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GS CONNECT

It gives us immense pleasure to present an innovative approach to master 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 their 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, 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 it 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 source yet in a manageable size. To use this book we recommend you to master the components of general studies (GS) syllabus as broken into rows and columns (provided in the beginning after preface). Each cell comprising of the portion of GS becomes the connect for the current and every news subsequently covered guides the reader to the address of the syllabus. It is logical to expect that 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 a 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 rankholders and other scholars. Continuing in line with the effort, we have started with programs like 7 Question (7Q) Challenge, Shell Points, Stock Points, Content Enrichment Booklet etc.

When it comes to evaluation, we are altogether 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 from our Expert Team and can get Feedback. **Drop a mail at evaluation@ksgindia.com for registering 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.	1	2	3	4	5	6	7	8	9	10	11
GS – I	Culture-Art Forms, Literature and Architecture from ancient to modern times.	Indian history significant events, person alities, issues and the Freedom Struggle	Post independence issues, National boundary and disputes	Indian society features, issues, globalization and diversity	Women - issues and developments	Urbanization – problems and remedies	Distribution of industries and resources – India and world	Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc			
GS – II	Indian constitution- Amendments, acts and bills.	Legislative, executive and judicial processes.	Constitutional, non-constitutional, judicial, quasi-judicial, administrative and other types of bodies.	Federal structure and local bodies. Their powers and functions.	Government policies and various governance issues like transparency, accountability and – governance	Committees and schemes.	Non-government issues, self-help groups and role of civil society	Vulnerable sections of our society and social sector issues and initiatives.	International Relation-India and other countries, various Indian and international agreements, effects of other countries on India and international institutions.		
GS – III	Various measures to boost Indian economy-planning, policies, management	Government budgeting and issues related to budget.	Agriculture, animal husbandry and transport	Food security-measures to boost food security and food processing. Issues related to land- land reforms	Industries and infrastructure -their growth and investment model	Space and technology, IT space, robotics and computer	Disease, biotechnology and human welfare	Innovations, intellectual property, Awards, POI and other import ant aspects of S&T	Environment; government initiatives, various judgment, pollution, degradation and conservation efforts	Disaster & Disaster Management	Challenges to internal security, Various Security forces and agencies and their mandate. Cybersecurity; money laundering and its prevention.
GS – IV	Ethical issues related to family society, education, Corruption etc.	Ethics in public and private administration	Issues	Related laws and rules	Governance/e - Governance	Ethics in interna-tional issues	Person alities and their teachings	Other import ant topics			
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POLITY & GOVERNANCE

Basic structure doctrine

News Excerpt

Former Chief Justice of India's recent remark in Parliament on the Basic Structure of the Constitution has again sparked a debate on the legitimacy of the doctrine.

Pre-Connect

- In the seminal ruling in Kesavananda Bharati vs State of Kerala (24th April, 1973), the Supreme Court laid down the "basic structure" doctrine limiting the power of Parliament to amend the Constitution. It was decided with a majority of 7:6 judges.

- It stated that every provision of the Constitution can be amended, provided the foundation and structure of the Constitution remain the same.

> **Article 368:** Deal with the amendment to constitution. It gives/confers power to parliament to amend the constitution.

- Its main function was of preserving the dignity and integrity of the constitution, protecting the spirit of Indian democracy.

Elements of basic structure

The basic structure consists of-

➤ Supremacy of the Constitution;

➤ Republican and democratic form of government;

➤ Secular character of the Constitution;

➤ Separation of powers.

➤ Various other judgements added to this list, such as sovereignty, unity of India, federalism, rule of law, judicial review, etc.

Indian Constitution and basic structure

✓ It has no explicit mention in the constitution. Even the supreme court has not clearly defined as to what constitute the basic structure.

✓ The apex court through its various judgements, keeps on adding and evolving this doctrine.

✓ It greatly extended the scope of its judicial review by claiming the authority to evaluate all constitutional amendments, and not only those that concerned fundamental rights.

✓ The judiciary is the guardian of the constitution. It ensures the enforcement the fundamental rights of people. the basic structure doctrine acts a shield that guards Indians against absolutism and majoritarianism of the Executive and Legislature.

Evolution of basic structure

- **1951**, Shankari Prasad vs Union of India: Parliament has absolute power to amend the Constitution including fundamental right provisions (reiterated in subsequent decisions) under Article 368 of the Constitution.

- **1967:** Golak Nath vs State of Punjab: Earlier decision reversed to say that power to amend the Constitution has limitations, and fundamental rights cannot be taken away or abridged.

- **1971:** 24th Constitutional Amendment Act: Parliament amends Article 368 to provide that Parliament has constituent power to amend any provision of the Constitution, by way of addition, variation or repeal.

- **1973**: Kesavananda Bharati case: 24th Constitutional Amendment Act held as valid. Parliament has power to amend any provision including fundamental rights, but this power is subject to inherent limitations. Parliament cannot use this power to change the basic structure or framework of the Constitution

- **1976**: 42nd Constitutional Amendment Act: Parliament amends Article 368 to bar courts from exercising judicial review over constitutional amendments, and provide that there will be no limitations on power to amend.

> **PEPPER IT WITH**
> Article 13, Judicial review, Kesavananda Bharati case

- **1980**: Minerva Mills vs Union of India: 42nd Constitutional Amendment Act held invalid. Power of judicial review and a limited amending power are basic features of the Constitution.

Way Forward

Currently, there is no disagreement about the existence of the doctrine. The recurring challenge revolves around its specific components. While certain elements have consistently gained affirmation from the courts, others remain subjects of ongoing discussions. The fundamental structure doctrine provides a delicate equilibrium between the necessary adaptability and steadfastness inherent in the amending authority of any constitution.

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INDORE: 7314977441 | **BENGALURU:** 7619166663 | **HYDERABAD:** 79960 66663 | **IMPHAL:** 9650245599 | **SRINAGAR:** 98712 35599| **MUMBAI:** 9871265599|

Lowering the age of contesting elections

News Excerpt

The Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice recommended lowering the minimum age for contesting Lok Sabha and Assembly elections from 25 years to 18 years.

Pre-Connect:

- **According to Article 84: of** the Constitution of India, the minimum age for becoming a candidate for Lok Sabha election shall be 25 years and for Rajya Sabha it is 30 years.

- **According to Article 173:** of the Constitution, minimum age to becoming a candidate for state assembly (vidhan sabha) shall be 25 years and for state legislative council (vidhan parishad) shall be 30 years.

- **Minimum age of voting: The 61st amendment to Constitution** in 1988, lowered the voting age of elections to the Lok Sabha and to the Legislative Assemblies of States from 21 years to 18 years.

- **Present scenario:** 47% of MPs **(in 2019)** were over the age of 55 while India's median age was 27.9 years **(as per PRS Legislative Research).** This shows that youth are not represented proportionately in parliament. Same is scenario in states.

Lowering the age of contesting poll will address anomalies like

- It will lead to more compassionate policies and laws related to marginalised sections.

- The attitude of youth is not rigid and free from prejudices, stereotypes, they can better understand the viewpoints of minorities like LGBTQ+ community, vulnerable sections and represent them.

- Youth with their optimism, sympathy and reformist mindset will promote balanced regional development **eg: Development of north east region, hilly areas.**

- Youth are believer in equality, this attitude will help curb the discrimination in society.

- This will prevent exclusion and alienation of tribals, SC, minorities, LGBTQ+, disabled (divyang).

Positive outcomes of lowering the age of contesting polls

- It will Make our democracy more representative

- They can make legislatures more productive as they are reform oriented, energetic. e.g., pushing the use of technology.

- Youth global have significant political awareness and knowledge. This is evident through youth-led movements such as Fridays for Future and March for Our Lives, highlighting their capacity to rally and champion critical social and political concerns.

- They can enhance the attendance (participation) along with quality of debated, discussion in legislatures.

- Due to their open-minded and unbiased approach, they are more capable of comprehending the perspectives of the LGBTQ+ community and other vulnerable segments, thereby effectively advocating for and representing them.

- Youth are more aware of importance of education, health. This will result in better allocation of resources for health, education.

- Youth being more gender sensitive can promote gender justice and challenge the notion of patriarchy. (Presently only 14% MPs in Lok Sabha are women).

- There is increasing political consciousness among young people. It would give young individuals equal opportunities to engage leading to vibrant democracy.

Challenges to reducing the age of contesting polls

- Lack of support from Political parties.

- According to Election Commission it is unrealistic to expect 18-year-olds to "possess the necessary experience and maturity for these responsibilities".

