shakti:

- The exercise involved **all Air Force bases and assets** scattered across the country.
- The exercise sought to test the IAF's readiness for a two-front war with China and Pakistan.
- The Indian Army also moved ammunition and about 10,000 IAF personnel on 12 passenger trains in order to validate the IAF's Operational Rail Mobilization Plan.
- The passenger trains were named **Sanyukta Express** to denote the inter-service camaraderie.
- 'Gagan Shakti' was last held in 2018.

IMT TRILAT 24

News Excerpt:

The second edition of the **India-Mozambique-Tanzania Trilateral Exercise** was conducted at **Nacala, Mozambique**, in March 2024.

About the IMT TRILAT Exercise:

- The week-long exercise underscores the importance of enhanced maritime cooperation and interoperability between the **Navies of India, Mozambique, and Tanzania**.
- **INS Tir** and **Sujata** participated in **IMT TRILAT 24** through a series of joint exercises, training sessions and collaborative activities, providing invaluable opportunities for all three Navies to exchange knowledge, enhance capabilities and bolster maritime security in the region.

GEOGRAPHY

India to receive above-normal monsoon rains: IMD

News Excerpt:

The **India Meteorological Department (IMD)** has forecast a bountiful monsoon for the year. The agency has forecast that the **rains in June-September** will be **6% more** than the annual **average of 87 cm** during these months.

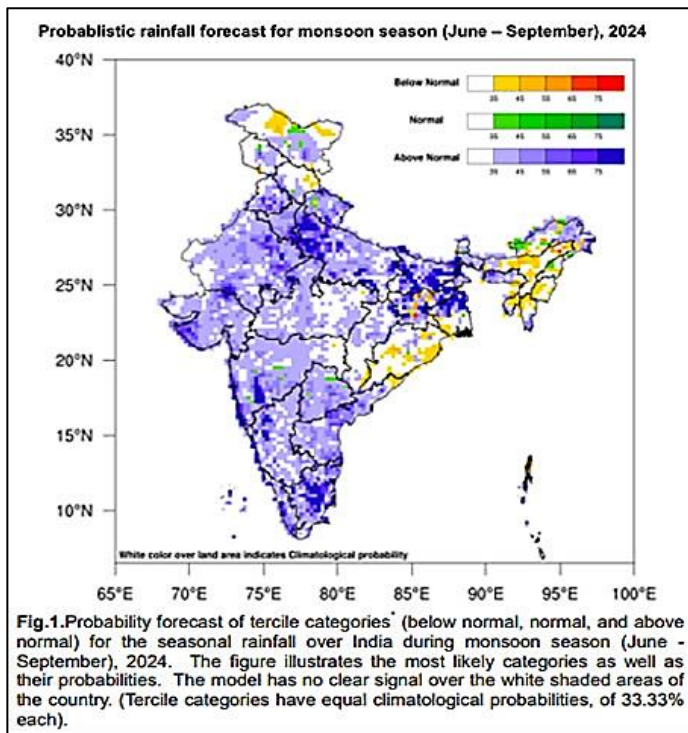
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IMD's Monsoon Forecasting Approaches:

- The IMD uses **multiple approaches** to forecast the monsoon.
 - One is to use **statistical associations** and draw upon its vast **historical database of over 150 years** to correlate certain **global meteorological parameters**, such as **ocean temperatures and snow cover** in Europe, to the performance of the monsoon.
 - The **other way** is to use the **dynamical approach, which involves simulating the global weather** on a particular day and having **powerful computers** extrapolate the data into a prediction for any future day or time period.
- Both these models indicated a **similar outlook for the monsoon this year.**

Rainfall forecast for the monsoon season (June – September), 2024:

- This is the first time, after a **gap of eight years**, that the IMD has forecast **“above normal”** rains in the country.



- This **above-normal seasonal** rainfall was **“very likely”** over most parts of the country, except in some areas over **northwest, east, and northeast India**, where below-normal rainfall was “very likely”.
- The **country's seasonal rainfall** will likely be **106%** of the long-period average (LPA), with a model error of **+/-5%**.

Categorization of Seasonal Rainfall:

- The LPA for the period between June and September is **87 centimetres (870 mm)** and is calculated as the average rainfall between **1971-2020**. By this calculation, there would be **92.2 cm** of rainfall across India.
- The forecast suggests a 31% probability of an above-normal monsoon, a 29% probability of a normal monsoon, a 30% probability of an excess monsoon, an 8% probability of below normal monsoon, and only a 2% probability of a deficient monsoon.

Category	Rainfall Range (% of LPA)	Forecast Probability (%)	Climatological Probability (%)
Deficient	< 90	2	16
Below Normal	90 - 96	8	17
Normal	96 - 104	29	33
Above Normal	104 - 110	31	16
Excess	> 110	30	17

Factors for the forecast of Rainfall:

- **El-Nino and La-Nina:** Moderate **El Niño conditions** currently prevail over the equatorial Pacific region. Climate model forecasts indicate **neutral conditions** by the beginning of the monsoon season and **La Niña** conditions during the **second half of the monsoon season.**

FACTORS GOING FOR GOOD RAINS

1 El Niño Likely To Transition To La Niña | La Niña conditions, likely to develop by July-Aug, generally favour good monsoon. In 22 La Niña years since 1951, only 3 led to below normal or deficient monsoon. 2024 is likely to be the 4th La Niña year since 2019

2 Positive Indian Ocean Conditions | Indian Ocean

Dipole (IOD) expected to turn positive, which usually favours good rains, by July this year

3 Snow Cover In Northern Hemisphere | Area under snow cover in northern hemisphere, including Eurasia, has been below normal this winter (Dec-March). Low snow cover is a positive indicator for monsoon rainfall later in the year

IMD Forecast | Countrywide rains likely to be **106%** of long period average during monsoon season (July-Sept), with **61% probability of above normal or excess** rainfall

- **Indian Ocean Dipole: Neutral Indian Ocean Dipole (IOD)** conditions are prevailing currently. Climate model forecasts indicate **that positive IOD conditions** are likely to develop **during the monsoon season.**
- **Snow Cover: The northern hemisphere snow cover** extent during the last three months (January to March 2024) was **below normal.**

PEPPER IT WITH:
El-Nino, La-Nina,
Indian Ocean Dipole

Winter and spring snow cover extent over the Northern Hemisphere and Eurasia has a generally **inverse relationship with the subsequent monsoon season rainfall.**

Long Period Average:

- The IMD predicts a **"normal," "below normal," or "above normal"** monsoon in relation to a benchmark "long-period average" (LPA).
- According to the IMD, the "LPA of rainfall is the rainfall recorded over a particular region for a given interval (like month or season) average over a long period **like 30 years, 50 years, etc.**"
- The IMD's prediction of a normal monsoon was based on the LPA of the **1971-2020 period**, during which India received **an average of 87 cm of rain** for the entire country.
 - The IMD has calculated the LPA at **88 cm for the 1961-2010 period** and at 89 cm for the **1951-2000 period.**
- While this quantitative benchmark refers to the country's average rainfall recorded from June to September, the amount of rain that **falls every year varies from region to region and month to month.**
- Therefore, in addition to the countrywide figure, the IMD maintains **LPAs for every meteorological region.** This number ranges from around 61 cm for the drier Northwest India to more than 143 cm for the wetter East and Northeast India.

- The study developed **six classifications** for soil erosion, ranging from **"minor" to "catastrophic"**, regarding soil eroded in tonnes over a **hectare per year.**
 - The **Brahmaputra Valley in Assam** is **India's biggest hotspot** for soil erosion. The state has **lost nearly 300 square kilometres or 31%** of its surface soil to "catastrophic" erosion.
 - The **lower reaches of the Himalayas**, which are characterized by loose soil and unstable slopes, are another hotspot.
 - The region spans from the **Kashmir Valley** to the southern regions of **Himachal Pradesh** and **Uttarakhand** and extends across the border into **Nepal** and **parts of Odisha.**
 - This region is one of the most prominent erosion hotspots in the country, exacerbated by its susceptibility to **seismic activity.**
 - **Odisha** is also a hotspot for **"catastrophic" erosion.**
 - This erosion extends from the **southern reaches of the Mahanadi River**, traversing along the **western borders** of the state's lush green cover and natural forests, all the way to the **northern parts of Andhra Pradesh.**
 - This underscores the significant soil degradation experienced by the **forest cover** in the region.
 - The study highlighted **nine out of the country's 20 most susceptible districts** to soil erosion are in Assam.
 - The **national mean for soil** in the country stood at **21 tonnes per hectare per year.**
- Significance of the study:**
- It provides a **holistic view of soil status** and would help plan **soil conservation.**

'Catastrophic' Soil Erosion

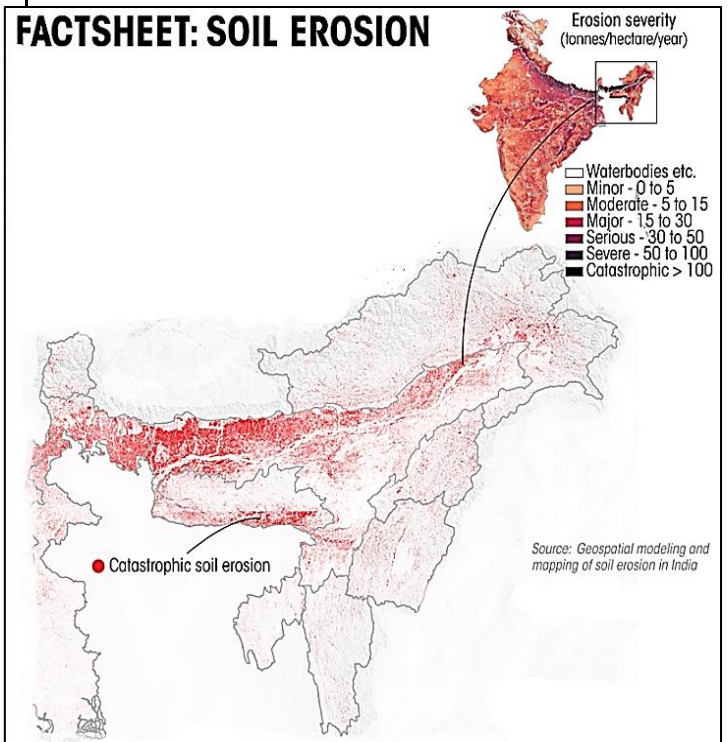
News Excerpt:

Nearly **30%** of the country's landmass is experiencing **"minor" soil erosion**, while a critical **3%** faces **"catastrophic" topsoil loss.**

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About the "Geospatial Modelling and Mapping of Soil Erosion in India" study:

- It classified soil erosion across India for the **first time.** Before this study, there was no classification for **different levels of soil erosion** in India.
 - Soil erosion is a process that **removes the upper layer** of soil, from which plants get most of their nutrients and water. It is the **most common type of land degradation.**
- The study used the Revised Universal Soil Loss Equation (**RUSLE**) equation.
 - It considers factors such as **predicted crop loss, rainfall, and runoffs**, also known as the **R-factor, soil erodibility, slope steepness** and **length, crop management**, and support practices like **strip cropping**, etc., to estimate soil loss at a **250-meter spatial resolution.**



- The data gathered would be **available for anyone** to use in the future.

Implications of the erosion:

- According to the **Food and Agriculture Organization** of the United Nations, it could take **up to 1,000 years to produce 2 to 3 centimetres of top or surface soil**, which has a depth of 6 cm.
- Topsoil — the uppermost layer of soil — is **vital for agriculture** as it holds nutrients and moisture essential for **plant growth**.
- Erosion significantly **reduces fertility** and can lead to **decreased crop yields**.

prevent erosion and allow more water to flow to crops.

- In addition, hillside farm fields need **full crop cover** to help keep the soil in place. This can be accomplished by **intercropping**, which means growing two crops together in the same field, such as planting rows of maize or soybean between rows of oil palm trees.
- For smallholders, **agroforestry systems** where diverse crops, including trees, are grown together can be effective.
- Access to manure** improves the organic matter of the soil, inhibiting erosion.

Causes

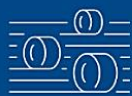
Natural factors



Strong wind



Heavy rains



Inappropriate agricultural land management



Deforestation



Overgrazing



Mining activities



Land disturbance at construction sites

Human activity

Effects

Loss of fertile topsoil



Lower agricultural production, decreased food quality and security

Environment and water resources



Loss of biodiversity, reduced water quality and aquatic life

Other effects



Amplified risks of landslides and floods



Infrastructure damage



Displacement of human populations

Soil Erosion vis-a-vis Climate Change:

- Erosion degrades land, which means it can **support fewer plants** that can take in **climate-warming carbon dioxide**.
- Soils could **sequester** enough **greenhouse gases** annually to equal **about 5% of all annual human-made GHG emissions**.
- On the flip side, unchecked **climate change can worsen erosion**. Due to **emissions-driven temperature changes**, the **risk of erosion** will increase, resulting in **decreased agricultural production, land value, and human health**.

Way Forward:

- Use **soil-friendly agricultural practices**:
 - Terrace farming** needs to be implemented to make hillside agriculture manageable. Terraces

PEPPER IT WITH:

Soil Health Card, National Watershed Development Project

- Alternating deep-rooted and shallow-rooted crops** improves soil structure and reduces erosion.
- Offer incentives for land management**:
 - Governments and banks** must help farmers **access credit and support** in implementing erosion prevention. The **cost of erosion prevention** is far **lower** than the **price of land restoration and rehabilitation**.
 - Better land management** can help keep soils intact so they can **grow more carbon-sucking vegetation**. This is already happening in **China**, where the **Grain-for-green project** in the **Yellow River basin** conserved soil and water and reduced carbon emissions.
- Prevention and Rehabilitation**:
 - The key to managing and reducing soil erosion is to **rehabilitate already damaged land, stop further degradation**, and make **erosion-preventative measures** the core of **land management policy**.

Annual Land Use and Land Cover Atlas of India

News Excerpt:

The National Remote Sensing Centre, Hyderabad, has published a comprehensive assessment of annual land use and land cover.

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About the Annual Land Use and Land Cover (LULC) Atlas of India:

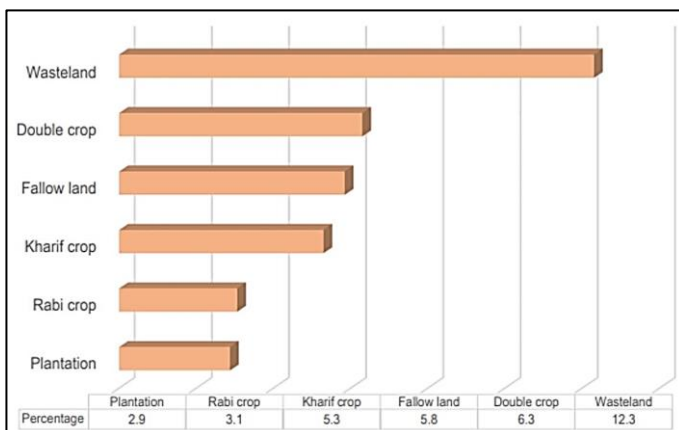
- The **National Remote Sensing Centre (NRSC), Hyderabad** has been undertaking an **annual assessment of LULC** for the country under the **Natural Resources Census (NRC) Programme of ISRO Since 2005**.

National Remote Sensing Centre (NRSC):

- The **National Remote Sensing Centre (NRSC)** at Hyderabad has been converted into a **full-fledged centre of ISRO** since September 1, 2008.
- Earlier, NRSC was an **autonomous body** called the National Remote Sensing Agency (NRSA) under the **Department of Space (DOS)**.
- It is responsible for remote sensing satellite data acquisition and processing, data dissemination, aerial remote sensing and decision support for disaster management.

Importance of Land Use and Land Cover Assessment:

- Land use and land cover monitoring is the essential practice of **observing, assessing, and recording** the **transformations that occur on Earth's surface**.
- This systematic examination of **how the land is utilized** and **its associated characteristics** offers invaluable insights into the **evolving dynamics** of our **environment**.
- From **urban development** to **agricultural expansion** and **natural resource management**, understanding these changes is pivotal for **informed decision-making, sustainable planning, and effective environmental conservation**.