- Assumption that Youth would not be sufficiently mature to use those rights properly, because they would—have insufficient understanding of the issues, be more likely to act irresponsibly

- A strong opinion of many MPs that there should be a period between being "free to manage one's own affairs and managing the affairs of a great nation."

- Belief that Youth can be influenced easily.

- They lack the stability hence they are prone to take hurried, impulsive and unpragmatic decisions.

- Possibility that it can create politicisation in colleges, universities, political rivalries, violence which will hamper the higher education.

Ethical dimension/issues involved:

- Some argue that power politics can corrupt the minds of youth. Lord Acton remarked, 'power corrupts and absolute power corrupts absolutely'.
- It can discourage youth from finishing their education first.
- Competition for power from young age can affect the camaraderie and cooperation, fraternity amongst youth.
- Youth can be influenced easily. are prone to take hurried, impulsive and unpragmatic decisions. This can result in corruption and chaos in legislatures. It can increase the instances of defection, disruption.
- Their high energy can be misused towards violence for political gains
- Today's youth is more driven by materialism, it increases their chances of getting corrupt.
- Their idealistic bent of mind can lead to unpragmatic policy.
- The generation gap between senior politicians and youth can lead to trust deficit, tussle in them affecting the functioning of legislatures.
- Reformist mindset of youth promote major changes. Sudden and drastic change in policy create huge costs, one that a developing country like India cannot afford.

> **PEPPER IT WITH**
> Universal adult franchise, 61st Constitutional Amendment Act, Government of India act, 1935

- Possibility that it can create politicisation in colleges, universities, political rivalries, violence which will hamper the higher education.

Conclusion

The decision to lower the age of contesting elections in India is a significant step towards inclusivity and democratic participation. By allowing younger individuals to engage in the political process, we not only harness the energy and ideas of the youth but also foster a more representative governance system. This move, while encouraging fresh perspectives and dynamism, must also be coupled with effective mechanisms to ensure the maturity, responsibility, and commitment of the candidates.

Marital Rape

News Excerpt

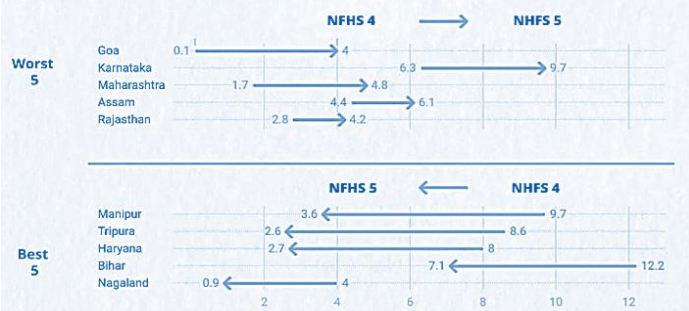Recently the Supreme Court said that it would list a batch of petitions pertaining to matters related to marital rape.

Pre-Connect

- Marital rape refers to **unwanted intercourse** by a man on his wife obtained by force, threat of force or physical violence or when she is **unable to give consent.**
- According to data from the National Family Health Survey-5 (NFHS-5), one in every 25 women in India reported being subjected to sexual violence by her husband.
- In India, **marital rape exists de facto but not de jure**, that means the definition of rape under section 375 of Indian Penal Code does not include marital rape as a criminal offence.
- Also, marital rape is not a criminal offence and it is only covered under the definition of domestic violence which is defined under the Protection of Women from Domestic Violence Act, 2005.

TREND OF SEXUAL VIOLENCE FROM HUSBANDS
% OF WOMEN FACING SEXUAL VIOLENCE SOMETIMES OR OFTEN

NFHS 4 → NFHS 5

Worst 5
- Goa 0.1 → 4
- Karnataka 6.3 → 9.7
- Maharashtra 1.7 → 4.8
- Assam 4.4 → 6.1
- Rajasthan 2.8 → 4.2

NFHS 5 ← NFHS 4

Best 5
- Manipur 3.6 ← 9.7
- Tripura 2.6 ← 8.6
- Haryana 2.7 ← 8
- Bihar 7.1 ← 12.2
- Nagaland 0.9 ← 4

History of Marital Rape in India

- In 1889, Phulmani Dasi a 10 year old child bride died because of her 35 years old husband raped her, and cited his right to have sex with his wife according to the contract of marriage. The government at the time tried to bring the age of consent bill but the bill faced severe opposition from many upper caste Hindu sections of the society. An incident that happened more than a century ago is imperative in our understanding of why India has still not criminalized marital rape. Historically, our society has found it difficult to comprehend the concept of marital rape.

Types of Marital Rape

- **Battering rape:** In battering rapes, women are battered to experience both physical and sexual violence in the relationship and they experience this violence in various ways. Majority of marital rapes fall under this category.
- **Force-only rape: Husbands use only the amount of force necessary to coerce their wives**
- **Obsessive rape: Women experience what has been labelled sadistic or obsessive rape.**

Status of Marital Rape

- Of 185 countries in the world, 77 have laws that clearly criminalise marital rape. Another 74 have legal provisions that allow for cases to be filed against spouses.
- India is part of this gallery of 34 with an exemption for marital rape in its sexual assault law.

Most Possible causes of Marital Rape

- **Dominance of gender:** When the discord between spouses increases, the husband may try to assert himself by forcing himself upon the woman. To one-up, his wife will use the ultimate weapon in his arsenal to demean and degrade her. In this way he is showing his dominion over her and destroying her privacy.
- **Power: Sexual dissonance between the couple:** At times the woman may not be interested in sex for reasons that are clear only to her and may refuse her husband. Men are generally more oversexed than women are. So, when the man is denied sex, he treats it as an insult to his manhood. This in turn causes discord between the couple. It is also believed that a man in a bid to overcome the humiliation of sexual rejection, will eventually force himself upon the wife.

Legal Position of Marital Rape

Criminal Law Aspect	Civil Law Aspect	Constitutional Law Aspect
- **Section 375 of the Indian Penal Code defines Rape but doesn't mention about marital rape. Also, Sexual intercourse by a man with his wife, the wife not being under fifteen years of age, is not rape.** - **Under Section 376-A, rape of judicially separated wife is criminal offence**	- Marital rape is not a criminal offence in India but it is partially covered under a civil law under Protection of Women from Domestic Violence Act, 2005	- **Violation of Article 14:** Constitution guarantees equality to all, Indian criminal law discriminates against female victims who have been raped by their own husbands. - **Violation of Article 21:** No person shall be denied of his life and personal liberty except according to the procedure established by law.

Judgments related to Marital Rape

- ✓ The Supreme Court in **Nimeshbhai Bharatbhai Desai v. State of Gujarat (2018**) stated that the wife does not have a right to initiate proceedings against her lawfully wedded husband for the offence of rape punishable under Section 376 as the idea is that, by marriage a woman gives irrevocable consent to her husband to have sex with her any time he demands it.
- ✓ Recent judgment by the Karnataka High Court that allowed the prosecution of a man for raping his wife.
- ✓ Recent split verdict by a two-judge Bench of the Delhi High Court on a challenge to the constitutional validity of the 'marital rape immunity' in the Indian Penal Code.

The case of Karnataka

- In Karnataka, 9.7 per cent of women, almost one in every 10 reported that they faced sexual violence from their husbands. Out of the respondents who said they were subjected to sexual violence, **7.9 per cent reported being physically forced to have sexual intercourse with their spouse after they had said no**. About 6 per cent said they were forced, through threats and other forms of coercion, to perform specific sexual acts that they did not want to do. Another 3 per cent said their husbands used physical violence to make them perform sexual acts they did not want to.

Marital Rape: Impact on Women

Marital Rape causes physical, psychological, and mental health issues to the female victim which hurt the emotional as well as the physical wellbeing of the women in the long run

- ❖ **Psychological Effects** women who have experienced marital rape have experienced sadness, fear, low self-esteem, rape trauma syndrome, as well as sexual instability, inaccessibility, or malfunction.
- ❖ **Health Issues** Most women have chronic pain as a result of being raped frequently. This ultimately results in black eyes, fractured ribs, knife wounds, and body marks from the assault. Most victims have described experiencing pain and vaginal bleeding. Intense vaginal rupture is the cause of bleeding.

Conclusion

Almost all studies show an association between marital rape and adverse mental health outcomes, despite likely widespread underestimation of marital sexual abuse prevalence. The qualitative studies provided relevant context regarding the lack of recognition of actions that may be considered abuse and mental health symptoms.

- o Thus, it is high time that the judicial system in India makes laws criminalizing marital Rape to preserve the dignity and psychological wellbeing of the woman.
- o **Prof Sandra Fredman of the University of Oxford o**nce said that, it would take training and awareness programmes should be provided to ensure that all levels of the criminal justice system and ordinary people are aware that marriage should not be regarded as extinguishing the legal or sexual autonomy of the wife.

> **PEPPER IT WITH**
> Protection of Women from Domestic Violence Act, 2005, SHe-Box, National Commission for Women

No Confidence Motion

News Excerpt

Recently, Lok Sabha Speaker accepted a no confidence motion moved by the Opposition against the government. It was defeated in Lok Sabha.

Pre-Connect

As per Article 75(3) of our Constitution, Council of Ministers are collectively responsible to the Lok Sabha (lower house).

- In a parliamentary democracy, a government remains in power only if it commands a majority in the directly elected House. It must demonstrate its strength on the floor of the house.
- For testing this collective responsibility, the rules of Lok Sabha provide for this no confidence motion. While defending the parliamentary system over a presidential system, B.R. Ambedkar had stressed that the former provided accountability
- **A no confidence motion can only be moved in the Lok Sabha.**
- A 'No-Confidence' motion is usually moved when a government is seen to have lost majority in the Lok Sabha. Sometimes, it is also moved to bring important issues to light or to highlight failures of the government.
- No reasons need to be given for moving this motion.

The procedure/process for no confidence motion

- ➢ Any Lok Sabha MP, can introduce it if he/she has support of 50 other members of lok sabha.
- ➢ **Under Rule 198** of the Rules of Procedure and Conduct of Lok Sabha, a member must move a written notice before 10 am, which will discussed within 10 days of the written motion being submitted.
- ➢ The Speaker has the discretion to allot time for discussion of the motion.
- ➢ Thereafter, a discussion on the motion takes place. MPs who support the motion highlight the government's shortcomings, and the Treasury Benches respond to the issues they raise.
- ➢ Finally, a vote takes place – if motion is passed by majority, the government is bound to vacate the office. If government wins in vote, the motion stands defeated and government remains in power.
- ➢ The motion will be passed if it is supported by a majority of the members of the House.
- ➢ The voting may be taken up through voice vote or division of vote or other means.
- ➢ The Constitution of India allows for a maximum of 550 members in the House **(provision of reservation of 2 seats for Anglo-Indians was abolished by 104th amendment to constitution).**
- ➢ At present, the Lok Sabha has 543 seats filled by elected representatives. Hence the majority mark at the Lok Sabha is 272.
- ➢ In India, every party appoints a Chief Whip whose duty is to ensure attendance of the party MPs in the house for important motions like the 'No-Confidence'.
- ➢ Direction is given to all the MPs to vote in a particular manner. Any violation of these directions can result in disqualification of the MP (**10th schedule-anti defection law).**

Difference between confidence motion and no-confidence motion

The 'no-confidence' motion is a formal proposal by a member against the ruling government. No confidence motion is usually brought up by the opposition against the ruling government. Confidence motion is brought by government itself to prove its majority in the house.

Confidence motions in Lok Sabha

- ✓ 11 confidence motions have been discussed in Lok Sabha. Of the 11 confidence motions discussed in Lok Sabha, seven were accepted. On one instance in 1996, the motion was not put to vote.
- ✓ On three instances, governments had to resign as they could not prove that they had the support of the majority the V P Singh government in 1990, H D Deve Gowda government in 1997 and the Atal Bihari Vajpayee government in 1999.

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Significance of no confidence motion

Accountability: Accountability is the most important reason that India chooses parliamentary form of government over presidential form.

- No confidence motion is a crucial tool for enforcing accountability of the government to the lower house of parliament.
- It's a tool to highlight the failures, short comings of the ruling government.
- At times its used to bring important issues to light. It gets high media attention and hence public attention is shifted on it.
- It's a tool for opposition to force the Prime Minister to have an elaborate discussion on an important, urgent issue.
- It brings crucial unity in the opposition hence increases the effectiveness of opposition.

> **PEPPER IT WITH**
> Quorum, Cut Motion, Policy Cut, Economy Cut, Token Cut

No-confidence motion	Censure motion
No need of mention reason for this	Need to mention reason for this
It is against entire council of minister	It can be moved against a single minister, more than one minister, or against entire council of minister
The objective is to check whether the government enjoys the confidence of the house	The objective is to censure the government for a particular policy, or action.
If passed, the government has to resign	Even if it is passed, the government do not resign

Regional Languages in Court

News excerpt

Recently the Supreme Court of India constituted justice A.Oak committee for translation of SC judgements in regional languages.

Pre-Connect:

As per Article 348 of constitution, until parliament changes, all proceedings in Supreme court and high courts shall be in English language.

- **Article 348(2)** says that governor, with consent of president, can permit use of Hindi or official language of the state in the proceedings of High court of that state.
- However, the judgements, orders of such high court must be in English.

Other provisions regarding the language in higher judiciary:

- **As per official language act**, the Governor, with consent of president can provide for use of Hindi or the official language of the state, in addition to English, for judgements, orders of the high court
- 1965, the Cabinet Committee decided that the Chief Justice of India's consent must be taken on any proposal on the use of any language besides English in the High Courts. **Thereafter, the use of Hindi was authorised in the High Courts of Uttar Pradesh (1969), Madhya Pradesh (1971), and Bihar (1972) in consultation with the CJI,**

Benefits of promoting regional language in judiciary

- To make justice meaningful for every citizen.
- Presently English language is barrier as many people are not proficient in English. Further even those who are good in English struggle to comprehend the legal language with complex phrases, obsolete words, jargons, excessively long sentences.
- With judgements available in regional language people will have better understanding of functioning of judiciary, creating trust and confidence in judiciary.
- Citizen will have a better understanding and awareness of their fundamental rights and their enforcement.
- It will also promote the development of regional languages which are fading in the era of globalisation.

Challenges in promoting regional languages in judiciary

- **Lack proficiency in regional language:** Many judges lack in proficiency in regional language as they come from all over India.
- **Shortage of manpower-** There is acute shortage of translators in India.
- **Technical glitches in AI based translation-** The AI systems for translating the judgements are evolving and errors are common in them.

✓ **Lack of infrastructure**- Such as internet connectivity, computers in judiciary. This is more prominent at the level of district courts and other subordinate courts.

✓ **Legal terms of English language**- Many legal terms of English don't find their mention in regional languages. Many new legal terms need to be added to regional languages.

✓ **Illiteracy rate**-Illiteracy rate is high in country. Besides many school pass outs are not proficient in regional languages.

Gram Nyayalaya-language
They use the official language of the state other than English. The training of Nya-Adhikari may also include the local **language** of the community. E.g., in Kerala Malayalam language is used in gram Nyaya Laya in Kerala.

Lok Adalats-language
Generally, the language used is Hindi, English or the regional language of the state where the Lok Adalat is held.

Initiatives to promote regional language in judiciary

- SC constituted **justice A. Oak committee for translation of SC judgements** in regional languages
- SC will be tapping into the talent of retired judicial officers to verify if these translations are done correctly.
- The Kerala High Court published two of its recent judgments in Malayalam, becoming the first HC in the country to publish judgments in the regional language.
- Supreme Court formed an Artificial Intelligence committee to develop judicial domain language translation tool called **SUVAS (Supreme Court Vidhik Anuwad Software)** to translate judgments from English to vernacular languages.
- Under the aegis of the Ministry of Law and Justice, the Bar Council of India has constituted '**Bharatiya Bhasha Samiti'** led by former Chief Justice of India. The committee is developing a Common Core Vocabulary close to all Indian languages for the purpose of translating legal material into regional languages.

Relevance of English in judiciary

- In SC and HC, judges come from all over India. Same is true for lawyers and litigants. They cannot be expected to know all regional languages. If AIJS (all India judicial service) reform comes into force even district judges will come from all over India. Hence its nearly impossible for higher judiciary to function without English.
- Judgements of one court are precedents and are referred by other courts in India
- For all these above-mentioned reasons a common language is needed. English is that language.

PEPPER IT WITH
Eighth Schedule, 'Language Divide' in India, the Official Languages Act, 1963

Conclusion

Preamble promises justice for all citizens. To fulfil this vision and create trust and confidence of citizens in judiciary the regional languages must be promoted in judiciary. For the justice must not only be done but also seen to be done.

Rules of procedure and conduct of business in Parliament

News excerpt

Recently, Rajya Sabha Chairman did not accept two notices under Rule 267 of the House for discussion on the border issue with China and rising prices of essential commodities. Both were moved by the opposition.