Key highlights of the LULC atlas:

- India's built-up area** has **steadily increased** over the past **17 years from 2005-06 to 2022-23**, expanding by almost **2.5 million hectares**.
- The trend highlighted the rapid pace of **urbanization** and **infrastructure development** across the country during this period.
- A large part of the increase was caused by the **diversion of agricultural land**.
- A substantial percentage of built-up area expansion originated from agricultural land covers, which includes **6.3% of double/triple/annual crop, 5.3% of Kharif crop, 3.1% of rabi crop, 2.9% of plantation, and 5.8% of fallow land**.
 - The term '**built-up area**' refers to an area with **buildings (roofed structures), paved surfaces (roads, parking lots), commercial and industrial sites (ports, landfills, quarries, runways), and urban green areas (parks, gardens)**.
 - The built-up land showed a **modest increase** with an overall growth of around **31% during the period from 2005-06 and 2022-23**.
- During this period, around **35% of the built-up area** has been added, with an average increase of around **2.4% annually from land cover**, which includes **wasteland and agricultural land cover**.
 - Wasteland**, which includes **degraded and unproductive land**, contributed significantly (**12.3%**) to **built-up area expansion**.
- The trends of built-up area for rapidly growing states seem to be quite stable, with a slight rise in area in 17 years. **Madhya Pradesh, Gujarat, Karnataka, West Bengal and Andhra Pradesh** showed a **distinct increase in the built-up area**.

Impact of infrastructure development on land use:

- While such infrastructural development is important, it comes at the **cost of agricultural land**, which is the source of livelihood for farmers.
- After the acquisition of land for infrastructure, the **farmers were not adequately compensated**, as shown by the recent protests by farmers against poor compensation for such development projects.
 - In **Gujarat**, farmers protested against the development of **NH-56 from Vapi to Shamlaji**.
 - In February 2024, farmers in **Madhya Pradesh**, too, came out in protest against the land acquisition for **Indore's Western Ring Road** and the **Indore-Budhni rail link**.

PEPPER IT WITH:

Land Reforms, Land Reformation, Reclamation and Degradation

- In this context, the atlas's findings on land cover and use are very relevant to the **formulation of development projects, including infrastructural projects.**

PRE-SHOTS

Volcanic Vortex Rings

News Excerpt:

Mount Etna, the largest volcano in Europe and among the world's most active has been sending up almost perfect rings of smoke into the air called **Volcanic Vortex Rings.**

About Mount Etna:

- Mount Etna is an **active volcano** on the east coast of **Sicily, Italy.**
- **Etna has been a World Heritage Site since 2013.**

What are Volcanic Vortex Rings?

- Vortex rings are generated when gas, predominantly **water vapour**, is released rapidly through a vent in the Etna's volcano crater.
 - If the **vent is nearly perfectly circular**, the vortex rings **formed will be circular.**
- The phenomenon of **volcanic vortex rings was first observed** and documented at **Mount Etna and Mount Vesuvius in Italy** in 1724, with an engraved plate depicting it from 1755.
- In more recent times, volcanic vortex rings have been observed at various volcanoes, including **Redoubt**



(Alaska), **Tungurahua (Ecuador), Pacaya (Guatemala), Eyjafjallajökull and Hekla (Iceland), Stromboli (Italy), Aso and Sakurajima (Japan), Yasur (Vanuatu), Whakaari (New Zealand), and Momotombo (Nicaragua).**

- According to **volcanologists**, volcanic vortex ring formation is similar to **how dolphins blow bubble rings.**
 - The process involves **compressing the gas (water vapor)** and pushing it out through a **circular aperture, creating a high-pressure zone and forming the vortex ring shape.**
- **The occurrence of these rings is relatively rare**, as it requires specific conditions within the volcanic crater,

such as a circular vent and the appropriate gas pressure and composition.

- According to volcanologists, **no volcano on Earth produces as many vapor rings as Etna,"** indicating that Etna is particularly prolific in producing these rings.

Integrated River Basin Management

News Excerpt:

A report by the **International Centre for Integrated Mountain Development (ICIMOD)** and the **Australian Water Partnership (AWP)** describes climate change as the urgent catalyst for collaboration across eight nations on three key river basins in Asia: **the Indus, the Ganga, and the Brahmaputra.**

Key Points of the report:

- Three major studies by ICIMOD and AWP highlight that these basins are **critical for food and water security, industry, and economic policies** in the region.
- Climate change exacerbates existing **pressures** on water resources, leading to increased risks from **floods, land erosion, and salinity.** There is a pressing need for collective action to address humanitarian, ecological, and economic risks. This further calls for the importance/ need of sustainable development for humankind.
- The report provides recommendations to mitigate risks by focusing on multi-dimensional perspectives/ issues, i.e., **economic, ecological, energy, social, geopolitical, and governance issues.**
- Report advocates for **integrated river basin management (IRBM)** approaches by emphasizing on the importance of data sharing and multi-stakeholder engagement.
 - Collaboration is essential for identifying areas of common interest and promoting mutual benefits.

What is Integrated River Basin Management (IRBM)?

- IRBM is the **process of coordinating the conservation, management,** and development of water, land, and related resources across sectors **within** a given river basin, to maximize the economic and social benefits derived from water resources equitably while preserving and restoring freshwater ecosystems.
- It is mainly suitable **for India and other developing countries.**
- The aforementioned development is concerned with **identifying structural and non-structural measures to ensure water availability,** overcoming its spatial & temporal variability to meet development objectives.
- **The seven key elements of a successful IRBM initiative are:**

- A **long-term vision** for the river basin, agreed to by all the major stakeholders.
- **Integration of policies, decisions, and costs** across sectoral interests such as industry, agriculture, urban development, navigation etc.
- **Strategic decision-making** at the river basin scale, which guides actions at sub-basin or local levels.
- **Effective timing**, taking advantage of opportunities as they arise while working within a strategic framework.
- **All relevant stakeholders must participate actively** in well-informed and transparent planning and decision-making.
- **Adequate investment** by governments, the private sector, and civil society organizations is needed to build capacity for river basin planning and participation processes.
- A **solid foundation of knowledge** of the river basin and the natural and socio-economic forces that influence it.

IRBM: A Multidisciplinary Approach

Historically, projects have been undertaken in a fragmented manner such as management of individual reservoirs to **meet local irrigation demand, abstraction of ground water for drinking water etc.**

Indus Water Treaty:

- The Indus Waters Treaty was signed in 1960 with Pakistan concerning the use of waters of the Indus system of rivers.
- The Treaty extends to main rivers of Indus basin i.e. **Sutlej, Beas, Ravi (Eastern rivers) and Jhelum, Chenab and Indus (Western rivers)** including their tributaries and sub tributaries and other water bodies.
- **All the waters of the Eastern Rivers were allocated to India for her unrestricted use**, while India is under obligation to let all the waters of the Western Rivers flow, except for the domestic, non-consumptive, and other uses permitted in the Treaty.

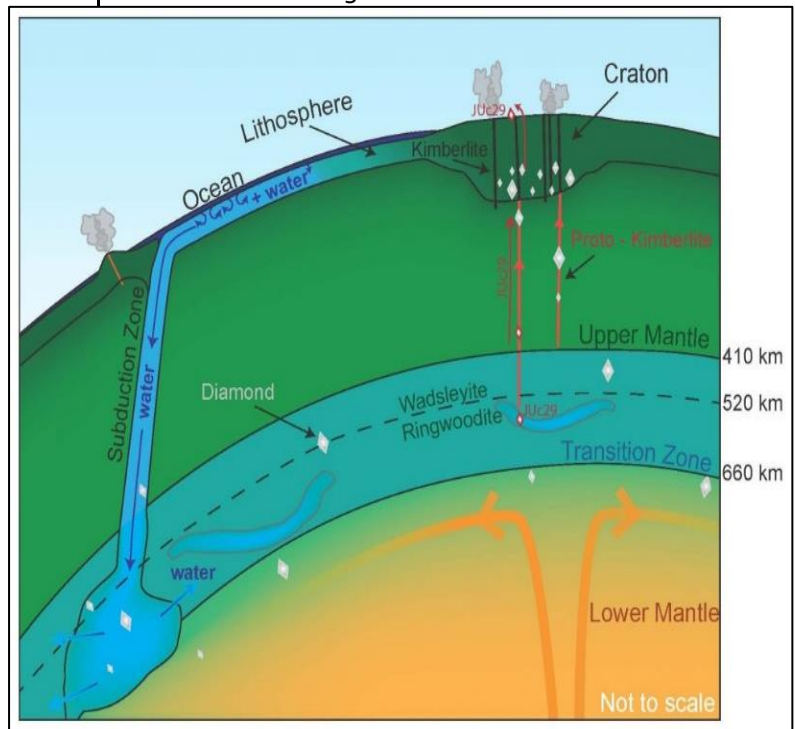
Ganga Water Treaty:

- **A Treaty was signed with Nepal in 1996**, viz. **Mahakali Treaty** concerning the integrated development of the **Mahakali River (known as the river 'Sarda' in India)** includes the Sharda Barrage, Tanakpur Barrage, and Pancheshwar Project.
- **The Ganga / Ganges Water Sharing Treaty was signed with Bangladesh in the year 1996** for the sharing of Ganga/Ganges waters at Farakka.
- As per the Treaty, the Ganga/Ganges waters are being shared at Farakka during lean period, from 1st January to 31st May every year, on a 10-day period basis as per the formula provided in the Treaty.

Ringwoodite

News Excerpt:

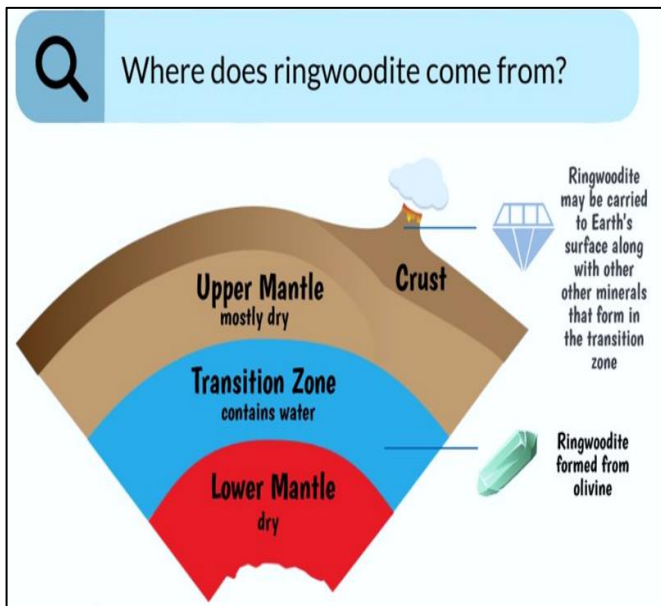
Scientific news about a **massive ocean hidden under the Earth's crust** has gained traction on social media.



Key highlights of the findings:

- The water is stored **700 kilometers below the surface of the Earth** in a rock known as ringwoodite.
 - This subterranean reservoir is **three times the volume of all the planet's surface oceans combined**.
- Ringwoodite is like a **sponge soaking up water**; there is something very special about the **crystal structure of ringwoodite**, which **allows it to attract hydrogen and trap water**.
- Researchers made the discovery after studying earthquakes and discovering that seismometers were picking up shockwaves under the surface of the Earth.
- The **high-water storage capacity of minerals in Earth's mantle transition zone** (410- to 660-kilometer depth) implies the possibility of a deep **H₂O** reservoir, which could cause dehydration and melting of the vertically flowing mantle.
 - They also found **intergranular melt in the transition zone**.

- These results suggest **hydration of a large region of the transition zone** and that **dehydration melting may act to trap H₂O in the transition zone.**



Importance of research:

- This discovery potentially reshapes our understanding of Earth's water cycle. **It proposes that water may exist within the mantle**, migrating amid rock grains.
- It can play a major role in **maintaining water beneath the Earth's surface**, without which water would predominantly reside on the planet's surface, rendering only mountain peaks visible.

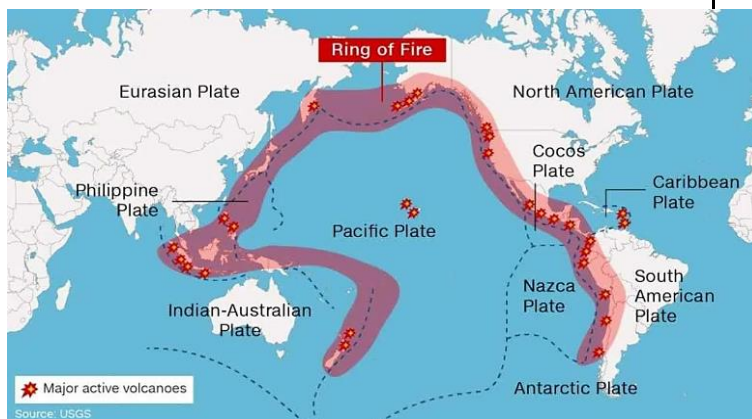
Earthquake hits Taiwan

News Excerpt:

On April 4, Taiwan was hit by its **biggest earthquake** in at least 25 years.

About the news:

- The **quake's epicentre** was located just 18 kilometres south-southwest of **Hualien County**, which is situated in **eastern Taiwan**.



- Taiwan is **prone to earthquakes** as it lies along the Pacific "**Ring of Fire**" — where **90%** of the world's earthquakes occur.
- According to the USGS, the island and its surrounding waters have registered about **2,000 earthquakes** with a **magnitude of 4.0 or greater** since 1980 and **more than 100 earthquakes** with a **magnitude above 5.5**.
- Taiwan experiences earthquakes due to the interactions of **two tectonic plates** — the **Philippine Sea Plate** and the **Eurasian Plate**.

Afar Triangle

News Excerpt:

Nestled within the **Horn of Africa** lies the Afar Triangle, a geological hotspot where the divergence of the **Nubian, Somali, and Arabian plates** set the stage for monumental tectonic shifts.

- This area is part of the **East African Rift system**, extending from the Afar region to eastern Africa.

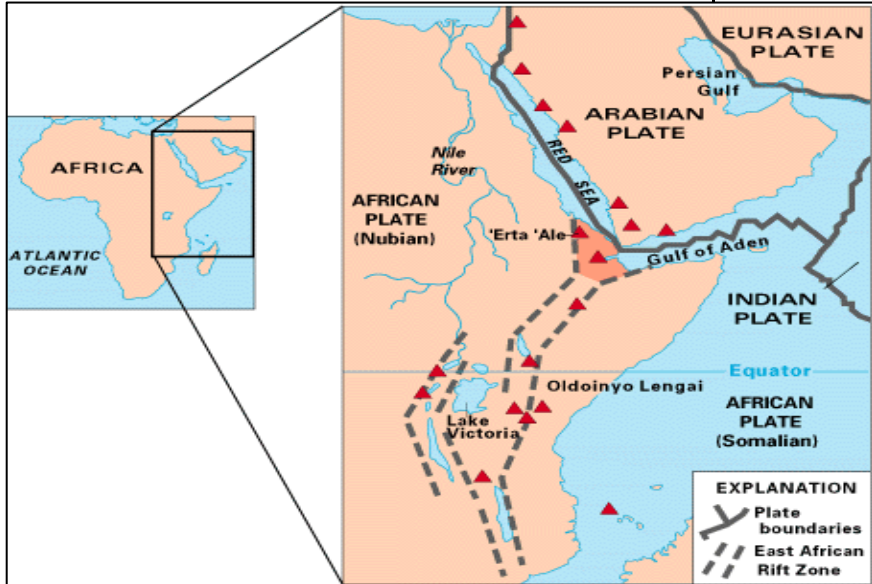
Background:

- Since 2005, when a 35-mile-long rift cracked open the **Ethiopian desert**, global attention has turned to the slow but steady separation of the African continent.
- This rift shows that immense forces are already at play beneath the Earth's surface as tectonic plates gradually drift apart.

Rare phenomenon:

- Amidst the vast expanse of Earth's oceans, geologists have ignited discussions **of a potential sixth ocean emerging from the depths of Africa**.
- Reports citing geologists speculated that **Africa could be cleaved in two within the next 5 to 10 million years**.
 - This could further give rise to a new ocean basin.
 - This transformation would see the Red Sea and the Gulf of Aden inundating the Afar region.
 - This could lead to the birth of a distinct continent in East Africa.
- The formation of a new ocean typically occurs through the process of **plate tectonics**.
- **When two tectonic plates move away from each other, they create a gap or rift between them.**
 - As the plates move apart, magma from the mantle rises to fill the gap. This magma cools and solidifies to form a new crust along the boundary.
- **As more magma rises and solidifies, the oceanic crust continues to expand outward from the mid-ocean ridge.**
 - This expansion pushes the existing oceanic crust away from the ridge.

- As the process of seafloor spreading continues, the gap between the diverging plates widens, eventually forming a new ocean basin.
- The formation of a new ocean basin is a continuous process that can take millions of years.
- The potential formation of a sixth ocean in Africa is a subject of scientific inquiry and a **reminder of the Earth's ever-changing nature.**



About the news:

- The new geoparks are situated in **Brazil, China, Croatia, Denmark, Finland, France, Greece, Hungary, Poland, Portugal, and Spain.**
- There is an additional new **transboundary geopark** spanning **Belgium and the Netherlands.**
- The addition of 18 new sites brings the **total number of geoparks to 213 in 48 countries.**
- **India does not have a UNESCO-designated Geopark.**

About UNESCO Global Geopark:

- The UNESCO Global Geopark designation was created in **2015** and recognizes **“geological heritage of international significance”.**
- Global Geoparks are **single, unified geographical areas** where **sites and landscapes of international geological significance** are managed with a **holistic concept of protection, education and sustainable development.**
- Geoparks serve **local communities** by **combining conservation with public outreach** and a **sustainable approach to development.**

UNESCO names 18 new Geoparks

News Excerpt:

UNESCO has endorsed the addition of 18 new sites from around the world to its network of outstanding Geoparks.