Pre-Connect

- Article 118(1) of the Constitution empowers each House of Parliament to make rules for regulating its Procedure and the Conduct of its business
- The Constituent Assembly (Legislative) Rules of Procedure and Conduct of Business in force immediately before the commencement of the Constitution of India were modified and adopted by the Speaker of Lok and published under the title "Rules of Procedure and Conduct of Business in the House of the People" in the Gazette of India in1952.
- Rajya Sabha adopted rules for regulating its procedure and the conduct of its business on June 2, 1964. The rules were brought into force with effect from July 1, 1964

Modification/amendments in the rules

➢ Those Rules were amended by the Speaker from time to time on the recommendations of the Rules Committee of the House.

➢ In December, 1956, Rules Committee recommended that the rules contained in the Fourth Edition of the Rules as amended from time to time might be approved by the House under article 118(1) of the Constitution.

➢ The House agreed. So now amendment to rules is approved by the respective house.

About rule 267 of Rajya Sabha

✓ The Rajya Sabha rule book defines "Rule 267" under "suspension of rules" as an instance where "any Member, may, with the consent of the Chairman, move that any rule may be suspended in its application to a motion related to the business listed before the council of that day and if the motion is carried, the rule in question shall be suspended for the time-being."

✓ Rule 267 of the Rajya Sabha rulebook, which allows for suspension of day's business to debate the issue suggested by a member.

Previous Instances

▪ In 11 instances between 1990 up till 2016 that this rule was invoked for various discussions. The last instance was in 2016 when then Chairman Hamid Ansari allowed for a debate on the "demonetisation of currency"

▪ Vice-President Shankar Dayal Sharma between 1990 to 1992 accepted four notices, Bharon Singh Shekhawat accepted three notices.

▪ It was Invoked for "Gulf War" in 1991 when Sharma was presiding, to debate "corruption" when Shekhawat was Chairman and under Mr. Hamid Ansari it was used four times to debate the "role of CBI in coalgate scam", "attack on the secular fabric of the country", "agrarian crisis" and "demonetisation of currency.

Importance of rules of procedure and conduct of business

✚ Parliament is the highest law-making body in the country. In addition to its legislative function, it keeps a check on the functioning of the government and passes the country's budget.

✚ As a representative institution, it also highlights important issues being faced by the people. The fulfilment of this mandate is dependent upon the effective participation of Members of Parliament (MPs) in its proceedings. Parliament as an institution works in a structured manner.

✚ Both Houses of Parliament have detailed Rules of Procedure which regulate their functioning. For effective participation in parliamentary proceedings, advance preparation and an understanding of the Rules is important

Parliament's productivity and role of rules

> Disruptions in both Houses of Parliament are becoming more common than ever before. over Rs 2.5 lakh is spent per minute to run Parliament, implying that disruptions are a waste of taxpayer's money. Rules were unable to prevent disruptions in parliament.

> Bills: many bills are passed without proper debates, discussions. In many instances landmark laws are passed in a single sitting.

> The use of guillotine motion prevents the scrutiny of the house. Bills sent to parliamentary committee have reduced.

Issues with Rules

⇒ It gives discretion to the presiding officer of the house. Many a times rules are not clear, vague. This creates tension between government and the opposition e.g. recent contention on rule 276.

⇒ Moreover, they have not kept pace with the speed of digitization, technology adoption. They have failed to prevent disruption in both houses. It doesn't give opposition enough say in the agenda of the house.

Way Forward

o National commission for review of constitution (Venkatchaliah commission) recommends changes in rules such as: minimum number of sittings of parliament: 120 days for Lok Sabha, 100 days for Rajya Sabha.

o Vidhi Centre for legal policy recommends and gives a methodology for parliamentary productivity index.

o A special Session of each House of Parliament in a year (i) the Session shall be of minimum fifteen days duration; agenda for the Session may be decided by all political parties represented in each House of Parliament;

o The number of hours unutilised due to disruptions shall be compensated by extending each Session by as many hours as the sitting were adjourned due to disruptions.

> **PEPPER IT WITH**
> Article 118, Rules Committee, Article 85 of the constitution

Demand for Inclusion of Ladakh under Sixth Schedule

News Excerpt

The functionaries of the Ministry of Home Affairs (MHA) and six Ladakh leaders from the Leh Apex Body (LAB) and the Kargil Democratic Alliance (KDA) will hold a meeting regarding different issues pertaining to the UT, including the Sixth Schedule issue.

Pre-Connect

- On August 5, 2019, the erstwhile state of Jammu and Kashmir was stripped of its special status and bifurcated into two Union Territories.
- The Sixth Schedule of the Constitution allows for greater political autonomy in some tribal areas in the North-East.
- In September 2019, right after the abrogation of Article 370 in the region, the National Commission for Scheduled Tribes recommended the inclusion of Ladakh under the Sixth Schedule.
- The Commission took note of the fact that the newly created Union Territory of Ladakh is predominantly a tribal region in the country. The total tribal population in Ladakh region is more than 97 percent.
- Prior to creation of the Union Territory of Ladakh, people in Ladakh region had certain agrarian rights including right on land which restricted people from other parts of the country to purchase or acquire land in Ladakh.
- The Ladakh region is home to the communities such as Drokpa, Balti and Changpa, all of whom have distinct cultures which need to be preserved and promoted.

What is at the heart of the demand?

- This has to do with Article 35A, which gave the erstwhile state of Jammu and Kashmir power to define permanent residents who can only buy land or take jobs in the state. However, abolition of Article 370 has taken away this protection from Jammu & Kashmir and Ladakh — two new Union Territories carved out on August 5, 2019.
- Article 35 A was believed to be good for the people of Ladakh as nobody from outside could buy land here. But now, the people as well as council can transfer lands to anyone. This can change if safeguards are granted under the Sixth Schedule. Then after, people here can't transfer land to non-tribals. They can transfer their land to only tribals.

Sixth Schedule and Tribal Protection

- ❖ The Sixth Schedule of the Constitution — Articles 244(2) and 275(1) — has provisions for the administration of tribal areas in the border states of Assam, Meghalaya, Tripura and Mizoram.
- ❖ Under the Sixth Schedule, autonomous districts and councils, administered by elected representatives, have a varying degree of autonomy to frame laws to protect the interests of tribal people.
- ❖ This is a demand that has been gathering momentum in Ladakh, too.
- ❖ The leaders in Ladakh, however, are demanding powers similar to what has been given to the Bodoland Territorial Council under the Sixth Schedule.
- ❖ The Bodoland Territorial Council has been given greater autonomy to frame laws in comparison to other District Councils.
- ❖ As per the Constitution, the Bodoland Territorial Council can make laws on 39 additional subjects such as culture, education, health and agriculture, labour and employment, land and revenue among others.

- There are administrative issues too that have cropped up after Ladakh became a Union Territory. At present, the officers at the council are accountable to the Centre.
- Their transfer and annual progress report is under Centre, so when a decision taken at the council level gets delayed in execution because the person or the chief executive overseeing the development is accountable to the Centre. These issues, can only be resolved when the council is given autonomy under the Sixth Schedule.
- The government to amend the Ladakh Hill Development Council Act, passed in 1997. It needs to be defined what will be the role and responsibility of the central government, the Union Territory administration and the Lieutenant-Governor.
- Along with this, (it needs to define) how the roles of gram panchayats and town councils will be streamlined with. The LAHDC Act also needs to be amended to grant Constitutional safeguards with regard to land, employment and cultural identity on the lines of certain regions in the North-East under the Sixth Schedule.

Fear of demographic change in Ladakh

- ✓ Ladakh has more than 90 percent tribal population with distinct ethnicity, culture, custom, these can be protected only if the state has constitutional safeguards under the Sixth Schedule.
- ✓ The biggest concerns are change in demography and protection of tribal lands. The biggest fear among Ladakhis is that now people will set up industry here, buy lands, bring people from outside that will lead to demographic change and loss of jobs for locals.
- ✓ Now, the new concern is the domicile law for Jammu and Kashmir. The people in Ladakh have this fear that Centre may bring a similar law allowing outsiders to become residents after 10-15 years. There is no need to bring any demographic change in Ladakh as the people here are nationalists. Ladakhis are demanding the sixth schedule because it will provide safeguards for tribal lands as non-tribal people cannot buy them and jobs will be for tribal.

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INDORE: 7314977441 | **BENGALURU:** 7619166663 | **HYDERABAD:** 79960 66663 | **IMPHAL:** 9650245599 | **SRINAGAR:** 98712 35599| **MUMBAI:** 9871265599|

Conclusion

This development dragged media attention from Ladakh's border to inner Ladakh when a body called the "Apex Body of Peoples Movement for Sixth Schedule for Ladakh" called for complete boycott of the upcoming sixth round of Ladakh Autonomous Hill Development Council (LAHDC) Leh elections. This came immediately after a media report suggested the central government had defied Ladakh's demand for inclusion in the Sixth Schedule of the Indian constitution. The Apex Body of Peoples Movement for

Sixth Schedule for Ladakh, unanimously resolved to boycott the ensuing 6th LAHDC Leh election till such time the constitutional safeguard under the sixth schedule on the lines of Bodo territorial council in not extended to UT Ladakh and its people.