- UNESCO Global Geoparks are given this designation for a period of **four years**, after which their functioning and quality are thoroughly re-examined during a revalidation process.

Newly designated UNESCO Global Geoparks	
Geoparks:	Country
Schelde Delta Global Geopark	Belgium and Netherlands
Uberaba Global Geopark	Brazil
Enshi Grand Canyon-Tenglong Dong Cave Global Geopark	China
Linxia Global Geopark	China
Longyan Global Geopark	China
Longyan Global Geopark	China
Wugongshan Global Geopark	China
Xingyi Global Geopark	China
Biokovo-Imotski Lakes Global Geopark	Croatia
The South Fyn Archipelago Global Geopark	Denmark
Impact Crater Lake – Lappajärvi Global Geopark	Finland
Armorique Global Geopark	France
Normandie-Maine Global Geopark	France
Meteora Pyli Global Geopark	Greece
Bükk Region Global Geopark	Hungary
Land of Extinct Volcanoes Global Geopark	Poland
Oeste Global Geopark	Portugal
Calatrava Volcanoes. Ciudad Real Global Geopark	Spain

Swell waves

News Excerpt:

Swell waves have inundated coastal areas in **central and southern Kerala.**

What are swell waves?

- A swell is a series of **mechanical or surface gravity waves** generated by **distant weather systems** that **propagate thousands of kilometers across oceans and seas.**
- Swell waves are **not generated by local winds** blowing near the shore. Instead, they're the **result of the interaction of severe storms with a large fetch of water** that takes place in the **open ocean**, thousands of kilometres away from land mass.
- **The phenomenon is referred to as ‘Kallakkadal’ locally in Kerala.**

Kallakkadal

- 'Kallakkadal' is a colloquial term used by Kerala fishermen to refer to **flash flooding events**.
- In Malayalam, **Kallan means thief or mischievous one, and Kadal means sea**.
- Fishermen use the term 'Kalla Kadal' to refer to the **unusual occurrence of high swell waves during good weather**.
- 'Kalla Kadal' usually occurs along the **southern coast of India**, mainly during the **pre-monsoon period**, in **April and May** during **clear weather conditions**.
- In **2012**, **UNESCO** formally accepted the term for scientific use.

Giant rogue waves

News Excerpt:

A University of Melbourne expedition to the **southernmost waters encircling Antarctica** has discovered that **wind drives the formation of colossal rogue waves**.

About rogue waves:

- A rogue wave is a **single swell** that is **much higher than nearby waves**, which can **damage ships** or coastal infrastructure.
- The **first scientific measurement of a rogue wave** was the **25.6-meter Draupner wave**, recorded in the **North Sea in 1995**.
- Ocean waves are among the **most powerful natural forces on Earth**, and as global trends suggest, ocean winds will blow harder because of climate change, so ocean waves could become more powerful.



Key highlights of the study:

- Using state-of-the-art technology and embarking on an expedition to one of Earth's most volatile oceanic realms, the **research team deployed a novel technique for three-dimensional imaging of ocean waves**.
- Operating stereo cameras aboard the **South African icebreaker SA Agulhas II** during the Antarctic expedition in 2017, they captured rare insights into the behavior of waves in this remote region.
- The observations show that **unique sea conditions with rogue waves arise during the waves' 'young' stage** when they are most responsive to wind.

DISASTER MANAGEMENT

India's Disaster Management Authority head appointed UN Asst Secretary-General.

News Excerpt:

The United Nations Secretary-General announced the appointment of **Kamal Kishore of India** as **Assistant Secretary-General** and **Special Representative of the Secretary-General for Disaster Risk Reduction**, United Nations Office for Disaster Risk Reduction (**UNDRR**).

About UNDRR:

- The UN Office for Disaster Risk Reduction (UNDRR), formerly **UNISDR**, was established in **1999** to coordinate disaster reduction efforts within the UN system and promote synergies with regional and humanitarian organizations.
- The United Nations Office for Disaster Risk Reduction (UNDRR) is the **designated focal point** in the United Nations system for coordinating disaster reduction.
- **Role of UNDRR:**
 - UNDRR works globally with a wide range of **partners and stakeholders** to prevent new disasters and reduce existing disaster risks.
 - Supporting the **Sustainable Development Goals**, the **Paris Agreement** on Climate Change, and other global development goals, UNDRR promotes the strengthening of resilience through successful multi-hazard disaster risk management.

UNDRR delivers through four Strategic Objectives and one Enabler:

- **Strategic Objective 1:** Countries use quality risk information and analysis to reduce risk and inform development decisions.
- **Strategic Objective 2:** Disaster risk reduction governance strengthened at global, regional, national, and local levels.
- **Strategic Objective 3:** Catalyze investment and action in disaster risk reduction through partnerships and stakeholder engagement.
- **Strategic Objective 4:** Mobilize governments & other stakeholders through advocacy and knowledge sharing to make DRR central to sustainable development.
- **Enabler:** Strengthened organizational performance

G20 Disaster Risk Reduction Working Group:

- Established under **India's G20 presidency in 2023**, the Working Group **aims** to integrate disaster risk reduction into the G20's work and support for developing countries.
- The Disaster Risk Reduction Working Group **supports G20 countries** in **developing and implementing national policies** that reduce risk today and build resilience **against future shocks** by **sharing expertise**

and **good practices** and developing guidance documents and common approaches.

The Working Group's activities focus on six high-impact areas for disaster risk reduction:

- Combating Inequalities and Reducing Vulnerabilities
- Universal Coverage or Early Warning Systems
- Disaster and Climate Resilient Infrastructure
- Financing Frameworks for Disaster Risk Reduction
- Disaster Recovery, Rehabilitation and Reconstruction
- Nature-Based Solutions and Ecosystem-Based Approaches for Disaster Risk Reduction

India Helping 5 Nations Develop Early Warning Systems

News Excerpt:

India is helping **Nepal, Maldives, Sri Lanka, Bangladesh, and Mauritius** develop **early warning systems** to reduce the loss of life and property due to extreme weather events.

More about the News:

- India's efforts are part of the '**Early Warnings for All**' initiative announced by the **United Nations** in 2022.

Technical and Financial support to be given:

- India is **helping five of the 30 countries** establish early warning systems in the **first phase of the initiative**.

- According to IMD, around **50%** of the countries do **not** have an **early warning system**.
- **Poor countries, least developed countries, and small island nations**, such as the **Maldives and Seychelles**, do **not** have the **capacity** to provide early warning about extreme weather events.
- India will help them set up **meteorological observatories**, allow them access to its **numerical models**, and create a **decision support system and computing power**.
- The IMD will provide **forecasts and warnings**, and the **Ministries of Communication** of the **respective nations** have been roped in to help develop a system for **data exchange** and **warning dissemination**.
- Financial support will be provided through **public-private partnerships**.

Early Warnings for All: Executive Action Plan 2023-2027

- Early Warnings for All is a **groundbreaking initiative** to ensure that everyone on Earth is protected from hazardous weather, water, or climate events through life-saving early warning systems by the **end of 2027**.
- The Action Plan calls for investments of **US\$3.1 billion over five years**—just 50 cents per person per year—to strengthen disaster risk **knowledge and management, observation and forecasting, dissemination and communication** of warnings, and **preparedness and response capabilities**.



Upcoming Batches

CENTRES	FOUNDATION COURSE	ADVANCE FOUNDATION COURSE <small>2 YEARS PROGRAM</small>	Contact
DELHI (R.N)	21st June	24th June	📞 98112 93743
DELHI (V.N)	5th July	26th July	📞 97173 80832
JAIPUR	24th June	23rd June	📞 82908 00441
BHOPAL	26th June	25th June	📞 75099 75361
INDORE	28th June	27th May	📞 9893 772941
HYDERABAD	20th May	10th June	📞 79960 66663
BENGALURU	30th June	Admission Open	📞 76191 66663
KOLKATA	1st July	Admission Open	📞 90077 09895
<small>Off Campus Centre</small> IMPHAL WEST	7th June	24th June	📞 965084 5599

KSG Online Learning (KOL)
Quality of Physical Classes with Convenience of Online

ADVANCE FOUNDATION COURSE
24th June

FOUNDATION COURSE
7th June (Batch Open) | 21st June (Batch Open)

FOUNDATION COURSE WEEKEND BATCH
Starting From... 29th June

OPTIONAL COURSE

PSIR 8 th July	GEOGRAPHY 11 th July
SOCIOLOGY 16 th July	HISTORY 24 th June

NEEV Foundation for UPSC starts with NCERT | Admission Open

AWSDP+ ANSWER WRITING SKILL DEVELOPMENT PROGRAM | Starts 7th May

📞 **9990 999707 / 96543 76543** | www.ksgindia.com

ART & CULTURE

The science behind Surya Tilak

News Excerpt:

On the occasion of Ram Navami, a beam of sunlight lit up the forehead of Lord Ram's idol in Ayodhya's newly built temple.

Key Points:

- A three-minute-long **Surya Tilak ceremony** — where a beam of sunlight was projected onto the forehead of Lord Ram's idol — was performed at noon on April 17.
- This was achieved using a **special mirror-lens arrangement** designed by astronomers at the **Indian Institute of Astrophysics (IIA)**, Bengaluru, which a team from the **Central Building Research Institute, Roorkee, installed in the building.**

The science behind Surya Tilak

- **Step 1: Predict the Sun's position (each year)**
 - Following the Gregorian calendar, the date of Ram Navami (the Hindu festival celebrating Lord Ram's birth) **varies yearly.**
 - This is because the **Gregorian calendar is solar** (based on Earth's revolution around the Sun), while the **Hindu calendar is lunar** (based on the Moon's revolution around Earth).
 - Thus, the IIA team would have to **calculate the position of the Sun in the sky on that day in any given year.**
- **Step 2: To channel the Sun's rays**
 - After astronomers estimate where the Sun would be in the sky, their **second task would be to channel the sunbeam in a manner that it will fall on the idol's forehead** for a certain amount of time.

About the instruments:

- The IIA team **used a four-mirror-and-four-lens array for this purpose.**
 - The **first mirror**, responsible for receiving the sunlight, has to be positioned at an angle along the path of the Sun's rays.

- The light will then be reflected in **three other mirrors** and will pass through **four lenses until it is of the desired intensity.** It will then be directed to the idol's forehead.
- **The mirrors directed the beams while the lenses made them converge to the required intensity.**

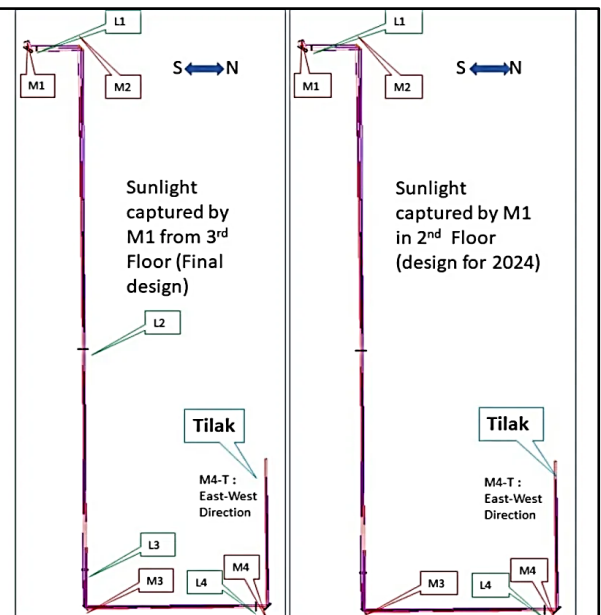
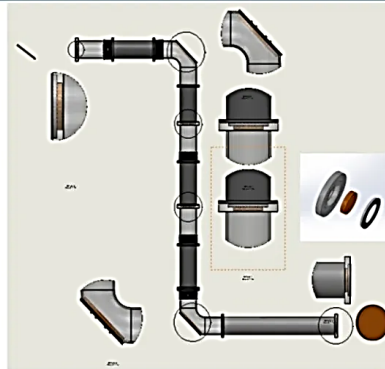
The principle behind it:

- This **opto-mechanical system** operates on a principle similar to that of a **periscope.**
 - Given that the Sun's position vis-à-vis the first mirror will vary each year, a specially **designed 19-gear system** was built to make requisite adjustments.



How the system works

Concept: Periscope with Mirrors & Lenses
 Number of mirrors: 4 (M1, M2, M3 and M4: Flat)
 No tracking for Sun in East-West direction
 Number lenses used : 4 (L1, L2, L3 L4)
 M1 shifts position every year (19 year cycle)



- Once a year, **one tooth of the gear must be manually turned** so that the angle of the pickup mirror (first mirror) is adjusted and ready to capture the Sun's rays.
- The number 19 was chosen to correspond to the **Metonic cycle — a period of 19 years in which there are 235 lunar months, after which the Moon's phases recur on the same days of the solar year.**
- This means that every 19 years, the system will effectively reset, and the cycle will then begin again.

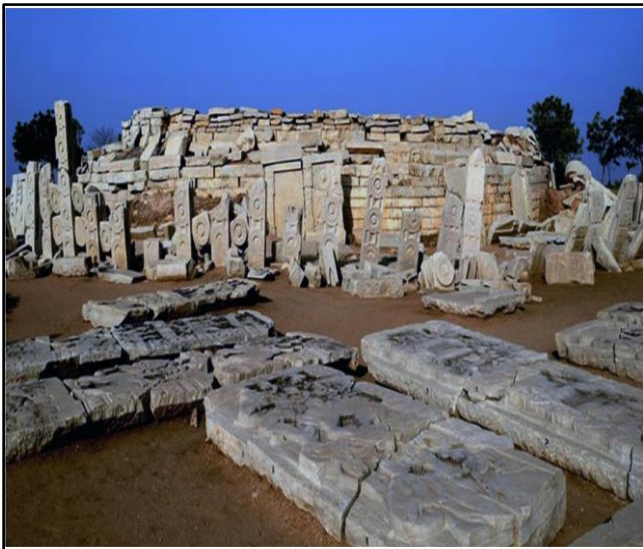
Sannati: The Buddhist site of Karnataka

News Excerpt:

In July 2022, the Archeological Survey of India (ASI) started a **major restoration project** on the ancient **Buddhist site of Sannati**.

The discovery of Sannati:

- The site was **accidentally discovered in 1986** when some villagers found a stone slab with a **Prakrit inscription in Brahmi script**.
- The **Archaeological Survey of India (ASI)** began **excavating the area in 1994**.
- Sannati, apart from its Buddhist association, is also known for **Sri Chandrala Parameshwari**, a **deity in a 9th-century CE temple**.
- It is located on the bank of the **Bhima River** in the **Kalaburagi** district of **Karnataka**.



Major findings from the site:

- **Abandoned Well:** It firmly establishes that this was indeed the site of **Adholoka Maha Chaitya [the Great Stupa of the Netherworlds]** as it was described in many inscriptions in the Ashokan era.
- **Maha Stupa:**
 - The **Maha Stupa** is believed to have been developed in three constructional phases – **Maurya, Early Satavahana** and **Later Satavahana**.
 - It is built with **locally available limestone**.
 - The Sannati stupa also has symbolic and **anthropomorphic forms** of the Buddha.
 - The Sannati stupa has the **maximum number of inscriptions among all stupas** (more than 700 inscriptions).
- **Sculpture of the emperor:**
 - The excavation also recovered a **stone sculpture** portraying **Mauryan Emperor Ashoka**.

- The emperor is seen **surrounded by his queens and female attendants** in this **rare sculpture**.
- The sculpture had the words **“Raya Asoko”** etched on it in **Brahmi script**, leaving little scope for mistaking the man's identity.
- While the Stupa is believed to be one of the largest Stupas built at the time, the **stone portrait** is considered to be the **only surviving and available image** of the **Mauryan Emperor Ashoka**.
- **Bodhi Tree sculpture:**
 - Ashoka is shown as paying obeisance to the tree.
- **Jataka story sculptures:**
 - The birth narratives of the Buddha are among the most interesting sculptures.
 - They commence with **his mother's dream, Mayadevi**, and finally culminate with his great departure, **Maha Parinirvana**.
 - The Jataka tales narrate the incidents of the Buddha's previous life as Bodhisattva.
 - The recoveries included around **60 dome slabs** with **sculptural renderings** of selected **Jataka stories**.

Ikshvaku-era coins unearthed in Telangana

News Excerpt:

Telangana's **Department of Heritage** has unearthed a **coin hoard at Phanigiri**, a renowned **Buddhist heritage site** located 110 km away from the state capital of Hyderabad.