Creating a New District in India

Why New Districts are created?

- Smaller Units will translates into better governance.
- Improve accessibility by bringing government and administration closer.
- People demand creation of district for cultural reasons as well as socio-economic reason.
- India has more than 775 districts
- Uttar Pradesh has the most districts (75) in the country, followed by Madhya Pradesh (52). Goa, by contrast, has only 2 districts.

Role of State Government → State governments have power to establish, alter or abolish existing district → This can be done either through → **Executive order (most preferred)** / **By passing law in assembly**

Role of Central Government → No role to play in the alteration of districts or creation of new ones

However in case of State wants to change the name of a district or a railway station. → Then, Home Ministry, no objection certificate is required. / Along with other departments viz. →

- Ministry of Earth Sciences.
- Intelligence Bureau
- Department of Post.
- Geographical Survey of India.
- Ministry of Science & Technology
- Railway Ministry

Delimitation and District creation
- Exercise of district creation doesn't impact delimitation as the later is dependent on the population enumerated in census.

How District creation helps?
- Apart from governance improvement, district creation helps in creating distinct identity of a region. The only challenge is that it is often misused by realtors, contractors and politicians.

SOCIAL ISSUES

Smart Cities Mission

News Excerpt
Govt extends Smart Cities Mission deadline by 1 year.

Pre-Connect

About Smart Cities Mission
- Smart Cities Mission is an initiative by the Indian Government:
- **The objective is to promote** cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.
- The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities.
- The Smart Cities Mission is meant to set examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country.

Labelling strategy
- The cities have been asked to implement the "labelling strategy" by August 31 2023
- It is important, the Mission wrote, to form a **"link to build trust with the community"** and that the labelling would "not only create awareness but also strengthen the loop between citizen feedback and project implementation."

Need for smart Cities in India
- Cities accommodate nearly 31% of India's current population and contribute 63% of GDP (Census 2011).
- Urban areas are expected to house 40% of India's population and contribute 75% of India's GDP by 2030.
- This requires comprehensive development of physical, institutional, social and economic infrastructure.
  - All are important in improving the quality of life and attracting people and investment, setting in motion a virtuous cycle of growth and development.
  - Development of Smart Cities is a step in that direction.

Achievements and progress
- According to data provided by the Union Housing and Urban Affairs Ministry to the
- Lok Sabha on July 20, 74% of the nearly 8,000 projects for which work orders have
- been issued, have been completed.
- Nashik Smart City Mission: Phase 2 of CCTV Project Begins
- Shimla to Invite Tenders for Parking Lots under Smart City Mission
- Smart Cities Mission: Srinagar to Come Up With 80 Km Cycling Tracks

Challenges of smart cities mission:
- This is the first time, a MoUD programme is using the **'Challenge' or competition method** to select cities for funding and using a strategy of area-based development.
- **States and ULBs will play a key supportive role** in the development of Smart Cities.
  - Smart leadership and vision at this level and ability to act decisively will be important factors determining the success of the Mission.
- **Understanding the concepts of retrofitting,** redevelopment and greenfield development by the policy makers, implementers and other stakeholders at different levels will require capacity assistance.
  - Major investments in time and resources will have to be made during the planning phase prior to participation in the Challenge.
  - This is different from the conventional DPR-driven approach.
  - The Smart Cities Mission **requires smart people who actively participate in governance** and reforms.
  - **Citizen involvement** is much more than a ceremonial participation in governance.
  - The participation of smart people will be enabled by the **Special Purpose Vehicle (SPV)** through increasing use of ICT, especially mobile-based tools.
- **Coordinating Three-Tier Governance**: Effective horizontal as well as vertical coordination between the different institutions is imperative for the implementation of the smart city solutions.

Way forward

- It should be a long-term programmer, not only a five-year programme as most of the cities cannot perform the best within this time frame.
- Comprehensive development required integrating the physical, institutional, social and economic infrastructure.
- Similarly, great benefit can be derived by seeking convergence of other Central and State Government Programs/Schemes with the Smart Cities Mission.
- For the mobilization of funds, more revenue should be generated through taxation. The fund transfer process should also be made accessible.
- All these cities should be secured by cyber security- ensuring data security and encryption.

> **PEPPER IT WITH**
> Schemes: AMRUT, PRASAD, HRIDAY, NULM.

Animal Protection, Welfare and Rights

News Excerpt

Recently, Madras High Court bats for right of animals to live without fear and distress and ordered to several families.

Pre-Connect:

The Centre has proposed to overhaul The Prevention of Cruelty to Animals Act, 1960, introducing 61 amendments in the law, which includes three years' imprisonment for committing "gruesome cruelty" including "bestiality" with animals.

Animal welfare and right in INDIA

- **The Supreme Court** had ruled that the right to dignity and fair treatment as enshrined in and arising out of Article 21 of-
  - India's Constitution is not confined to human beings alone, but animals as well.

Our laws safeguard animals against cruelty:

- **Article 51A (g)** of the Constitution of India imposes a fundamental duty on us to safeguard the wildlife and have compassion for all living creatures
- The Directive Principles of State Policy (**DPSP**) 48 and 48A talk of wildlife protection.
- In July 2018 the Uttarakhand High Court and in June 2109 Punjab and Haryana High Court observed that animals have a distinct legal person with corresponding rights,
- In the case of Animal Welfare Board of India v. Nagaraja (2014) while striking down the practice of Jallikattu (bull-wrestling).

Need to provide animal protection and securing their rights

- ➤ **Protection from undue harm**: To prevent them from undesirable distress and cruelty.
- ➤ **Maintaining natural Behaviors**: Animals' instincts and natural behaviours should be respected. For instance, animals housed in captivity should have the proper enrichment and habitat-like living arrangements.
- ➤ **Conservation and habitat protection:** It is important to work to save wildlife's innate ecosystems and habitats.
- ➤ **Ecological requirement and biological need.** Wildlife need unique geographical landscape and specific biological conditions like for breeding, movement, significant prey base, etc. to survive otherwise it will lead to their extinction.
- ➤ **To prevent animal cruelty and just treatment** Animals that are reared for food should be given a respectful and compassionate upbringing to reduce suffering and anguish, humane slaughter techniques should be employed.
- ➤ **Human and ethical consideration-**For animals, having rights is everything. With rights, they would not be trapped, beaten, caged, artificially inseminated, mutilated, drugged, traded, transported, harmed and killed just because someone else profits by it.
- ➤ -By granting animals rights, the sum of suffering in the world would reduce dramatically.
- ➤ **Lack of awareness:** Lack of awareness about animal welfare, both among the public and within educational institutions

Challenges faced in implementation

- ✓ **Economic challenges** -Animals are reared for vast majority of commercial activities be it legal or illegal there is ever increasing demand.
  - Thus, making it inevitable to compromise the welfare and right of animals. Example illegal trade in wild, unethical breeding of commercial animals.
- ✓ **Traditional practices and way of life. Example** people living in the tribal area fulfill their various food requirements from animals.

✓ **Administrative and institutional challenges: Even** though there are strict regulations in place to protect animals, they may not be consistently or effectively enforced.
  ○ Effective implementation can be hampered by a lack of committed agencies, corrupt practices, limited resources poor protection and implementation of laws and lack of institutional capacity in terms of fund allocation, manpower, weak penalties etc.

✓ **Wildlife protection issue: Due** to various reasons like hunting, poaching, illegal destruction of forest, conflict between human and animal population etc.

✓ **Commercial requirement and agriculture expansion:** require clearing of forest, excessive commercial activities like fishing have been posing serious challenges.

✓ **Urbanization, Globalization and industrial development: Has** put pressure on animal welfare as it has led to commodification of various wild products, and increased illegal trade of wild animals.

✓ Besides it poses **problem of regulation and jurisdiction** Example protection of marine ecosystem spread across borders, industrial activities by big MNCs spread across globe etc

Way forward

■ **Animal abuse has to stop.** Humans need to shed their condescending approach of patronizing other species. Mere intellectual superiority of human kind cannot be allowed to supersede living rights of another species.

■ **Co-existence of all life forms** is absolutely essential to prevent an imbalance of our ecosystem. **But no rights can be absolute.** Like human rights, regulation of animal rights is a must. We need to strike a balance between safeguarding the interests of animals without compromising on the safety or well-being of humans.