More about the discovery:

- The **lead coins** were found in an earthen pot during the ongoing excavations in Telangana's **Suryapet district**.
- The coins numbering 3,730 bore an **elephant symbol on the obverse** and a **Ujjain symbol on the reverse**.
- Studies concluded that the **coins belonged to the Ikshvaku period**.
- Many other valuable cultural antiquities and structural remains, including **beads of stone and glass, shell bangle fragments, stucco motifs, broken limestone sculptures, toy cartwheels, iron nails, and pottery**, were also unearthed during the excavation.

About Phanigiri:

- **Phanigiri (meaning hillock of snake hood)** is a small village in **Suryapet** district, about 150 km from Hyderabad. The word **Phani** in **Sanskrit** means **snake**, and **Giri** means **hillock**.
- Phanigiri is believed to be one of the important **Buddhist monasteries strategically** located on a **hilltop**, on the **ancient trade route (Dakshinapatha)** connecting the west and east coasts of the Deccan.

Earlier excavations at Phanigiri:

- Various stages of earlier excavations here discovered **Mahastupa, apsidal Chaityagrihas, Votive stupas, pillared congregation halls, Viharas, platforms with staircases at various levels, octagonal stupa chaitya, 24-pillared mandapam, circular chaitya, and cultural materials** that included terracotta beads, semi-precious beads, iron objects, Brahmi label inscriptions and holy relic casket.
- The **Phanigiri Gutta**, where most of the discoveries of the early Buddhist era were made, is considered a narrative-changing find.
- The **thoranas** discovered at Phanigiri are very important as they are among the **first ones found south of Sanchi**.
- The same thorana has a panel that shows both **Mahayana** and **Hinayana** schools of thought, which shows that despite philosophical differences, both sects co-existed in **Phanigiri**.
- There is evidence from Phanigiri that shows the **deification of Buddha**.

The Ikshvaku dynasty:

- The **Ikshvaku dynasty (225-340 A.D)** was feudatory under the patronage of the **Satavahana Empire**.
- They ruled over the delta of the **Krishna and Godavari** rivers on the east coast of the **Andhra region**.
- Their capital was situated at **Dharanikota (present-day Amravati)**.
- The **Ikshvakus inscriptions** obtained from **Nagarjunakonda, Jaggayapetta, Amravati, and Bhattiprolu** record their activities, such as **donations, construction, etc.**
- The **Puranas** also record the existence of Ikshvakus as **Andhrabhrtyas (servants of the Andhras)** and as **Sriparvatiyas**.

Gulaal Gota

News Excerpt:

A Gulaal Gota is a small, lightweight ball made of lac that is filled with dry gulaal and thrown at people during Holi in Jaipur.



How did Gulaal Gotas become a tradition in Jaipur?

- Gulaal Gotas are **made by Muslim lac makers**, called **Manihaars**, in Jaipur.
- **Manihaars' ancestors were shepherds and horse traders from Afghanistan**. They settled in **Bagru, a town near Jaipur**, and learned lac-making from local artisans.
- The city of **Jaipur was established in 1727**. Its **founder, Sawai Jai Singh II**, an admirer of art, dedicated a lane at the Tripoliya Bazaar to the Manihaar community, naming it **"Manihaaron ka Raasta."**
- In older times, kings would ride through the city on elephant backs on Holi and **toss Gulaal Gotas to the public**.

Mohiniyattam open to boys

News Excerpt:

The Kerala Kalamandalam, a **deemed university for arts and culture**, has lifted gender restrictions for learning Mohiniyattam.

Mohiniyattam:

- Mohiniyattam is the **classical solo dance form of Kerala** and has deep roots in **Hindu mythology** and **temple traditions**.
- The dance form is characterized by **delicate body movements** and **subtle facial expressions**, which are inherently feminine and thus ideally suited for performance by women.
- **Historical References:**
 - Ancient texts like Mazhamagalam Narayanan Namputiri's Vyavaharamala (1709) and Kunjan Nambiar's Ghoshayatra mention Mohiniyattam.
 - The **Travancore Kings, particularly Maharaja Kartika Tirunal and Maharaja Swati Tirunal, structured the dance form into its present classical format in the 18th and 19th centuries.**
- **Temple Origins:**
 - Mohiniyattam's roots trace back to the temples of Kerala, where female temple dancers, known by various names like **Nangai, Dasi, and Koothachi**, performed **expressive gestures** to accompany **temple rituals**.



The salient features of the Mohiniyattam dance include:

- **Graceful and swaying body movements:** Mohiniyattam is known for its fluid and graceful

movements, devoid of abrupt jerks or sudden leaps. It belongs to the **lasya style**, characterized by femininity, tenderness, and grace.

- **Importance of hand gestures and facial expressions:** Mohiniyattam places significant emphasis on **Hastha Mudras (hand gestures) and Mukhabhinaya (facial expressions)**, which convey emotions and narratives with subtlety and precision.
- **Influences from Nangiar Koothu and folk dances:** Mohiniyattam has borrowed movements from **Nangiar Koothu, a temple art form**, as well as from **folk dances like Kaikottikali and Tiruvatirakali**.

MP's 6 heritage sites included in UNESCO's tentative list

News Excerpt:

Six heritage sites in Madhya Pradesh have been included in the **tentative UNESCO list**.

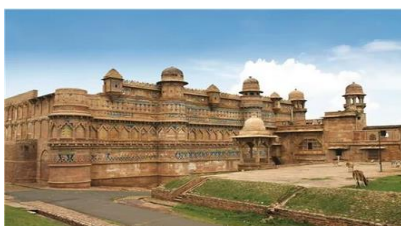
The sites included in the new list are:

- **Khooni Bhandara, Burhanpur:**
 - Khooni Bhandara is an **underground water management system** comprising eight waterworks built in the historical city of **Burhanpur, Madhya Pradesh in 1615**.
 - **Khooni Bhandara** consists of **103 kundis (well-like storage structures)** constructed in a row.
 - This system **checks the flow of rainwater from the Satpura hills towards the river Tapti**.
 - The design is based on the simple law of gravity.
 - The technique used in Burhanpur was taken from the **Persian Qanta systems of Iran and Iraq by the Mughals**.
 - It provided water to the entire city for as long as 300 years before it **collapsed in 1977**.
 - The hint of **red colour** in this **mineral-rich water** gave it the name **khooni (bloody)**.



Gwalior Fort:

- The historic fortress of Gwalior was initiated by **Raja Surya Sena**, who finished the fortification system in **773 CE**.



- Its strategic location on the basalt rock hills is mentioned as '**Gopachala, Gopagiri**' and other allied names, all of which mean '**cowherds' hill** in the old Sanskrit Inscriptions.
- The fort's imposing structure **inspired Emperor Babur** to describe it as "**the pearl amongst the fortresses of Hind.**"
- Particularly worth seeing is the statue of **Shalabhanjika**, the tree goddess, from Gyaraspur. It is the epitome of perfection in miniature.

The historic ensemble of Dhamnar:

- The **Dhamnar caves** are located on a hill near the village of **Dhamnar** in the **Mandsaur** district of **Madhya Pradesh**.
- This **rock-cut site** consists of a **total of 51 caves** of varying sizes **carved into the laterite hill**.
- The hill consists of **two groups of structures:** the series of **Buddhist caves** and the **Hindu temple complex** known as the **Dharmarajeshwara temple**, also called **Dharmanath temple**.
- The series of caves consists of **14 larger caves** and **37 smaller caves**.



Bhojeshwar Temple:

- **Bhojpur Temple** (also known as **Bhojeshwar Temple**), often known as the **Somnath of the East**, is located on the banks of the **Betwa River** in the **Raisen** district.
- It is **named after the ruler of the region, King Bhoj**, and the temple is dedicated to **Lord Shiva**.
- **Raja Bhoj** ordered the construction of the temple between **1010 and 1053 AD**.
- The Bhojpur temple is unusual in numerous ways; the **absence of a Mandapa** attached to the **Garbhagriha** and the use of a **rectilinear roof** rather than the more traditional curved Shikhara can be noted.



- The **7.5-foot-tall stone Shivling** lies on a **21-foot-tall platform**. The shivling at Bhojpur temple is about 18 feet in circumference.

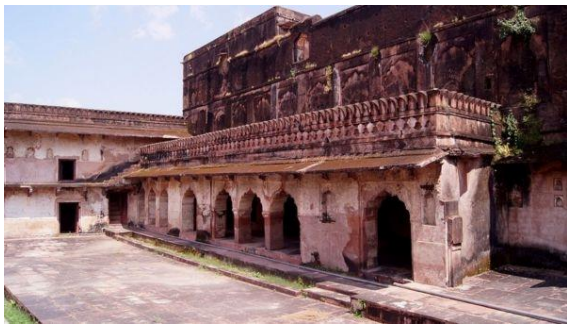
Rock Art Sites of Chambal Valley:

- The Chambal Basin and Central India region contain the **world's largest known rock art sites**.
- The **Chambal Basin covers parts of Madhya Pradesh, Rajasthan, and Uttar Pradesh**.
- Rock art in the Chambal Basin has been crafted by various civilizations over different historical periods.



Gond Memorial of Ramnagar, Mandla:

- The **main palace was built by the Gond king Hriday Shah in 1667** after Ram Nagar was made the capital.
- It is a magnificent and beautiful sample of **Gond architecture**.



- The rock inscription showing **the genealogy of the Gond Royal Dynasty** is found in this huge palace.
- This is a **protected monument** of the Department of Archaeology, Govt. of M.P.

Konda Reddi tribe & the Indian Laurel tree

News Excerpt:

A member of the Konda Reddi tribe, a Particularly Vulnerable Tribal Group, confirmed that the Indian laurel tree stores water in summer.



About Konda Reddi Tribe:

- **Habitat:** Konda Reddis live along the **banks of the Godavari River** in the hilly and forested areas of the East and **West Godavari and Khammam districts of Andhra Pradesh**.
- **Language:** Their **mother tongue is Telugu** in its purest and chaste form, and **they have a unique accent**.
- **Marriage:** The Konda Reddy tribe regulates marriage relations by dividing itself into **exogamous septs**.
- **Family & Religion:** The **Konda Reddi family is patriarchal and patrilocal**.
 - They worship **Muthyalamma (Village deity), Bhumi Devi (Earth Goddess), Gangamma Devi (River Goddess)**, etc.

Indian Laurel tree:

- The Indian Laurel tree also known as Indian Silver Oak, scientifically known as **Ficus microcarpa**, is a **tropical or subtropical tree** found primarily in several parts of **Asia, Western Pacific Islands and Australia**.
- As an ornamental tree, it provides a **dense canopy**, has **smooth light-grey bark**, and has **shiny green lanceolate leaves**.
- Its thick foliage creates **excellent habitat for various bird species**, and its small **round figs serve as food for birds**.
- Indian Laurels are also known as '**strangling figs**' because they are often seen **growing on other trees and seriously threaten their host's survival**.

Statue of Valour

News Excerpt:

The Newly inaugurated Statue of Valour depicts **Lachit Borphukan**, the iconic Ahom general revered for leading the **Battle of Saraighat in 1671**.

About the Statue of Valour:

- It is a 125-foot bronze statue of **Ahom general Lachit Borphukan** at his burial site in eastern Assam's Jorhat district.
- It was unveiled at the **Lachit Borphukan Maidam Development Project** at **Hollongapar, Assam**.
- **Veteran sculptor Ram Vanji Sutar**, a Padma Bhushan awardee, **built the statue**. He had earlier crafted the **Statue of Unity in Gujarat**.



Who was Lachit Borphukan?

- He was a legendary army commander of the **Ahom kingdom (1228-1826)**.
- He is known for his leadership in the '**Battle of Saraighat (1671)**'.
- He **defeated the Mughal forces, led by Raja Ramsingh-I**, in this battle.
- Unlike the Mughals, who preferred battles in the open with their massive armies, Borphukan preferred **guerrilla tactics**, which provided an edge to his smaller but fast-moving and capable forces.

He was buried at the '**maidam**' (burial grounds for Ahom royals and nobles) at **Hollongapar**.

Remembering Ambedkar

News Excerpt:

India pays homage to **Dr. Bhimrao Ambedkar** on his **birth anniversary**.

About Mahad Satyagraha:

- In August 1923, the Bombay Legislative Council passed a resolution by the social reformer Rao Bahadur S K Bole, allowing untouchable classes to use public water sources, wells, dharamshalas, schools, courts, offices, and dispensaries.
- Despite the resolution, **upper-caste Hindus did not allow lower castes to access public water sources**.
- Ramchandra Babaji More, a Dalit political leader from Mahad, approached B.R. Ambedkar to preside over a conference of untouchables in Konkan.
- Ambedkar at the time was helping Dalits fight against the social evil of untouchability through the **Bahishkrit Hitkarini Sabha**, founded by him in **1924**.
- Ambedkar agreed More's proposition and oversaw the preparations for the conference, in Mahad town in the Konkan (now in Maharashtra's Raigad district).

What happened at the Satyagraha?

- Ambedkar delivered a speech emphasizing the need for awakening among the untouchable communities.



- It was decided to march to the nearby **Chavadar tank**, where untouchables were not allowed to draw water.
- On March 20, Ambedkar and attendees marched to the tank, shouting slogans of equality.
- **Ambedkar entered the tank and picked up water, followed by others who drank the water..**
- Upper-caste Hindus conducted a purification ritual of the tank by emptying 108 pots of cow urine into it.
- Undeterred by the backlash, **Ambedkar announced another conference**, consciously calling it a Satyagraha, on a larger scale on December 26, 1927, at the same venue to showcase the resolve of the Dalit community.
- On December 12, upper-caste Hindus filed a case against Ambedkar and his followers, claiming the tank was private. On December 14, **the court issued a temporary injunction barring Ambedkar and Dalits from accessing the tank until further notice**.

Mahad Satyagraha, December 1927:

- Despite a court injunction against the Satyagraha, around **4,000 Satyagrahis** from various villages gathered in Mahad with a resolve to continue the protest.
- On December 24, when Ambedkar reached the spot, the police informed him about the lawsuit and asked him to **postpone the Satyagraha**.
- Deliberations were held on whether to go ahead with the Satyagraha in the changed circumstances. Most people wanted to continue, but it was suspended on Ambedkar's advice.
- Unlike the previous occasion, **no water was drawn from the Chavadar tank during this Satyagraha**.
- Ambedkar argued that their struggle was against caste Hindus, and their objective of demonstrating unity and determination was fulfilled. He advised against directly confronting the state by defying the court injunction.
- In a powerful symbolic rejection of the caste system, Ambedkar and his followers ceremoniously **burnt a copy of the Manusmriti**, sending shockwaves through Hindu society.

Significance of Mahad Satyagraha:

- The Mahad Satyagraha is the "**foundational event**" of the **Dalit movement**, marking the **first collective stand against the caste system** and for human rights. Earlier anti-caste protests were localized and sporadic.
- The Mahad Satyagraha was to become the **blueprint for organizing future movements** against the caste system and its practices.

Festivals in News









BAISAKHI	<p>It is the spring festival observed on April 13th or 14th of every year, which marks the first day of the month of Vaisakh and the beginning of the harvest season.</p> <ul style="list-style-type: none"> Baisakhi, also known as Mesh Sankranti, marks the beginning of the solar calendar. On this day, the Sun enters the Mesh Rashi, the first of the twelve zodiac signs. The other spring festivals that fall on or around Baisakhi are Pana Sankranti in Odisha, Poila Baisakh in West Bengal, Rongali Bihu in Assam, Puthandu in Tamil Nadu, Vaishakhi in Bihar, and Pooram Vishu in Kerala. The day acquired historic and spiritual significance since 1699 when on this day, the tenth Guru of Sikhs, Guru Gobind Singh established the Khalsa Panth.
UGADI/ GUDI PADWA	<ul style="list-style-type: none"> In different parts of the country, the first day of the Chaitra month of the Hindu calendar is celebrated as the new year. This festival is recognized by different names. For instance, in Maharashtra and Goa, it is celebrated as Gudi Padwa, while in Karnataka, Andhra Pradesh and Telangana, it is known as Ugadi. In West Bengal, Poila Boishak is celebrated on this day. The term Ugadi, also referred to as Yugadi, combines two Sanskrit words: 'Yug,' which signifies an era, and 'Adi,' which denotes a beginning, meaning that this festival marks the advent of a new era. The 12th-century Indian mathematician Bhaskaracharya recognized Ugadi as the commencement of the New Year. According to Hindu mythology, Lord Brahma created the world on this day, and since then, the new year has been regionally celebrated. A unique aspect of this festival is the commencement of the sixty-year cycle, known as Samvatsara, with each year in this cycle bearing a distinct name.
GOOD FRIDAY	<ul style="list-style-type: none"> The Friday before Easter is a Christian holiday commemorating the crucifixion of Jesus Christ and his death at Calvary. Members of many Christian denominations observe Good Friday with fasting and church services. On Good Friday, Jesus Christ was crucified by Roman soldiers on charges of blasphemy from the religious leaders. According to the biblical record, his death was a sacrifice meant to absorb sins and allow the followers to reenter a relationship with God.
NAVROZ	<ul style="list-style-type: none"> The word Nowroz is made up of two Parisian words: now means 'new' and ruz means 'day', so the meaning of Nowruz/Navroz is 'a new day'. It is a festival of new beginnings, which marks the victory of light over darkness. Navroj or Nowruz is considered a holy day for Baha'is, Zoroastrians and some Muslim communities worldwide. The United Nations acknowledges March 21st as the International Day of Nowruz. Why is Navroz celebrated twice in India? Nowruz will be observed in India on two different dates due to the following calendars. The first date is March 20th, 2024, which, according to the Solar Hijri calendar, aligns with the global observance of the spring equinox. The second date is August 15th, 2024, which follows the Shahenshahi calendar. Leap years are not calculated in the Shahenshahi calendar, which is why it is a unique tradition of the Indian Parsi communities to celebrate this festival two times a year.

60 products from across India earn GI tags




News Excerpt:

A record number of 60 products from across India, have been given the Geographical Indication (GI) tag by the Chennai-based Geographical Indications registry.



Some important GI Tags:

Product	About	
Asharikandi terracotta craft (Assam)	<ul style="list-style-type: none"> Asharikandi in Assam is one of the largest clusters of Terracotta and Pottery in North East India. This art involves products made of clay and sand and baked with earthen color, a brownish red known as Terracotta. 	
Pani Meteka craft (Assam)	<ul style="list-style-type: none"> Pani Meteka or Water Hyacinth is one of the most widely distributed species in this region. In the past, it was considered only as a waste and was either cleared up or left unused. However, the Assam State Rural Livelihood Mission (ASRLM) in recent years started utilizing them for making crafts, which generated employment for many locals. 	
Mising Handloom Products (Assam)	<ul style="list-style-type: none"> Mising Taat or Mising Handloom Products are part of traditional cloth-making of Assam's Mising indigenous tribal community. Mostly women are involved in making handloom products including garments and mekhela chador, a traditional women's attire, etc. These clothes have cultural significance. Mising women weave these products especially before marriages and other occasions at home. 	
Sarthebari metal craft (Assam)	<ul style="list-style-type: none"> Sarthebari Metal Craft are traditional handmade bell metal utensils found in Assam's Barpeta. It has a socio-cultural and religious significance. These products are part of ritual practices of Nava Vaisnava religion advocated by Srimanta Sankardeva. Apart from the Assamese Vaisnava Prasanga, these bell metal utensils are part of Buddhist worship, according to locals. 	
Bodo Eri silk (Assam)	<ul style="list-style-type: none"> Bodo Eri silk is referred to as the fabric of peace or ahimsa (non-violence). It comes from the silkworm Samia ricini that feeds mostly on the leaves of the castor plant (Ricinus communis), and cassava. 	
Jaapi (bamboo headgear of rural Assam)	<ul style="list-style-type: none"> Japi is a traditional symbol of Assamese folk culture and it is made with bamboo/cane and palm leaves (tokou) In the earlier days when umbrellas were unheard of, farmers used Japi as a headgear to protect them from the sun and rain. 	
Bihu dhol (Assam)	<ul style="list-style-type: none"> Assamese Bihu Dhol, also known as Pati Dhol, is a two-faced drum played with a stick and a hand. It is one of the most important musical instruments in the folk entertainment and culture of Assam. 	
Banaras Thandai (Uttar Pradesh)	<ul style="list-style-type: none"> Thandai is a chilled milk-based drink prepared with a soaked paste of almonds, cashews, and pistachio along with saunf etc. The drink was first introduced many centuries ago as an offering to the Shri Kashi Vishwanath deity on the occasion of Mahashivaratri, Rangbhari Ekadasi, and Holi. 	

- With these six new additions, **Uttar Pradesh has retained its position as the state with the most GI-tagged products in India.**
- The total number of **GI-tagged** products from **Uttar Pradesh are 75.**
- **Tamil Nadu is second** with **58 GI products.**

Pachra-Rignai (Tripura)	<ul style="list-style-type: none"> ● Pachra Rignai is a traditional attire of tribal women from Tripura. ● It is a handwoven cloth used as tribal women's upper garment, and also as headgear or a stole, and it is also given to others as a gift as a mark of love and respect. 	
Matabari Peda (Tripura)	<ul style="list-style-type: none"> ● Matabari pera is a sweet made from milk and sugar. ● It is offered as prasad at the famous Tripureswari temple in Tripura. ● Tripurasundari temple is one of the 51 shaktipitha. 	
Lyrnai Pottery (Meghalaya)	<ul style="list-style-type: none"> ● The Larnai pottery is a traditional Black pottery produced in Larnai village of Jaintia Hills in Meghalaya. ● It is locally known as khiew larnai or khiew ranei. 	
Chubitchi (Meghalaya)	<ul style="list-style-type: none"> ● Chubitchi or Chubok is a traditional rice based alcoholic beverage of the Garو tribe. ● This staple drink is offered to their God, Saljong (Sun God) during the Wangala festival, marriage ceremonies and even funerals. 	

New Gi-Tagged Products of UP

Product	Details	
Banaras Tirangi Barfi	<ul style="list-style-type: none"> ● Tirangi Barfi is a sweet made with cashews and pistachios, coloured in the three stripes of the Indian flag: green, saffron, and white. ● It was first introduced in 1942 by Shri Ram Bhandar of Thatheri Bazar locality in Varanasi, following Mahatma Gandhi's call for decisive action. 	
Banaras Metal Casting Craft	<ul style="list-style-type: none"> ● Varanasi is the home of utilitarian utensils, puja vessels and decorative art pieces. ● They are made of brass, copper and brass-copper combination. ● The surface of these articles is either smoothened by chiseling, in which case the surface gives a bright appearance, or by hammering in which case a dotted surface is the result. 	
Lakhimpur Kheri Tharu Embroidery	<ul style="list-style-type: none"> ● The craft in Lakhimpur Kheri is mainly handmade and people of the Tharu tribe of the district are engaged in making these traditional hand-woven and embroidered cloths. ● The Tharu households prepare several articles for domestic use and these household articles are decorated with embroidered cloth. 	
Bareilly Cane and Bamboo Craft	<ul style="list-style-type: none"> ● Bareilly was once known as 'Baans Bareilly' famous for cane and wooden furniture manufacturing. ● Nearly 10000 artisans are involved in the different types of furniture making using cane and bamboo. ● The furniture frame is made with thick bamboo by heating, bending and joining. ● Finally, the frame is rounded with a thin processed cane called 'Gola'. 	
Bareilly Zardozi Craft	<ul style="list-style-type: none"> ● In Bareilly Zardozi Craft, Zari work is done using the Ari needle and varieties of embroidery needles. ● Motifs used in the Bareilly Zardozi Craft are mostly inspired by nature, like flowers, leaves, trees, animals and birds. ● Other than this, the geometrical and abstract motifs, inspired by art and spiritual beliefs are also commonly used. 	
Pilkhua Hand Block Print Textile	<ul style="list-style-type: none"> ● Today Pilkhua in Hapur district is the world famous place for its printed bed sheets. ● The current block printers claim that the printing legacy in this area is around 100 - 125 years old. ● In the earlier phase bed covers (Khes) were the only products printed with hand blocks. 	

GOVT SCHEMES & INITIATIVES

SWAMIH fund

News Excerpt:

The government-backed **SWAMIH (Special Window for Affordable and Mid-Income Housing) Fund** has helped complete over 28,000 homes and is projected to deliver another 60,000 homes.

About the news:

- According to the **National Real Estate Development Corporation (NAREDCO)**, the Fund played a **critical role in the growth of many ancillary industries** in the real estate and infrastructure sector having **successfully unlocked liquidity of more than Rs 35,000 crore**.
- The report also found that **housing inventory overhang has significantly dropped from 41 months in 2017 to 15 months at the end of 2023**.
- Housing demand and new supply in the top 7 cities have soared in the last 10 years, particularly post the pandemic, and **housing sales are now aligned with new launches**.
- The report also highlights the **positive impact of various other government-backed initiatives such as PMAY (Urban & Gramin), GST, demonetization, and the growing adoption of technology in real estate**.

About the SWAMIH Fund:

- It is a **social impact fund specifically formed to complete stressed and stalled residential projects**.
- The Fund is sponsored by the **Ministry of Finance, Government of India**, and is managed by **SBICAP Ventures Ltd., a State Bank Group company**.
- Since the Fund considers **first-time developers, established developers with troubled projects, and developers with a poor track record of stalled projects**, it is considered the **lender of last resort for distressed projects**.
- The Fund's presence in a project often **acts as a catalyst for better collections** and sales, primarily in projects that have been delayed for years.
- Launched in **November 2019**, the Fund has raised Rs 15,530 crore so far to provide priority debt financing for the completion of **stressed, brownfield, and Real Estate Regulatory Authority (RERA)-registered residential projects** that fall in the affordable, mid-income housing category.
- It has so far provided **final approval to about 130 projects** with sanctions worth over Rs 12,000 crore.

Electric Mobility Promotion Scheme (EMPS)

News Excerpt:

The **Ministry of Heavy Industries** has approved 11 Electric Vehicle (EV) manufacturers to receive incentives under the recently introduced **Electric Mobility Promotion Scheme (EMPS) 2024**.

About the news:

- A total of 11 firms have been approved for the **EMPS**.
- The scheme aims to **sustain the growth in EV sales, replacing the former Faster Adoption and Manufacturing of Electric Vehicles – II (FAME-II) scheme**.

Electric Mobility Promotion Scheme 2024 (EMPS 2024):

- The EMPS scheme was introduced by the **Ministry of Heavy Industries** to further **accelerate the country's adoption of EVs**.
- This is a **fund-limited scheme with a total outlay of Rs. 500 crore for 4 months, w.e.f. 1st April 2024 till 31st July 2024**.
- The scheme aims for **faster adoption of electric two-wheelers (e-2W) and three-wheelers (e-3W)** to provide further impetus to the **green mobility** and development of the electric vehicle (**EV**) **manufacturing ecosystem** in the country.
- The Scheme promotes an **efficient, competitive, and resilient** EV manufacturing industry in the country, thereby promoting the vision of **Aatma-Nirbhar Bharat**.



- For this purpose, the **Phased Manufacturing Programme (PMP)** has been adopted which encourages **domestic manufacturing and strengthening** of the EV supply chain.
- The scheme will also create significant **employment opportunities** along the value chain.

Eligible EV categories:

- **Two Wheelers (electric) (e-2W)**
- **Three-wheeler (electric)** including registered **e-rickshaws & e-carts and L5 (e-3W)**
- With greater emphasis on providing affordable and environment-friendly public transportation options for the masses, the scheme will apply mainly to those **e-2W and e-3Ws registered for commercial purposes.**
- Further, in addition to commercial use, **privately or corporate-owned** registered **e-2W** will also be eligible under the scheme.
- **No such benefits are extended to electric four-wheelers (e4W) and e-buses** under the **EMPS** scheme.
 - **The exclusion of e4W and e-buses** from the EMPS is due to **existing schemes** like the **Auto Production Linked Incentive (PLI) Scheme** and **PM-eBus Sewa** Scheme catering to these categories.

EV sales data:

- EV sales this year have seen a significant **increase of over 45 percent.**
- This growth has propelled the **overall EV penetration in India to 6.3% from 4.8% in 2022**, exceeding the **5% mark.**

One Vehicle, One FASTag implemented

News Excerpt:

The 'One Vehicle, One FASTag' **initiative** of the National Highways Authority of India (**NHAI**) was **implemented** on April 1, 2024.

About FASTag:

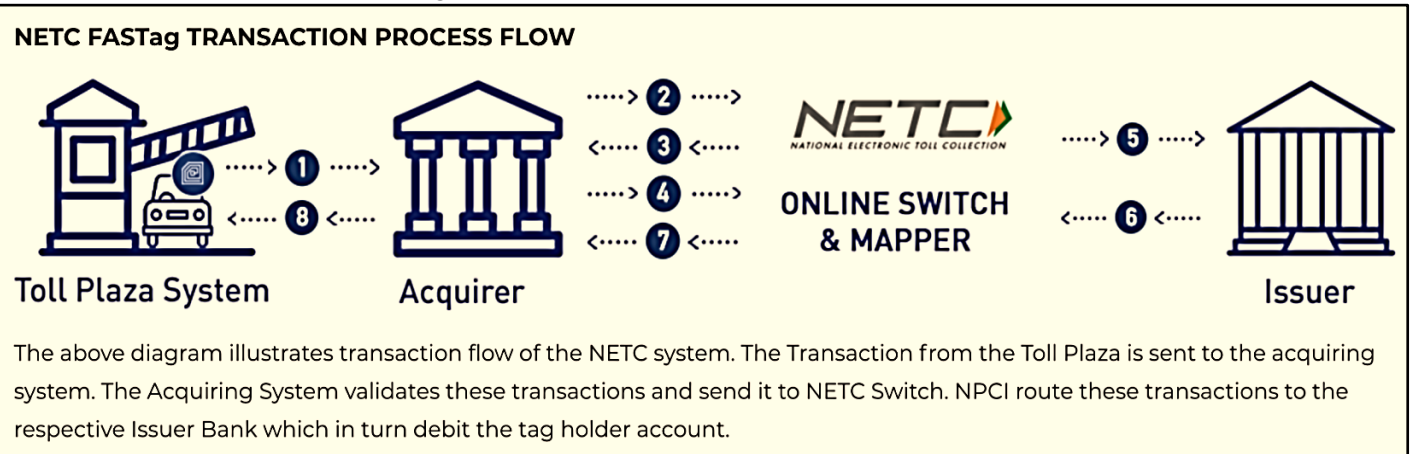
- FASTag is a Radio Frequency Identification (**RFID**) tag used for making **toll payments** directly from the customer's linked prepaid or savings/current account.

National Highway Authority of India (NHAI):

- It was set up by an act of the Parliament, **NHAI Act, 1988.**
- NHAI is mandated to **implement** the National Highways Development Project (**NHDP**) which is India's largest-ever Highways Project in a phased manner.
- **Mission**
 - To **develop, maintain, and manage National Highways** vested in it by the Government.
 - To **collect fees** on National Highways, **regulate and control** the plying of **vehicles** on National Highways for its proper management.
 - To develop and provide **consultancy and construction services** in India and abroad and carry on **research activities** in relation to the development, maintenance, and management of highways.
 - To **advise the Central Government** on matters relating to highways.

To **assist** on such terms and conditions as may be mutually agreed upon, any **State Government** in the formulation and implementation of schemes for highway development.

- FASTag is issued to each vehicle **based on the registration certificate (RC)** of the vehicle. Once it is affixed to a vehicle, it **cannot be transferred** to another vehicle.
- It is **affixed** to the **windscreen** of the vehicle and enables the customer to drive through toll plazas **without stopping** for any toll payments.
 - The toll fare is **directly deducted** from the **customer's linked account.**
- FASTag can be **purchased** from any of the National Electronic Toll Collection (**NETC**) **Member Banks.**
 - The National Payments Corporation of India (**NPCI**) has **developed** the **NETC program** to meet the electronic tolling requirements of the Indian market.



- With a penetration **rate** of **around 98%** and over **8 crore users**, FASTag has revolutionized the Electronic Toll Collection system in the country.

One Vehicle, One FASTag concept:

- It **aims** to deter the practice of using a single FASTag for multiple vehicles or associating multiple FASTags with one vehicle.
- The concept indicates that a vehicle owner is permitted to have **only one active FASTag for one vehicle**.
- It has been observed that it is to be done **with** the mandatory **KYC** process to adhere to **the RBI's mandate**.

Significance of the initiative:

- It will **enhance the efficiency** of the Electronic Toll Collection system and provide seamless movement at the Toll Plazas.
- FASTag offers the convenience of **cashless payment** along with benefits like - **savings on fuel and time**, as the customer does not have to stop at the toll plaza.

MISCELLANEOUS

Abel Prize

News Excerpt:

A French mathematician, **Michel Talagrand**, has been awarded the Abel Prize - one of the most prestigious honours in the field.

About:

- Michel Talagrand, 72, received the award for his "**groundbreaking contributions**" for his **work in probability theory involved understanding random phenomena**.
- He **is the fifth Frenchman to win the prize** since it was founded in 2003.
- He has made profound contributions to our **understanding of random, and in particular, Gaussian processes**.
- The award is presented **by Norway's King Harald V at a ceremony in Oslo**.