> **PEPPER IT WITH**
> Animal Welfare Board of India, Kambala festival, NGOs: Humane Foundation for People and Animals, PETA.

Blanket ban on smartphones in schools

News Excerpt

UNESCO recommended a universal ban on the usage of smartphones in schools.

Pre-Connect

• According to **Deloitte**, India has 1.2 billion mobile phone users and over 600 million smartphones users, that figure expected to cross a billion by 2026.

• Until the beginning of pandemic, the **Indian edtech sector** had just one unicorn. In the last three years, six edtech startups have entered the billion-dollar club. India is second largest market for e-learning after USA.

• Earlier **people's campaign** was started in **Kerala**, to provide to provide smartphone to all students.

• A **pan-India survey** of 6,229 parents of schoolchildren, aged 6–16, in rural communities across 21 States revealed more kids used smartphones for entertainment rather than for studying.

Global Scenario

➢ Normally countries use age restriction of 16 years, students can bring smartphones in classrooms.

➢ **Finland** allows smartphones from the age of 12 years. They can keep it with them even when the classes are on.

➢ In **England**, children are allowed to bring in from the age five. But they have to deposit their phones.

➢ Earlier **Australia** had no restrictions, but after pandemic they have somewhat restricted the usage of smartphones.

➢ **Netherland** and **France** have banned the usage of smartphones in school and academic performance improved as a result.

➢ **Spain**, **Norway** and **Belgium** have already banned mobile phones in school.

➢ USA and Australia have framed policies to limit screen time for children.

Case of making smartphones as an object of Inquiry:

❖ Smartphones can be used to encourage techno skepticism i.e., questioning our relationship with technology and finding limits. E.g., students can be encouraged to use navigational apps in place of paper maps, students can explore the algorithm of their social media or how notifications get their attention.

❖ **Techno fasts:** Teachers can encourage students to go on techno fasts i.e., abstaining from the use of technology for a specific period. This will give students time to reflect on the time they spend away from the devices.

❖ **Digital Mindfulness:** Awareness about digital mindfulness can be spread among students. It means differentiating between digitally important tasks and digital distractions.

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Arguments in favor of ban:

✓ **Distractions:** UNESCO has warned against embracing digital products in educational settings in its report "Restrictions on the use of mobile phones in school premises under rule 43 of DSER 1973". It highlighted that proximity to a mobile device was found to distract students.

✓ **Academic performance:** Children's get too much involved in social media, they play games and their focus on academic tasks completely goes off track. According to London School of Economics, not allowing smartphones increases the academic performance of children.

✓ **Behavioral issues:** Psychologists advocate that mobile phones are addictive in nature, hinder concentration, and social skills. There circadian rhythm gets affected, creating emotional, behavioral and mental issues.

✓ **Regulatory issues:** India still does not have data protection laws specially child data protection laws. Also, School safety policy is required because if some mishappening happens schools will be the easy target.

✓ **Social exchange:** Banning will promote healthier face to face interactions, students will get a space to vent out by sharing their feelings.

✓ **Cyber security:** School is a safe zone, allowing smartphones will make them vulnerable to cyberbullying and comparisons. Resulting in depression and feelings of inadequacy. Prohibiting will give relief from such pressures.

✓ **Inequalities:** Smartphones might raise disparities among students belonging to various socioeconomic backgrounds. Students with access to smartphones will have an advantage over the students who do not have access.

Arguments against the ban:

Availability: Smartphones are ubiquitous, children have easy access to it as parents are giving it to them. The generation is born in digital world.

- **Edtech sector and AI:** With the ever-increasing edtech products, smartphones are an essentiality to get access to them. Personalized learning, smart content delivery, tutoring and assistance will help students in long term, banning smartphones will hinder their career.

- **Digital India:** With the government giving so much emphasis on digitalization, banning is not in line with the goal. The NEP 2020 also gives a lot of importance to smartphones as the new curriculum has QR codes which can be accessed through smartphones.

- **Lack of research:** There is a lack of indigenous studies and research that shows what kind of damage smartphones can do.

- **Duty of school:** The duty of the school is to prepare students for life and sensitize them about their surroundings. Digital literacy should be provided instead of banning smartphones, so that they can use a smartphone in a better way.

- There is no surety that if banned; children will not bring it. They can bring it discreetly to the classes. As a result, frisking will done which will bring pressure on school.

- **Age appropriateness:** Like we have an age for driving license, an age for voter id card, similarly we can have an age for mobile phones.

Way forward

All the stakeholders connected with the education ecosystem such as students, teachers and parents should arrive at a **consensus** on the minimum use of mobile phones in the school so that a distraction free and learning atmosphere could be created.

PEPPER IT WITH
SWAYAM-MOOCs, e-Pathshala, Blue Whale challenge game.

- o Any decision on this issue must prioritize student wellbeing by taking all pros and cons of the issue. The implication of such a choice must be carefully considered.
- o There is need to explore some kind of **alternatives** like enhancement of digital spaces, availability of laptops and tablets in schools. This would require school to invest in digital infrastructure.

India's First Cannabis Project

News Excerpt

Recently, Union Minister of State (Independent Charge) Science & Technology announced that Jammu will pioneer India's first Cannabis Medicine Project.

Pre-Connect:

About the Cannabis Project

- Cannabis Research Project' of CSIR-IIIM Jammu is a first of its kind in India initiated under the leadership of Prime Minister Narendra Modi, in Private Public Partnership with a Canadian firm which has a great potential to put substance of abuse for the good of mankind especially for patients suffering from neuropathies, cancer and epilepsy.

Cannabis:

- Cannabis is a generic term used to denote the several psychoactive preparations of the plant Cannabis sativa.
- The major psychoactive constituent in cannabis is Δ-9 tetrahydrocannabinol (THC). Compounds which are structurally similar to THC are referred to as cannabinoids.
- Cannabis in India is known by many names and exists in various forms. The most popular names are weed, charas, ganja, marijuana, etc.
- **Spread:** Cannabis is by far the most widely cultivated, trafficked and abused illicit drug. Half of all drug seizures worldwide are cannabis seizures. The geographical spread of those seizures is also global, covering practically every country of the world. About 147 million people, 2.5% of the world population, consume cannabis (annual prevalence) compared with 0.2% consuming cocaine and 0.2% consuming opiates.

Potential

➢ To develop high-quality medicines for neuropathies, cancer, and epilepsy.
➢ To put substance of abuse for the good of mankind especially for patients suffering from neuropathies, cancer and epilepsy.
➢ It will serve the objective of Atmanirbhar Bharat as it will enhance India's knowledge and perspective for Cannabis cultivation.
➢ This will help in boosting export quality drugs meant for different kinds of neuropathies, diabetic pains etc.

Acute health effects of cannabis use

The acute effects of cannabis use have been recognized for many years, and recent studies have confirmed and extended earlier findings.

These may be summarized as follows:

✓ Cannabis impairs cognitive development (capabilities of learning), including associative processes;
✓ free recall of previously learned items is often impaired when cannabis is used both during learning and recall periods;
✓ Cannabis impairs psychomotor performance in a wide variety of tasks, such as motor coordination, divided attention, and operative tasks of many types;
✓ Human performance on complex machinery can be impaired for as long as 24 hours after smoking as little as 20 mg of THC in cannabis;
✓ There is an increased risk of motor vehicle accidents among persons who drive when intoxicated by cannabis.

Chronic health effects of cannabis use:

- Selective impairment of cognitive functioning which include the organization and integration of complex information involving various mechanisms of attention and memory processes;
- Prolonged use may lead to greater impairment, which may not recover with cessation of use, and which could affect daily life functions;
- Development of a cannabis dependence syndrome characterized by a loss of control over cannabis use is likely in chronic users;
- Cannabis use can exacerbate schizophrenia in affected individuals;
- Epithelial injury of the trachea and major bronchi is caused by long-term cannabis smoking;
- Airway injury, lung inflammation, and impaired pulmonary defence against infection from persistent cannabis consumption over prolonged periods;
- Heavy cannabis consumption is associated with a higher prevalence of symptoms of chronic bronchitis and a higher incidence of acute bronchitis than in the non-smoking cohort;
  - Cannabis used during pregnancy is associated with impairment in fetal development leading to a reduction in birth weight;
  - Cannabis use during pregnancy may lead to postnatal risk of rare forms of cancer although more research is needed in this area.