Awards in Maths:

Abel Prize:

- It is a prestigious **international award** recognizing outstanding contributions to the field of mathematics.
- Named after the **Norwegian mathematician Niels Henrik Abel**, it is awarded **annually** by the Norwegian Academy of Science and Letters.

Fields Medal:

- The Fields Medal, often regarded as **the Nobel Prize of mathematics**, is awarded **every four years** to mathematicians who are **under the age of 40**.
- It was established using excess funds raised by **John Charles Fields** (1863–1932), a mathematics professor at the University of Toronto.

World Water Day

News Excerpt:

World Water Day, celebrated on March 22 every year, is an occasion to realize the importance of freshwater, especially this year amid the ongoing Bengaluru water crisis.

Historical background:

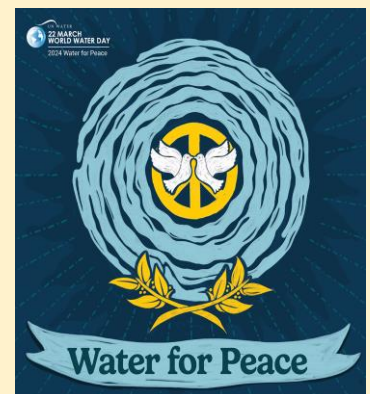
- **In 1992**, the United Nations Conference on Environment and Development in Rio de Janeiro saw **the first formal proposal of World Water Day under Agenda 21**.
- The United Nations General Assembly adopted a resolution in **December 1992** by which March 22 was declared World Water Day.

Significance

- The United Nations (UN) marks this day to **advocate for the sustainable management of freshwater resources**.
- On this day, the **UN's flagship report on water and sanitation is launched every year**.

Theme

- The theme for this year is **'Water for prosperity and peace'**.
- Thus, the 2024 edition of the **UN's flagship World Water Development Report (WWDR) report** will explore this theme.
- The theme changes every year, but the central focus remains on topics relevant to **clean water, sanitation, and hygiene (WASH)**, which is in line with the targets of **Sustainable Development Goal 6**.



Key takeaways from UN's World Water Day 2024:

- **Water can create peace or spark conflict:** Tensions in societies arise when water is scarce or polluted or when people struggle for access. We can balance everyone's water needs only through cooperation.

- **Prosperity and peace rely on water:** Mass migration and political unrest make water cooperation a central part of how nations manage climate change.
- **Water can lead us out of crisis:** Harmony between communities and countries can be fostered by uniting around the fair and sustainable use of water.

India Gaming Report 2024

News Excerpt:

A joint report by the **Interactive Entertainment and Innovation Council** and an online gaming firm projects **paying gamers will reach 240 million by 2028** from 144 million paid users for games in 2023.

Key highlights of the report:

- **Industry landscape:**
 - **India** is the **fastest-growing mobile gaming market**, and the **annual revenue** of the **Indian gaming industry** is expected to double by almost **\$6 billion by 2028** from \$3.1 billion in 2023.
 - The Indian gaming industry comprises **over 1,400 gaming companies**, including 500 gaming studios.
- **Job creation:**
 - The report projects that **India's online gaming industry will add 2.5 lakh more jobs in the next 10 years**, which currently employs 1 lakh skilled gaming professionals directly and indirectly.
 - The **Indian gaming sector is presently witnessing a surge in demand for talent**, with job openings ranging from 50,000 to 60,000 across various roles, including **developers, programmers, testers, artists, and customer support**.
- **Demand for talent:**
 - The **number of professional players will grow by 2.5 times over the next five years from 500 in 2023** on the back of recognition by the government of esports and various state government-led initiatives to develop talent around esports.
 - The report estimates that **India has a consumer base of around 568 million gamers** and is **home to approximately 15,000 game developers and programmers**.
- **Demographic trends:**
 - Approximately **40% of the gaming populace in India** is made up of **women**, whereas three years ago, only one in five gamers in India were women.
 - Among the gaming community, **nearly 50% fall within the age bracket of 18 to 30 years**.
 - Conversely, the report found that about **30% of Indian gamers are between 31 and 45 years old**, and their gaming preferences lean towards **strategy games**.
- **Game downloads:**

- **From 2019 to 2023, game downloads in India soared from 5.65 billion to a staggering 9.5 billion.**
- This growth propelled **India's share of global game downloads to a substantial 16% in 2023, followed by Brazil and the US** with 4.5 billion (7.6% market share) and 4.4 billion (7.4% market share) downloads, respectively.
- **Mobile dominance:**
 - **Mobile gaming accounts for 90% of the Indian gaming market**, compared to around **37% and about 62% in the US and China**, respectively.
 - The **growth in smartphones to over 820 million**, driven by affordability, **increased phone memory by 3-4 times in the past five years**, and **low-priced data**, will be key growth drivers for the Indian gaming industry.
- **Cost advantage:**
 - On average, **game development costs in India can be up to 50-60% lower than those in Western countries**, making it an exceptionally attractive **outsourcing destination**.

Earth Hour Day 2024

News Excerpt:

The **World Wildlife Fund (WWF) India** celebrated Earth Hour 2024 on **March 23 from 8.30 p.m. to 9.30 p.m. worldwide to raise awareness about environmental issues**.

About Earth Hour:

- The first Earth Hour event was held on **31 March 2007**.
- Earth Hour **serves as a beacon of positivity, hope, and inspiration, rallying people around the globe to come together in solidarity with the environment**.
- The **aim was to engage as many individuals as possible**, especially those who may **not yet be fully aware of the environmental crisis we face**.
- Earth Hour saw participation from over 190 countries and territories, with millions of people contributing their time to support the cause.



Why is World Earth Hour Day celebrated?

- Earth Hour **encourages people worldwide to turn their lights off for 60 minutes to raise awareness about environmental issues**.

- It's a movement that, for the last 18 years, has **continued to inspire and mobilize people globally**, reminding us of our **collective responsibility to create a more hopeful and resilient future for our planet.**

World Wildlife Fund:

- It is an **international non-governmental organization.**
- The work of WWF has **evolved from saving species and landscapes to addressing the larger global environmental threats and forces** that impact them, with people at the center of its work, and **organized around six priority areas** for improved environmental management comprising **climate, forests, food, freshwater, wildlife, and oceans.**

World Chagas Disease Day

News Excerpt:

World Chagas Disease Day is a global healthcare event observed on the 14th of April every year.

World Chagas Disease Day:

- It was **first celebrated on the 14th of April 2020** after it was approved and endorsed by the **World Health Assembly at the World Health Organization (WHO)** in **May 2019.**
- World Chagas Day aims to raise awareness of Chagas disease, improve early detection, expand diagnostic coverage, and provide equitable access to clinical care.
- **Theme 2024: "Tackling Chagas disease: detect early and care for life".**
 - This theme emphasizes raising public awareness of Chagas disease and developing more funding and support for early detection along with follow-up care initiatives.





Chagas disease (American trypanosomiasis):

- It is a potentially life-threatening illness caused by the **protozoan parasite Trypanosoma cruzi** or (**T. cruzi**).
- Chagas disease is prevalent among poor populations of **continental Latin America.**
- **It can be transmitted by the triatomine bug (vector-borne), as well as orally (food-borne), during pregnancy or birth (congenital), through blood/blood products, organ transplantation, and laboratory accidents.**
- Chagas disease is named after **Carlos Justiniano Chagas**, a Brazilian doctor who discovered the disease in **1909.**
- Chagas disease is **clinically curable** if **antiparasitic treatment** is initiated at an early stage. Therefore, universal access to prompt diagnosis and care is essential.
 - There is **no vaccine to prevent Chagas disease.**
- **Symptoms:** Chagas disease has two successive phases: an **acute phase** and a **chronic phase.**
 - Most **acute phases are asymptomatic** or have **non-specific symptoms.**
 - During the **chronic phase**, patients may also be **symptom-free**, but some may progress to clinical forms of the disease (**cardiac, digestive, and/or neurological**), which can be **life-threatening if left undiagnosed and untreated.**
- Chagas disease can be treated with **benznidazole** or **nifurtimox.** Both medicines kill the parasite and are fully effective in curing the disease if given early in the acute phase.
- WHO recognized Chagas disease as a **Neglected Tropical Disease (NTD)** in **2005.**
 - **NTDs are diseases of neglected populations that perpetuate a cycle** of poor educational outcomes and limited professional opportunities; in addition, they are associated with stigma and social exclusion.
 - **They are 'neglected' because they are almost absent from the global health agenda and have very limited resources.**

SPECIES IN NEWS

SPECIES	DETAILS
<p>Baobab Tree</p> <p>News Excerpt: The Global Society for the Preservation of Baobabs and Mangroves (GSPBM) has initiated a mission - ARO (Assessment, Research, and Outreach) Baobab Project to rejuvenate the iconic baobab trees. These ancient giants, threatened by deforestation and climate change, are receiving a lifeline through seedling transplantation.</p>	<p>About Baobab Tree:</p> <ul style="list-style-type: none"> ● All Baobabs are deciduous trees ranging in height from 5 to 20 meters. It grows in low-lying areas in Africa and Australia. <ul style="list-style-type: none"> ○ Also known as the upside-down tree or Adansonia trees. ○ Prefer hot, sandy plains. ● Widely distributed in belts across Africa. They also grow in Madagascar, Zimbabwe, India, Ceylon, and Australia. ● Very difficult to kill, they can be burnt, or stripped of their bark, and they will just form new bark and carry on growing. ● When they do die, they simply rot from the inside and collapse, leaving a heap of fibres, which makes many people think that they don't die at all, but simply disappear. <p>How is climate change driving the loss of baobab forests?</p> <ul style="list-style-type: none"> ● Reduced rainfall is hampering the growth of baobab seedlings. ● Climate change exacerbates forest fragmentation, isolating baobab habitats and disrupting the ecological balance. ● The increased dryness caused by climate change, and human activities are contributing factors to the fires. <p>Why are baobab trees so important to Madagascar?</p> <ul style="list-style-type: none"> ● Ecological Importance: <ul style="list-style-type: none"> ○ Keystone species in Madagascar's unique landscapes. ○ Their massive trunks and extensive root systems help store water in arid environments. ● Economic Potential: <ul style="list-style-type: none"> ○ Sustainable development through the utilization of their highly nutritious fruits and seeds. ● Cultural & Spiritual Significance: <ul style="list-style-type: none"> ○ Deeply woven into the Malagasy way of life.
<p>Javan tiger</p> <p>News Excerpt: A single hair found on a village fence in the west of the island of Java in 2019 has been DNA-tested and found to be belonging to the extinct species of Javan Tiger.</p> <p>IUCN Red List: extinct in 2008</p>	<ul style="list-style-type: none"> ● The last confirmed sighting of a Javan tiger was in 1976 in Meru Betiri National Park, East Java. ● In August 2019, a Javan tiger was reported in a community plantation near the village of Cipeundeuy in South Sukabumi, West Java. <ul style="list-style-type: none"> ○ Subsequently, a hair strand belonging to a tiger was found on a fence, along with footprints and claw marks. ○ The analysis concluded that the hair sample belonged to the Javan tiger. ● The taxonomy of tigers was revised in 2017, categorizing the Sunda Island tigers, including the Javan tiger, as Panthera tigris sondaica, distinct from mainland tiger subspecies. <p>Javan Tiger:</p> <ul style="list-style-type: none"> ● Its an endemic subspecies of tiger found only on the Indonesian island of Java. ● It descended from the Sunda tiger, a shared ancestor of the Sumatran (P. tigris sumatrae) and Bali (P. tigris balica) tigers. <p>Physical characteristic:</p>



	<ul style="list-style-type: none"> • The Javan tiger exhibited significant sexual dimorphism in size; males averaged 200-245 cm in length and 100-140 kg in weight, while females were smaller at 180-215 cm long and 75-115 kg. • It boasted a rich, rusty orange coat adorned with distinct, narrower dark stripes, ideal for blending into Java's lush forests and grasslands. <ul style="list-style-type: none"> ◦ Its underparts and inner legs featured a white fur characteristic shared with numerous tiger subspecies. • It sported notably short and dense fur and flatter skull, differing from mainland subspecies. <p>Habitat:</p> <ul style="list-style-type: none"> • The Javan Tiger primarily inhabited the dense forests and grasslands across the Indonesian island of Java. • Despite habitat shrinkage due to human activities, critical areas such as Meru Betiri and Ujung Kulon National Parks provided safe havens for the Javan Tiger.
<p>Bumblebee species</p> <p>News Excerpt: Scientists have revealed queens of the common eastern bumblebee, a species widespread in eastern North America, can withstand submersion for up to a week when hibernating.</p>	<p>About Bumblebee:</p> <ul style="list-style-type: none"> • Bumblebees belong to the genus <i>Bombus</i> within the family Apidae. • The family Apidae includes the well-known honeybees and bumblebees, as well as carpenter bees, cuckoo bees, digger bees, stingless bees, and orchid bees. <ul style="list-style-type: none"> ◦ Bumble bees are important pollinators of wild flowering plants and crops. <p>Features:</p> <ul style="list-style-type: none"> • Bumblebees are large yellow and black flying insects with a distinct buzz. There is variation in coloration among bumblebees and some species have bands of red, yellow and black. • They have stocky bodies that are covered with many hairs to which pollen adheres. • Bumblebee workers and the queens can sting, and their stinger is smooth. <ul style="list-style-type: none"> ◦ Male bumblebees cannot sting as they do not have a sting. • Bumblebees have four wings, the two rear wings are small and usually attached to the fore wings by a row of hooks called hamuli. • Range / Habitat: There are over 250 known species, existing primarily in the Northern Hemisphere. Hedgerows near orchards provide food and shelter for pollinators like bumblebees. • Diet: Bumblebees harvest nectar (carbohydrates) and pollen (protein) from flowering plants. • Behavior: Bumblebees are social insects that live in colonies. The queen bee, drones and worker bees all have specific tasks to help support the colony. The queen bee lays hundreds of eggs. 
<p>Brucethoa isro</p> <p>News Excerpt: A newly discovered species of deep-sea isopod found off the coast of Kollam in Kerala has been named in honor of the Indian Space Research Organisation (ISRO) by researchers.</p>	<p>About Brucethoa isro:</p> <ul style="list-style-type: none"> • <i>Brucethoa isro</i> was discovered at the base of the gill cavity of the <i>Spinyjaw greeneye</i>, a species of marine fish. • The new species has been named in honour of the ISRO's "successful space missions, including the recent successful lunar mission Chandrayaan-3." • It marks the second documented species within this genus to be recorded in India. <ul style="list-style-type: none"> ◦ Females typically exhibit larger sizes compared to males, reaching approximately 19 mm in length and 6 mm in width, while males are roughly half the size. • They are deep-sea parasitic isopods. 

	<ul style="list-style-type: none"> ○ Isopods are an order of invertebrates (animals without backbones) that belong to the greater crustacean group of animals, including crabs and shrimp. ○ Isopods have two pairs of antennae, compound eyes, and four sets of jaws.
<p>Caracal News Excerpt: An estimated 50 caracals are left in the small clusters in the states of Rajasthan and Gujarat, making caracal the second cat species after the Asiatic cheetah to reach the brink of extinction in India.</p> <p>Conservation status:</p> <ul style="list-style-type: none"> ● IUCN Red List: 'least concern' ● Conservation Assessment and Management Plan (CAMP) and IUCN Red List assessment in India: 'near threatened' ● Indian Wildlife Act of 1972: Schedule I ● CITES: Appendix I 	<ul style="list-style-type: none"> ● Caracals, also known as desert lynx or African lynx, are medium-sized wild cats native to Africa and Asia. ● These animals have a distinctive appearance, with long, tufted ears and a short, beige-brown coat. They are known for their agility and speed. ● They are found in small herds and inhabit dry, arid regions and moist woodlands. ● The caracal is known by multiple distinct vernacular names in India. <ul style="list-style-type: none"> ○ For instance, in Rajasthan, its known as Mor Todni and Mor Mar Bagheri due to its reputation as a killer of peafowl. <p>Geographic Range of Caracal:</p> <ul style="list-style-type: none"> ● Widely distributed across Africa, Central Asia, and south-west Asia into India. ● While it is relatively common in Africa, there is concern over the status of the Caracal population in India. ● Today it has a wide but patchy distribution and is restricted to specific pockets in western India in the state of Gujarat and Rajasthan. Locally, the species is facing a threat of going into extinction in India. ● The areas in Kutch (Gujarat), Aravalli mountains (Rajasthan), Malwa plateau (Rajasthan and Madhya Pradesh) and Bundelkhand region (Madhya Pradesh) were potentially suitable habitats for caracals. ● It further identified the Ranthambore-Kuno Landscape (RKL), which falls in Rajasthan and Madhya Pradesh, as a highly potential caracal habitat area and a suitable site for the conservation of the Caracal.
<p>New species of Cicada in Meghalaya</p> <p>News Excerpt: Scientists have uncovered a dazzling new cicada species known colloquially as "Butterfly Cicadas" from Meghalaya.</p>	<ul style="list-style-type: none"> ● This cicada, belonging to the genus Becquartina, marks the first-ever record of this genus in India. ● The colorful wings of the cicada earned it the nickname "butterfly cicada", with the species name "bicolour" reflecting its two distinct colour forms. ● It is a unique cicada generally grouped as 'butterfly cicada' because of its colourful wings. ● It has not been found in other parts of Northeast India. <ul style="list-style-type: none"> ○ The species is localized in Garo Hills and Ri-Bhoi district, preferring thick forests and native vegetation. <p>What are cicadas?</p> <ul style="list-style-type: none"> ● Any member of the family of insects that produce sound. <ul style="list-style-type: none"> ○ They have three simple eyes, two pairs of membrane-covered wings, and a conspicuous compound eye is called a cicadas. ● Cicadas range in size from 2 to 5 cm (0.8 to 2 inches), which is medium to large. ● Male cicadas vibrate membranes close to the base of their abdomens to make loud noises. ● Typically, female cicadas deposit their eggs in the woody plant tissues that fall off the plant either immediately after the eggs hatch or later. ● There are currently about 3,000 identified species of cicadas. ● Cicadas are tropical insects that live in deserts, grasslands, and woodlands. <ul style="list-style-type: none"> ○ They are members of the Cicadidae family.



CONTEMPORARY ETHICS CASE STUDY

M. Thounaojam, a brilliant and honest IPS Officer, has been posted to a district in a border State. This border post shares an international border infamous for drug, human trafficking, and infiltration.

The demography of the bordering State is complex, with 90% of the population residing in the plains (10% of the total area of the State) and 10% living in the hilly areas (90% of the total area of the State). The hilly region is notorious for illegal opium cultivation, leading to the formation of cross-border cartels. This region has also witnessed continuous cases of infiltration, with some people from the hilly regions supporting and acting as a bridge for the cross-border infiltrators to transport opium to the market.

After taking charge as the SSP in the district, Thounaojam received a directive from the Chief Minister to crack down on the notorious drugs and infiltration gangs. While acting on confidential intelligence reports, Thounaojam conducted surprise checks on the border posts with his Special Forces team. During one such operation, they caught three families comprising 18 members who had infiltrated with the connivance of the security personnel at the border posts. Further investigation revealed that once the migrants from the neighbouring country infiltrated, their documentation, such as Aadhaar Card, Ration Card, and Voter Card, were forged, and they were made to settle in the remote pockets of the hilly areas with the help of the local community.

Thounaojam prepared a detailed and comprehensive report, exposing the entire nexus and the involvement of individuals from both within and outside the State. He submitted the report to the

State Director-General of Police (DGP). Following a massive police action against the cartel, many members were caught and sent to jail. Police raids ignited tensions between the communities and led to significant riots between the two communities, although the real motive behind the unrest was drug-related.

Due to growing violence in the State, Thounaojam was summoned by the DGP and instructed to withdraw the report. The DGP informed him that the higher authorities did not appreciate the report as it tarnished the government's image regarding law and order in the State. Thounaojam was warned that failure to withdraw the confidential report could have severe consequences, including threats to his life, transfer from his prestigious appointment and jeopardising his future promotions.



SCAN THIS QR FOR
MODEL CONTENT

- What are the ethical dilemmas M. Thounaojam is facing?
- What options are available to M. Thounaojam as the SSP of the bordering State? Do a critical analysis of the options and suggest the best option available.
- What policy measures would you suggest to combat the menace of infiltration of illegal migrants and drug trafficking from the neighbouring country?

(Answer in 250 words) 20

PHILOSOPHY OF THE MONTH

Ordinary to Extraordinary!

“वह पथ क्या पथिक, कुशलता क्या, जिस पथ पर बिखरे शूल न हों।
नाविक की धैर्य कुशलता क्या, जब धाराएँ प्रतिकूल न हों।”

This line conveys that being able to perform your best in adverse settings is what makes a man extraordinary. Let us look at two familiar cases:

Case I: In the movie **12th Fail**, a young boy in a remote village in the Chambal Valley has a dream. He wants to become an **IPS officer** and serve the country even though he has **no money and no help** achieving his goal. Yet he achieves the impossible.

Case II: Colonel Sanders, the founder of KFC, fought hard for success at the age of 63, and after a lifetime of drama and bad luck, he triumphed.

In both these cases, did you notice something similar? **Both of these ordinary men could have easily given up amidst the adversities of daily life, but they CHOSE NOT TO and thus, became extraordinary.**

Thus, everything comes down to **CHOICES**. We all have the **choice of action and intellect**.

The Resources and Opportunities will come with the right choices we make at the correct times. The attitude to **not let anything hamper our dreams, for they come first**, be it age, finances, or people themselves. This is the **Choice of Action**.

The intellect needs to be developed. Everyone has talent. To translate this talent into excellence, you need intellect. The intellect

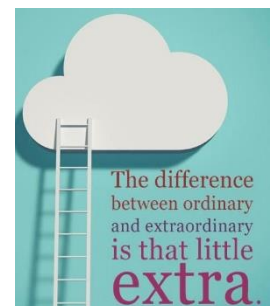
is created by thinking. Ponder, question, enquire, and gradually you transform. **This is the Choice of Intellect.**

But is materialistic success the only parameter of being extraordinary? Whose parameters are these? Your ordinary could be someone's extraordinary, and vice versa.

After making the choices, the **main thing comes to satisfaction**. Learn to remain content and satisfied with what comes with our choices. **No life is ordinary**; it just boils down to making it more satisfactory. The more satisfied you are, the more extraordinary you become.

The satisfaction could come from both your personal or professional life and could range from a plate of Dal-Chawal cooked by someone special for you to finally buying that dream car you always wanted. **And that satisfaction is for nobody to judge. To each their own.**

A calm mind is the precursor to excellence. When the mind is quiet, the intellect is clear, and the actions are brilliant. This clarity in life makes an individual transcend from ordinary to extraordinary. Finally, **when success comes your way, enjoy those moments**. But do not depend on them. Your transformation is not just a journey from ordinary to extraordinary but also a passage to inner satisfaction.



MAP CONNECT

ARALKUM DESERT
The drying up of the Aral Sea has made Central Asia dustier by 7% due to sand from the Aralkum Desert.

DIAOYU ISLANDS
China conducted patrols in the "territorial waters" around the Diaoyu Islands, also known as the Senkaku Islands by Japan, in the East China Sea.

SITTWE PORT
After Chabahar, India has gained the right to operate a second overseas port (located on the Kaladan River), Sittwe, in Myanmar.

KATCHATHEVU ISLAND
June 28, 1974: The then Indian Prime Minister, formally exchanged an agreement with the Sri Lankan counterpart ceding Katchatheevu to Sri Lanka.

URAL RIVER
The Ural, Europe's third-largest river, which flows through Russia and Kazakhstan into the Caspian sea, burst through an embankment dam, flooding the city of Orsk.

MALAWI
Malawi has declared a state of disaster over drought in 23 of its 28 districts as El-Nino brings hunger to southern Africa.

KOSOVO
Kosovo's government began its first nationwide census since 2011 which will now include surveying the ethnic Serb minority in the north.

COLORADO RIVER
Scientists have confirmed that a dog-killing flatworm parasite has been discovered in Southern California's Colorado River.

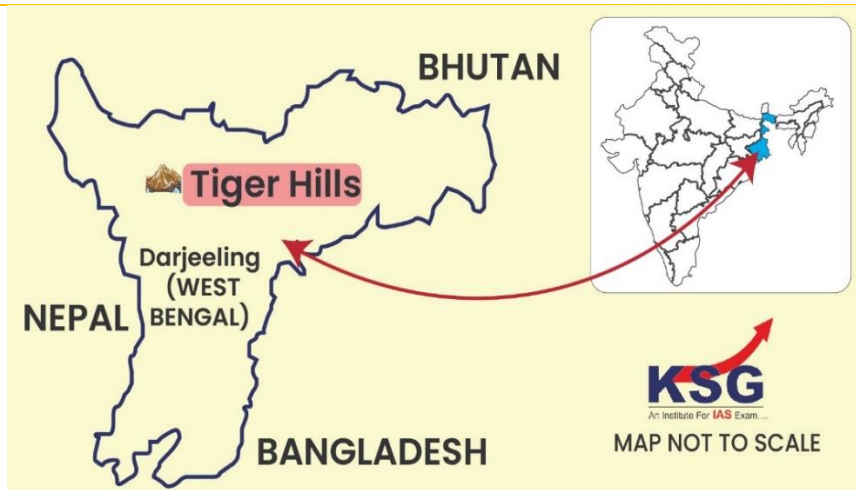
FRANCIS SCOTT KEY BRIDGE
This Baltimore Bridge collapsed after a container ship named the Dalli; smashed into the bridge.

QUITO
Ecuador's raid at the Mexico embassy in Quito is a serious violation of the Vienna Convention (1961) on Diplomatic Relations

MAP NOT TO SCALE

PROTECTED AREAS IN NEWS

PLACES IN NEWS	DETAILS
<p>TIGER HILL NEAR DARJEELING</p> <p>News Excerpt: The eastern zonal bench of the National Green Tribunal in Kolkata has issued notices to several key Union and state government departments, asking them to respond to the allegation that the environmental status of the iconic Tiger Hill has severely deteriorated due to unplanned activities.</p>	<ul style="list-style-type: none"> Tiger Hill is famous for watching sunrises in the background of Mt Kanchenjunga. It is part of the Senchal Wildlife Sanctuary, one of the oldest wildlife sanctuaries in the country, established in 1915. <ul style="list-style-type: none"> The sanctuary holds two lakes that are the main sources of drinking water for the town of Darjeeling. From Tiger Hill, Mount Everest (8848 m) is just visible. Kanchenjunga (8598 m) looks higher than Mt. Everest, owing to the curvature of the Earth, as it is several miles closer than Everest. <ul style="list-style-type: none"> The distance in a straight line from Tiger Hill to Everest is 107 miles (172 km). Weather is relatively cold in Tiger Hill, with temperatures going up to 18 °C to 11°C during summers. It has sunny, clear days and cold, low-pressure winds at night.
<p>Wayanad Wildlife Sanctuary</p> <p>News Excerpt: Close to 100 hectares of forest were recently destroyed in a fire in the Sulthan Bathery forest range under the Wayanad Wildlife Sanctuary (WWS).</p>	<ul style="list-style-type: none"> Wayanad Wildlife Sanctuary is contiguous to the protected areas of Nagarhole and Bandipur in Karnataka on the northeast and Mudumalai in Tamilnadu on the southeast. <ul style="list-style-type: none"> The sanctuary is an integral part of the Nilgiri Biosphere Reserve. History: <ul style="list-style-type: none"> The area was declared a sanctuary in 1973. The deep forests of this area had provided shelter for Pazhassi Raja during his rebellion against the British force. The sanctuary is part of Project Elephant. Visitors need prior permission to enter the sanctuary and are restricted to the outer zone. Climate: Temperature varies from 13°C to 32°C. Topography: Altitude ranging from 650 to 1150m. The highest peak is Karottimala (1158m). Rainfall: The average annual rainfall is 2000 mm.

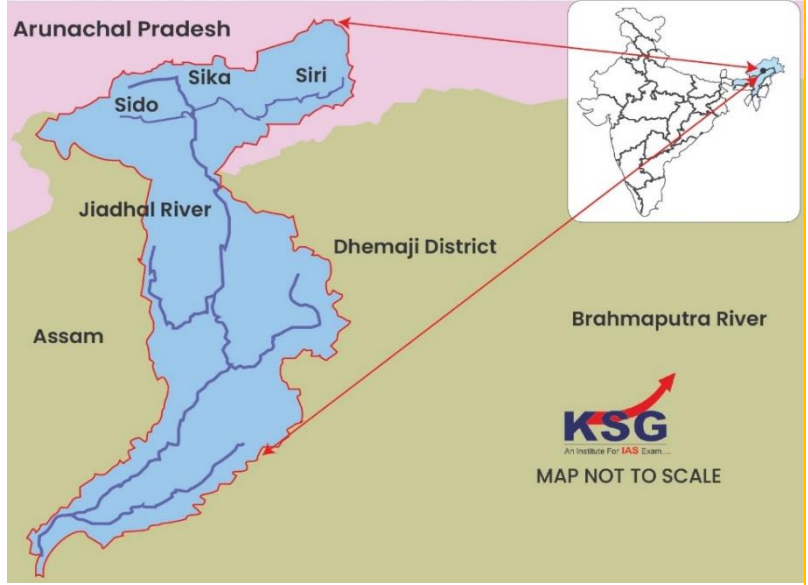


- **Forest Types:** The forest types include **South Indian Moist Deciduous forests, West Coast semi-evergreen forests** and plantations of teak, eucalyptus and Grewelia
- **Flora:** The major tree species are Tectona grandis, Terminalia sp, Dalbergia latifolia, Anogeissus latifolia, Grewia tiliaefolia, Adina cordifolia Cirmamum zeylanicum, Pterocarpus marsupium, Vateria indica, Langerstroemia lanceolata, Artocarpus hirsute, Macranga peltata etc.
- **Fauna:** The major mammals are elephant, Gaur, Tiger, Panther, Sambar, Spotted deer, Barking deer, Wild boar, Sloth bear, Nilgiri langur, Bonnet macaque, Common langur, Wild dog, common otter, and Malabar giant squirrel.

Jiadhhal river in Dhemaji

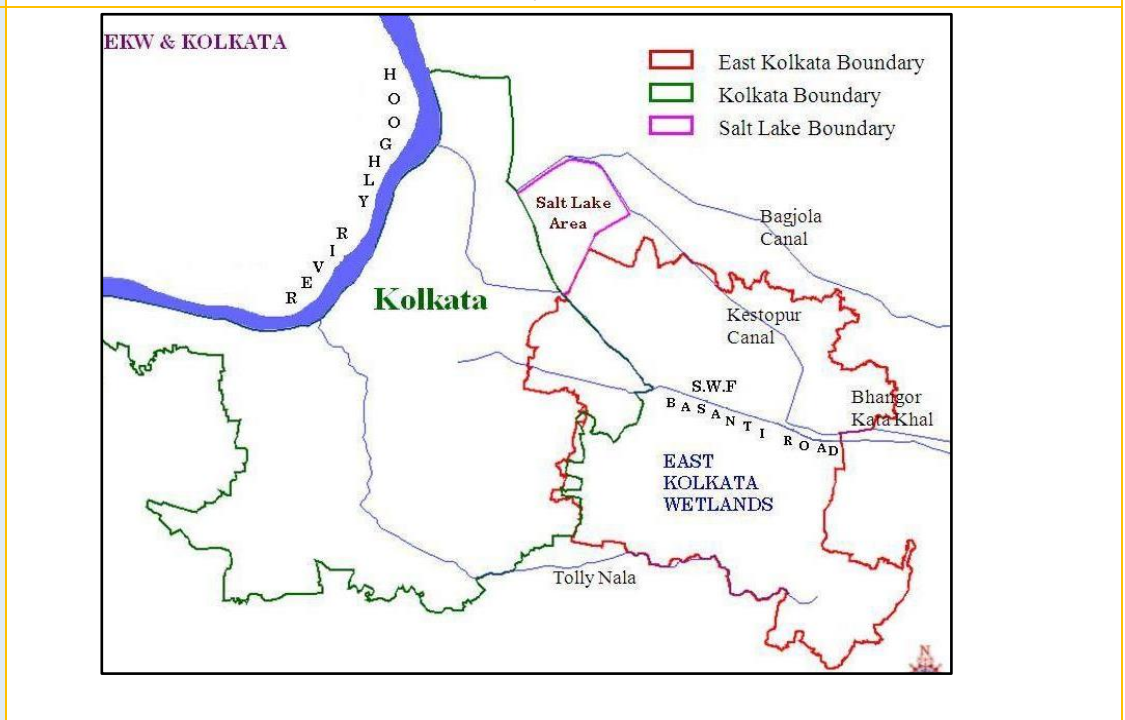
News Excerpt: Excessive rainfall has triggered unprecedented shifts in the course of the Jiadhhal river.

- The Jiadhhal River spans two states of India: **Arunachal Pradesh** and **Assam**.
- A **north-bank tributary of the Brahmaputra**, the Jiadhhal River originates in the **lower Himalayan ranges** in the **West Siang District of Arunachal Pradesh**.
- It **flows southward through the flood plains of Dhemaji District in Assam** in a complex network of channels before **meeting the Brahmaputra near Majuli Island**.
- The Jiadhhal River **catchment covers an area of 1,205 km²**, of which 370 km² (31 per cent) lie in the hills of Arunachal Pradesh and 835 km² (69 per cent) lie in the plains of Assam.
- The **sub-tropical monsoon climate** may be stated as the general climate for the whole catchments.
 - The **average annual rainfall in the catchment** ranges from **2,965 to 4,386 mm**, with a mean annual rainfall of about 3,150 mm.