Legal provisions in India for Cannabis

✦ The NDPS Act 1985, forbids the sale and manufacturing of cannabis resin and flowers, but the use of cannabis plant leaves and seeds is legal, with states having the authority to regulate and implement state rules.
✦ The States derive this authority from Section 10 of the NDPS Act, 1985. Anyone caught in possession of any of these cannabis plant parts could be arrested.
✦ There is **no complete ban** on cannabis under NDPS Act and it can be used for medical, scientific, industrial, horticultural purposes by taking requisite permissions from respective state governments.

Regulations in Different States:

> **Odisha** is one such State in India where marijuana is legal, and residents typically use 'chillums' to enjoy it within the State's borders.
> **Uttarakhand** is the first Indian State to legalise commercial hemp farming. Many other hilly states are considering allowing regulated production of hemp and marijuana because it is a rich crop that requires less water.
> In **Assam,** the sale, possession, purchase, and consumption of ganja and bhang are all prohibited under the Assam Ganja and Bhang Prohibition Act, 1958.
> In **Maharashtra,** the Bombay Prohibition Act of 1949 makes it illegal to manufacture, possess, or consume bhang and bhang-containing substances without a licence.

Israel was among the first countries to legalize medical marijuana – it remains illegal for recreational use and is one of just three countries with a government-sponsored cannabis program, along with Canada and the Netherlands.

PEPPER IT WITH

Narcotics Control Bureau, Article 47, Golden Triangle, Golden Crescent

Demand to restore Old Pension Scheme (OPS)

News Excerpt

The demand for the old pension scheme (OPS) is growing especially after a few States announced that they would be reverting to it.

Pre-Connect

- Several States including Rajasthan, Punjab, Chhattisgarh, Jharkhand, and Himachal Pradesh have decided to return to the OPS.
- **About the Old Pension Scheme (OPS).**
  o Under the OPS, public servants are given a monthly pension. Based on the employee's most recent basic wage and the number of years of service.
  o **It guarantees a pension** for those with at least ten years of government service.
  o The OPS **scheme offered defined benefits** to all government employees without any contribution on their part.
  o Government employees who retire under the OPS are paid their whole pension by the government.
- **The National Pension Scheme (NPS)** was launched in 2004.
  o The **primary bone of contention** is that the NPS does not guarantee a certain amount.
  o Also, unlike OPS **the NPS requires employees** to contribute a sum throughout their working years.
  - Almost two decades after the NPS came into effect, several States are switching back to the Old Pension Scheme (OPS).

COMPARISON OF OLD AND NEW PENSION SCHEME		
DETAIL	OPS	NPS
Contribution of employee	Nil	Employee contribution required
Pension Guarantee	Yes, by government	No
Amount of pension	50%of the last pay	Share market and PFMs driven
On price rise	Dearness Relief given	Nil
PE eligibility	Yes	No
PF withdrawal	Temporary withdrawal: within 15 year PF final: After 15 year	Tier 1-NIL Tier-2 withdrawable

Reason to Bring NPS

➢ Such **policy measures are indispensable** when widespread hunger results in death among children under the age of five, and 229 million are still poor.
➢ Sixth Pay Commission had substantially increased the basic salary of government employees to cover pension contributions and promote savings for post-retirement expenses
➢ It is **more progressive and fiscally prudent** as it is market-linked, employee contribution is mandatory, reduces financial pressure on the government, aligns with modern tax structure, etc.
➢ It is important to understand that this change in the pension scheme was a bipartisan effort.

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➢ It was initiated under the Atal Bihari Vajpayee government and carried forward by the Manmohan Singh government. **There was political consensus on this change.**

Concerns relating to OPS

✓ **Financial strain on the Government exchequer**:
   o The pension liabilities of the central government increased due to a substantial hike under the Sixth pay matrix.
   o As it was politically tricky to withdraw the OPS for existing employees when the NPS was introduced.
   o As a result**, pension liabilities substantially** increased to 9% of total States expenditure, and are expected to increase in the future.

✓ **Financial unsustainability**:
   o Because of the **defined benefit of OPS**, the government was required to guarantee pensions to retired personnel independent of changes in the financial markets or the economy.
   o Over time, this may put a **financial strain on the government.**

✓ **Socially unjust**: The salary of a government employee is higher than the income of more than 90% of the population.
   o The OPS compels governments to **compress an already low social sector expenditure**, thus pushing the marginalised into a downward spiral of indigence.
   o OPS acts as a regressive redistribution mechanism favouring a better-off class.

✓ **Lack of fiscal prudence:** since the scheme **is not linked to the market,the inflation** risk may erode the saving benefits.

✓ **Restrict flexibility and mobility**-OPS is not in tune with **modern economic systems** which require flexibility
   o It restricts job mobility, personal growth as employees prefer stability and assured retirement benefits.

✓ **The Sixth Pay Commission** had substantially increased the basic salary of government employees to cover pension contributions and promote savings for post-retirement expenses
   o The OPS facilitates a further **monopolization of future labour markets** in the private sector by this proprietary class.
   o **Economically unjust**- Currently, the bottom 50% of the population bears the iniquitous burden of indirect taxation six times more than their income.
   o Due to the OPS, **the bottom of the pyramid population** with a monthly income much less than that of government employees must bear the incubus burden which will sled them into destitution and abject poverty.

Steps and initiative taken by Government

▪ Earlier this year, the Central government set up a committee under the leadership of the Finance Secretary to review the working of the NPS and evolve an approach that addresses the needs of government employees while maintaining fiscal prudence

▪ Various pension schemes has been launched taking into account the need for various sections of the population.

Way forward

➕ The mainstream scourging of OPS is centered on a preconceived notion of inefficiency and a doctrine of fiscal deficit.
   o Nevertheless, there is a need to disentangle the consequences of OPS from the neoliberal setup and **examine the policy from the class and welfare perspectives.**

PEPPER IT WITH
PFRDA, Atal Pension Yojana, National Social Assistance Programme, PM Kisan Maan Dhan Yojana

➕ Opposition to the OPS should not be a weapon for downsizing the government but used to argue for a more **equitable distribution of resources** and expansion of universal provisions of public goods

➕ A participatory pension for government employees will provide a **more egalitarian outcome** in an economy with acute income inequality.

➕ To protect employees (especially those in the lower rung in the hierarchy) from the vagaries of the market, **the government can tweak the NPS to provide a guaranteed monthly return.**

ECONOMY

India's drug reliance

News Excerpt
India still heavily reliant on China for life saving drugs, according to CareEdge Report.

Pre-Connect
- The Indian pharmaceutical industry is the **3rd largest** in the world by volume and provides approximately **60% of the global vaccine supply** and **20-22% of generic exports**. India is often referred to as **"Pharmacy of the world".** It is projected to reach a value of US$ 130 billion by 2030.
- Recently, Cabinet approved the **Policy for the Medical Devices Sector**. It is expected to help the Medical Devices Sector, grow from present $11 Bn to $50 Bn in next five years.
- According to the **CareEdge report**, India imports 43% of total pharma products from China. Moreover, the use of bulk drugs from China has increased from 64% in fiscal year 2014 to 71% in FY23.

About
Constituents of bulk drug imports
- **Lifesaving drugs**: Mainly incudes antibiotics such as penicillin, cephalosporins, azithromycin, etc.
- **Key Starting Material (KSM) or Active Pharmaceutical Ingredient (API):** These are the drug intermediates, used in manufacturing of other drugs. Basically, these are the building blocks of pharmaceutical sector. India's dependency on KSM from China exceeds 50%.
- **Formulations:** It includes various mixtures such as concoctions of AYUSH and other herbal mixtures. Their dependency is around 30-35%.
- **Surgical Products**: It includes Graspers, clamps, bone cutter, needles, and sutures.

Potential risks to healthcare ecosystem
- **Availability:** Such dependency makes Indian healthcare system vulnerable to supply chain disruptions. Geopolitical tension, pandemic alert, or trade disputes can lead to non-availability of life saving drugs to India.
- **Cost:** Over reliance on single supplier can lead to affordability issues, as supplier has the pricing power which can be manipulated during hard times.
- **Sovereignty:** China might use its position to exert influence during the need and emergencies, leading to detrimental health parameters of the country.
- **Safety:** The quality and safety controls of imported drugs can be low, making the healthcare of importer country suboptimal.

Recent incidents of quality failure:
- Around 70 children died in **Gambia**, after consuming substandard cough syrup.
- **WHO** issued a medical alert claimed the substandard quality of Indian made cough syrups.
- Eye drops exported to **USA**, were linked with vision loss.
- Death of children in **Uzbekistan** were also linked with cough syrup.
- In recent regulatory inspections, around **40 drugs failed** to meet the quality standards.