East Kolkata Wetlands (EKW)

News Excerpt: In the last 30 years, the East Kolkata Wetlands have **lost 36% of their total area** – from **65,300 sq. km in 1991 down to 42,000 sq. m in 2021**.



- It is located on the **eastern fringes of Kolkata city** and forms one of the **largest assemblages of sewage-fed fish ponds**.
- It was **designated a Ramsar site in 2002**.
- There are **three reasons** for the **shrinkage of Kolkata's wetlands**:
 - **Human encroachment** ("wetland hunting" by land developers and real estate agents, as one group of researchers described it),
 - **Eutrophication**,
 - **Transformation of wetlands into fishing ponds**.
- The **East Kolkata Wetlands (Conservation and Management) Act, 2006**, represents an important landmark as it paved the way for the establishment of the East Kolkata Wetlands Management Authority (EKWMA) for the **conservation and management of the EKW**.
- Large birds (such as the **Openbill Stork** and **Spoonbill**) and **birds of prey**, such as **Brahminy Kite** and **Pallas's Fishing Eagle**, which used to be common in the recent past, are **now no longer seen**.

Nethravathi River News Excerpt:

The principal bench of the **National Green Tribunal (NGT)** has **initiated action on the Netravathi Waterfront Promenade Development Project in Mangaluru**.

- The Netravathi River **originates** in the **Chikkamagaluru district of Karnataka** at Bangrabalige Valley, Yelaneeru Ghat in **Kudremukh**.
 - The **river merges** with the **Kumaradhara River**, which also originates in the Western Ghats in the Subramanya range near Uppinangadi village.
- Along its course, the Netravathi flows through the **popular pilgrim place Dharmasthala**.
- **Geography of Netravathi River**:
 - With a **drainage area of about 1,353 square miles**, the Netravathi River has an apparent breadth of almost 200 yards.
 - The **river bed** mainly comprises **hornblende rock** containing **spangles of mica and small garnets**, which act to fetter the river bed.
 - The river bed also has **sienites** that form fragments of a beautiful **pegmatite** with **flesh-coloured feldspar**.



THEMATIC ESSAYS

1. It's not faith in technology; it is faith in people
2. "We are the first generation to feel the impact of climate change and the last generation that can do something about it."
3. We are only as blind as we want to be. - Maya Angelou.



SCAN THIS QR FOR
MODEL CONTENT

MAINS PRACTICE QUESTION

1. Highlight the critical observations of India's Land Use and Land Cover (LULC) Atlas. By emphasizing the importance of land use and land cover assessment, discuss how infrastructure development impacts land use and why it needs to be considered seriously.
2. What do you understand by Integrated River Basin Management (IRBM)? Define the key elements of a successful IRBM initiative that make it a multidisciplinary approach.
3. India is expected to generate 600 kilotons of solar waste by 2030. In light of the above statement, define solar waste and its impact on the environment and human life. Suggest innovative measures to deal with it.
4. Discuss how nuclear energy is essential for global problems like climate change and energy security. However, nuclear energy has its own challenges and roadblocks. What are they, and how can they be overcome?
5. The recently released World Happiness Report for 2024 shows India's poor ranking. Explain the possible reasons for this ranking and suggest important policy measures that must be taken to improve this situation.
6. Discuss the factors contributing to the decline in India's total fertility rate (TFR). Analyzing its impact, suggest the best policy forward so that India can manage its population well.
7. By explaining the need for the CDP-SURAKSHA initiative, suggest its benefits on the farmer's income. How can this initiative be further improved? Give your suggestions.
8. The Indian Cyber Crime Coordination Centre has revealed that digital financial frauds accounted for a staggering ₹1.25 lakh crore over the last three years. What is the modus operandi of digital financial fraud, and what hindrances do enforcement agencies face in tracing money trails? Supplement your answer with a best-case example of dealing with such crimes.
9. What do you understand by the Suspension of Operations (SoO) pact? Explain its terms and conditions and comment on its effect on maintaining sustained peace and development in Manipur.
10. What do you understand by reverse flipping? Explain the reasons behind startups opting to reverse flip. What benefits and challenges are there in doing so? Elaborate briefly.
11. Highlight the key provisions of the new EV policy approved by the Union Government. Also, discuss the policy's impact on various stakeholders, including the industry and the end consumers. What must be done to improve EV adoption in India?
12. What do you understand about postal ballots, and who is eligible to cast their vote through postal ballots? Discuss the steps taken by the Election Commission of India for inclusive elections in India.
13. Social media has become the stage for free speech but has also raised defamation cases. Analyze defamation under Indian law and explain how to balance the right to speech and defamation.
14. How will the recent Iran-Israel conflict impact India's diplomatic and strategic relationship with both countries? Explain India's stance and suggest future policy initiatives in this regard.
15. Many areas of India are facing catastrophic soil erosion. Enumerate the possible reasons for it and suggest creative ways of controlling it.

PT ORIENTED QUESTION

Q1. Consider the following statements:

Statement-I

Doxxing is the intentional revelation of a person's private information online without their consent, often with malicious intent.

Statement-II

Doxxing directly attacks a person's physical, digital, and emotional security.

Which one of the following is correct in respect of the above statements?

- Both Statement I and Statement II are correct and Statement II is the correct explanation for Statement I.
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- Statement I is correct but Statement II is incorrect.
- Statement I is incorrect but Statement II is correct.

Q2. With reference to Patents, consider the following statements:

- It is a statutory right.
- The patent system in India is governed by the Patents Act, of 1970.
- The term is 10 years from the date of filing of application.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Q3. With reference to the Unified Payments Interface (UPI), consider the following statements:

- It is an instant payment system developed by the National Payments Corporation of India (NPCI).
- It is built over the IMPS infrastructure and allows the transfer of money between any two parties' bank accounts instantly.
- It powers multiple bank accounts into a single mobile application.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Q4. With reference to the District Election Management Plan (DEMP), consider the following statements:

- DEMP must be prepared at least three months before the tentative Poll Day.
- The DEMP enhances the voting experience by making it more organized and accessible for everyone.
- The execution of the DEMP involves both the election officials and administrative authorities.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Q5. With reference to the Voter Verifiable Paper Audit Trail (VVPAT), consider the following statements:

- It is attached to the ballot unit of the EVM.
- The VVPAT was used for the first time in 2013.
- The Conduct of Elections Rules, 1961 were amended to allow for a printer with a drop box to be attached to the EVM.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Q6. Consider the following statements:

Statement-I

Kallakkadal is a colloquial term used by Kerala fishermen to refer to flash flooding events.

Statement-II

'Kallakkadal' usually occurs along the southern coast of India, mainly during the pre-monsoon period

Which one of the following is correct with respect to the above statements?

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- Statement-I is correct but Statement-II is incorrect.
- Statement-II is correct but Statement-I is incorrect.

Q7. With reference to the Afar Triangle, Consider the following statements:

- This area is part of the East African Rift system.
- It is nestled in the Horn of Africa.

Which of the statements given above is/are correct?

- Only 1
- Only 2
- Both 1 and 2
- Neither 1 nor 2

Q8. Consider the following statements regarding the Surrogacy Act:

1. A woman can become a surrogate mother only once in her life.
2. It is permitted for non-altruistic purposes.
3. Currently surrogacy in India is not prohibited for commercial purposes.

Which of the following statements is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Q9. With reference to the Science Based Targets Initiative (SBTi), consider the following statements:

1. It is essentially a standards-setting body for corporate climate targets.
2. It reviews climate targets that large companies have set against its given framework and validates those that meet its stringent criteria.
3. It guides businesses in setting greenhouse gas (GHG) emission reduction targets.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q10. Consider the following statements:

Statement-I

Hepatitis is the second leading infectious cause of death globally.

Statement-II

It is an inflammation of the liver that is caused by a variety of infectious viruses.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect
- (d) Statement-II is correct but Statement-I is incorrect

Q11. With reference to the Technology Development Board (TDB), consider the following statements:

1. It works under the Department of Science and Technology.
2. It was constituted in 1996, under the Technology Development Board Act, 1995.

3. It provides equity capital or loans to industrial concerns and financial assistance to research and development institutions.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q12. With reference to the Igla-S, consider the following statements.

1. It is a hand-held defence system that can be operated by an individual or crew.
2. It is designed to bring down low-flying aircraft.
3. It is acquired from France to enhance the Army's Very Short-Range Air Defence (VSHORAD) capabilities.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q13. With reference to the Gulf Cooperation Council (GCC), consider the following statements:

1. It is an economic and political bloc formed in 1981.
2. It includes six nations Kuwait, Qatar, Bahrain, Saudi Arabia, the UAE, and Oman.
3. These nations have the lowest GDPs per capita worldwide.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q14. Which among the following is the largest operator of the Patriot Air Defense System?

- (a) U.S.A.
- (b) Israel
- (c) Russia
- (d) France

Q15. Consider the following statements about Project Akashteer:

1. Akashteer is the vehicle-based and mobile control reporting system of the Indian Air Force.
2. It is an indigenous system developed by Bharat Electronics Limited (BEL).
3. It will enable monitoring of low-level airspace over the battle areas of the Indian Army.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q16. Consider the following statements:
Statement-I

World Happiness Report released annually by the United Nations Sustainable Development Solutions Network (SDSN).

Statement-II

It now provides separate rankings by age group.

Which one of the following is correct in respect of the above statements?

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-II is correct but Statement-I is incorrect

Q17. With reference to the Institute for Human Development (IHD), consider the following statements:

- It was established in 1998 under the aegis of the Indian Society of Labour Economics (ISLE).
- It is a non-profit autonomous institution.
- It aims to contribute towards building a society that fosters and values an inclusive social, economic, and political system.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Q18. With reference to the International Labour Organization (ILO), consider the following statements:

- It was created in 1919 as part of the Treaty of Versailles.
- At present, the ILO has 187 Members.
- India is a founding member country.
- In 1946, the ILO became a specialized agency of the United Nations.

How many of the above statements is/are correct?

- Only one
- Only two
- Only three
- All four

Q19. Consider the following statements:
Statement-I

Mumps is primarily transmitted by respiratory secretions, such as droplets and saliva, and direct contact with an infected person.

Statement-II

It is a viral and contagious infection.

Which one of the following is correct in respect of the above statements?

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-II is correct but Statement-I is incorrect

Q20. With reference to the Sannati culture site, consider the following statements:

- It was discovered in 1986.
- Stone slab written in Prakrit inscription in Brahmi script.
- It is located on the bank of the Bhima River near Kanaganahalli in Kalaburagi.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Q21. With reference to the Mohiniyattam, consider the following statements:

- It is a classical solo dance form of Kerala.
- The dance form is characterized by delicate body movements and subtle facial expressions.
- Mohiniyattam performances are accompanied by classical Carnatic vocal music.
- It belongs to the Lasya style.

How many of the above statements is/are correct?

- Only one
- Only two
- Only three
- All four

Q22. With reference to the Ikshvaku dynasty, consider the following statements:

- It was feudatory under the patronage of the Satavahana Empire.
- Their capital was situated at Dharanikota (present-day Amravati).

3. They ruled over the delta of the Mahanadi and Godavari rivers on the east coast of the Andhra region.

How many of the above statements is/are correct?

- (a) Only one
(b) Only two
(c) All three
(d) None

Q23. Consider the following statements:

Statement-I

SWAMIH Investment Fund is a social impact fund specifically formed for completing stressed and stalled residential projects.

Statement-II

It is sponsored by the Ministry of Housing and Urban Affairs, Government of India.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
(c) Statement-I is correct but Statement-II is incorrect
(d) Statement-I is incorrect but Statement-II is correct

Q24. With reference to the Electric Mobility Promotion Scheme (EMPS), consider the following statements:

1. It was introduced by the Ministry of Heavy Industries.
2. A total of 20 firms have been approved for the EMPS.
3. It aims to sustain the growth in EV sales.

How many of the above statements is/are correct?

- (a) Only one
(b) Only two
(c) All three
(d) None

Q25. With reference to FASTag, consider the following statement:

1. It is issued to each vehicle based on the registration certificate (RC) of the vehicle.
2. When needed it can be transferred to another vehicle, after affixed to a vehicle.
3. FASTag can be purchased from any of the National Electronic Toll Collection (NETC) Member Banks.

How many of the above statements is/are correct?

- (a) Only one

- (b) Only two
(c) All three
(d) None

Q26. With reference to Chagas disease, consider the following statement:

1. It is a potentially life-threatening illness caused by the protozoan parasite *Trypanosoma cruzi* or (*T. cruzi*).
2. It is named after Carlos Justiniano Chagas, a Brazilian doctor, who discovered the disease in 1909.
3. The UN recognized Chagas disease as a Neglected Tropical Disease (NTD) in 2005.

How many of the above statements is/are not correct?

- (a) Only one (b) Only two
(c) All three (d) None

Q27. Consider the following statements:

Statement-I

AUKUS is a trilateral security alliance established in September 2021.

Statement-II

It is a partnership between Argentina, the United Kingdom, and the United States of America.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
(c) Statement-I is correct but Statement-II is incorrect
(d) Statement-II is correct but Statement-I is incorrect

Q28. With reference to the United Nations Security Council (UNSC), consider the following statements:

1. It has 10 permanent and 5 non-permanent Members and each Member has one vote.
2. It gives primary responsibility for maintaining international peace and security to the Security Council.
3. Under the Charter of the United Nations, all Member States are obligated to comply with Council decisions.

How many of the above are/are not correct?

- (a) Only one (b) Only two
(c) All three (d) None

Q29. With reference to the Eurasian Economic Union (EEU), consider the following statements:

1. It comprises five member states.
2. In the EEU bloc, Russia is India's top trading partner.
3. It is an ambitious project for economic integration in the former Soviet region.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q30. With reference to the Central Pollution Control Board (CPCB), consider the following statements:

1. It is a statutory organization constituted under the Air (Prevention and Control of Pollution) Act 1981.
2. It was entrusted with the powers and functions under the Water (Prevention and Control of Pollution) Act, 1974.
3. It provides technical services to the Ministry of Environment and Forests.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

ANSWER KEY

1. B	7. C	13. B	19. A	25. B
2. B	8. A	14. A	20. C	26. A
3. C	9. C	15. B	21. D	27. C
4. B	10. A	16. B	22. B	28. A
5. C	11. C	17. C	23. C	29. C
6. B	12. B	18. D	24. B	30. A

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INDORE	28th June	27th May	📞 9893 772941
HYDERABAD	20th May	10th June	📞 79960 66663
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Website: www.ksgindia.com, E-mail: dikhans@ksgindia.com

1. Name: ANSHUL BHATT
2. Medium: English
3. Optional Subject: **AIR-22**

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✪ Ayushi Pradhan (UPSC 2023-24) ✪

REGISTRATION FORM

Website: www.ksgindia.com, E-mail: dikhans@ksgindia.com

1. Name: AYUSHI PRADHAN
2. Medium: **AIR-36**
3. Optional Subject: Anthropology

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✪ Deepthi Rohilla (UPSC 2023-24) ✪

REGISTRATION FORM

Website: www.ksgindia.com, E-mail: dikhans@ksgindia.com

1. Name: DEEPTHI ROHILLA
2. Medium: English
3. Optional Subject: **AIR-39**

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✪ Adwait Singhai (UPSC 2023-24) ✪

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Website: www.ksgindia.com, E-mail: dikhans@ksgindia.com

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✪ Chaitanya Giri (UPSC 2023-24) ✪

REGISTRATION FORM

Website: www.ksgindia.com, E-mail: dikhans@ksgindia.com

1. Name: CHAITANYA GIRI
2. Medium: English
3. Optional Subject: **AIR-117**

INTERVIEW GUIDANCE PROGRAM

✪ Aditya Srivastava (UPSC 2023-24) ✪

REGISTRATION FORM

Website: www.ksgindia.com, E-mail: dikhans@ksgindia.com

1. Name: ADITYA SRIVASTAVA
2. Medium: English
3. Optional Subject: **AIR-1**

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GS & CSAT

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DELHI (R.N)	21 st June	24 th June	www.ksgindia.com
DELHI (V.N)	5 th July	Admission Open	www.ksgindia.com
JAIPUR	24 th June	23 rd June	www.ksgjaipur.com
BHOPAL	26 th June	25 th June	www.ksgbhopal.com
INDORE	28 th June	27 th May	www.ksgindore.com
HYDERABAD	20 th May	10 th June	www.ksghyderabad.com
BENGALURU	30 th June	Admission Open	www.ksgbengaluru.com
KOLKATA	1 st July	Admission Open	www.ksgkolkata.in
IMPHAL WEST	Admission Open	24 th June	www.ksgindia.com

KSG Online Learning (KOL)
Quality of Physical Classes with Convenience of Online

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