Manufacturing Clusters
- Maharashtra
- Tamil Nadu
- Gujarat
- Telangana
- Andhra Pradesh
- Karnataka
- Uttar Pradesh

Advantages India has in Pharma Industry:
- **Law: Patent Act 1970** has prevented the evergreening of the drugs. This has led to the development of **generic drug market**, of which India is a leader.
- **Affordability:** Indian medicines and treatments are cost effective; this has played a huge role in the projection of India as a destination for **medical tourism**.
- **Infrastructure:** India has highest number of US-FDA compliant plants outside the USA.
- **FDI:** Up to 100% is allowed through automatic route for greenfield investments and up to 74% for brownfield investment. Beyond 74% to 100% in brownfield through government approval route.

- **Product Linked Incentive scheme (PLI):** PLI scheme has high rate of project completions, for e.g. recent Penicillin G manufacturing plant. The scheme since implemented has reduced the import dependency of India on China by providing incentives on increased production to the drug manufacturing companies.

Government initiatives:

- **Promotion of Bulk Drugs Park scheme**: Aim is to develop 3 mega bulk drug parks with the partnership of union and states government.
- **Strengthening Pharmaceuticals Industry scheme**: It seeks to strengthen existing infrastructure of pharmaceutical sector.
- **Production Linked Incentive scheme in Pharmaceuticals**: With an objective to enhance India's manufacturing capabilities and contributing to product diversification towards high value goods in the pharmaceutical sector, 3 different categories of products are being supported under the scheme, viz,

  Category 1: Biopharmaceuticals; Complex generic drugs; Patented drugs or drugs nearing patent expiry; Cell based or gene therapy drugs; Orphan drugs; Special empty capsules, Complex excipients.

  Category 2: Mostly bulk drugs.

  Category 3: Drugs not covered under Category 1 and Category 2 such as Repurposed drugs; Auto immune drugs, anti-cancer drugs, anti-diabetic drugs, anti-infective drugs, cardiovascular drugs, psychotropic drugs and anti-retroviral drugs.

  PM Bhartiya Janaushadhi Pariyojana: Under this initiative Jan Aushadhi Kendra's are opened, to promote and provide generic medicines to the peoples at nominal prices.

> **Medical Diplomacy and Vaccine Diplomacy:**
> - India has made the pharmaceutical sector, a tool to strengthen international relations.
> - In the COVID-19 pandemic, India has supplied essential drugs like Hydro chloroquine, Paracetamol, etc to around 185 countries.
> - Vaccines of Covid-19 were distributed to the neighbouring as well as distant countries.

Prevalent challenges in pharma sector

- **Research and Development (R&D):** The lack of research is one of the main reasons for the India's drug import dependency on China. India spends less than 1 percent of GDP on R&D.
- **Quality:** Indian drugs have been often found in news recently, mainly because of its substandard quality. This has created a trust deficit with other nations.
- **Regulatory**: India has around 36 drug regulators, which makes the regulation and standardization of drugs a tedious task.
- **Pricing**: Frequent revision of prices by authorities and prices manipulated by drug giants is another important challenge in pharma industry.

> **PEPPER IT WITH**
> Pradhan Mantri Bhartiya Janaushadhi Pariyojana, Active pharmaceutical ingredients

- **New diseases**: Recent outbreaks of Tomato flu, Nipah virus and Lumpy Skin Disease in cattle's; earlier Covid 19 pandemic have put pressure on pharmaceutical industry. It is still grappling with aftereffects.
- **Clinical Trials**: The rules and regulations regarding the clinical trials in India are very strict. This discourages the pharmaceutical companies to manufacture and test a new drug.

Total pharma imports during last decade vis-à-vis imports from China (in USD million)

Way forward

⇒ **The Drugs and Cosmetics Act 1940**, is an old legislation which does not cater to the needs of pharmaceutical sector. It needs to be replaced with a new legislation which addresses the present challenges in the sector.

⇒ The incentives provided to companies under **PLI scheme** should be increased. Though slowly, the scheme has helped in decreasing the import dependency on China.

⇒ There is a need to develop the entire **healthcare ecosystem** – R&D labs, medical institutions, bulk drug parks and logistics facilities like refrigerated containers for swift movement of drugs and vaccines. This will enable the pharmaceutical sector to become aatmanirbhar.
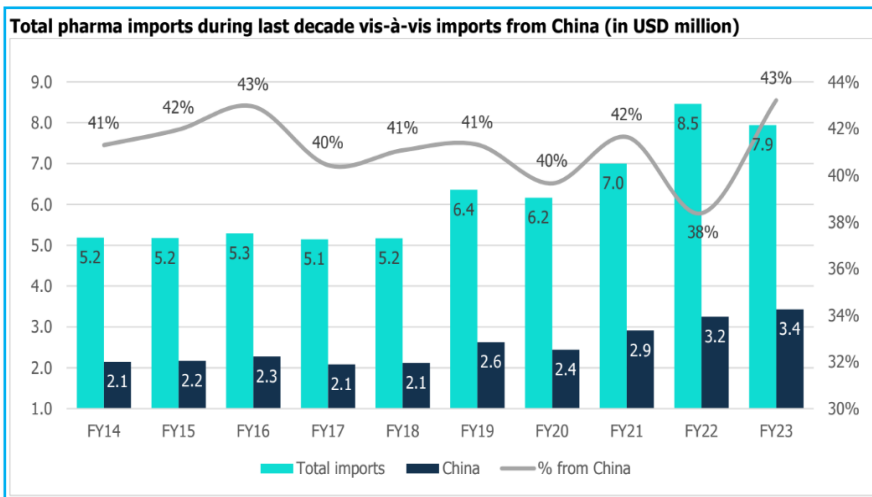
PLI and Manufacturing in India

News Excerpt
Centre mulls changes in PLI scheme, aims to boost manufacturing.

Pre-Connect
- The Indian manufacturing industry generated 16-17% of India's GDP pre-pandemic and is projected to be one of the fastest growing sectors.
- As per the economic survey, India has the capacity to export goods worth US$ 1 trillion and it has potential to become a global manufacturing hub by 2030. It can add more than US$ 500 billion annually to the global economy.
- India has overtaken China as the second-largest manufacturer of mobile devices in the world, according to a report released by the international research firm Counterpoint.

Need for boost in Manufacturing
- **Demographic Dividend**: India has the youngest population in the world. For raising the employment opportunities, manufacturing needs to be explored and focused upon.
- **Service sector constraints**: The service sector has almost reached its saturation point; it can no longer absorb more people. Manufacturing sector is the labor-intensive sector; hence avenues can be created in this.
- **$ 5 trillion economy goal**: A push in manufacturing sector is needed to realize the goal of making India $ 5 trillion by 2025.

Factors contributing to subdued manufacturing
- **Indian scenario:** Normally a country in its path for economic development, gradually shifts from primary sector to secondary and then tertiary. For e.g China and other developed nations. But India jumped its path of development from primary sector to tertiary sector, skipping manufacturing or secondary sector.

MANUFACTURING

MARKET SIZE

Quarterly estimates of GVA at current prices (US$ billion)

Q1'20	Q1'21	Q1'22
620.7	495.3	626.5

Note: FY - Indian Financial Year (April -March)

SECTOR COMPOSITION

Total FDI equity inflow in the manufacturing subsectors between April 2000 - September 2022
- Services 22.0
- Computer Software & Hardware 34.0
- Telecommunications 18.0
- Trading 4.0
- Automobile 5.0
- Construction (Infra) Activities 5.0
- Chemicals (other than fertilizers) 7.0
- Drugs & Pharma. 4.0
- Others 1.0

KEY TRENDS

Annual Growth Rates of IIP (%) at Sectoral level
- Mining, Manufacturing, Electricity
- Apr 2021 - Feb 2022: 13.2, 13.0, 8.2
- Apr 2022 - Feb 2023: 5.7, 4.9, 10.0

Capacity Utilization in Manufacturing Sector (%)
- Q2FY20: 69.1
- Q2FY21: 63.3
- Q2FY22: 72.0

GOVERNMENT INITIATIVES

MAKE IN INDIA — Make in India

Skill India

National Manufacturing Policy

ADVANTAGE INDIA

- **Robust demand:** Manufacturing exports have registered highest ever annual exports of US$ 447.46 billion with 6.03% growth during FY23 surpassing the previous year (FY22) record exports of US$ 422 billion.
- **Increasing Investment:** Building on the competitive advantage of a skilled workforce and lower cost of labour, the manufacturing sector is also witnessing an increased inflow of capex and heightened M&A activity, leading to a surge in manufacturing output and resultant increased contribution to exports.
- **Policy support:** In May 2021, the government approved a PLI scheme worth Rs. 18,000 crore (US$ 2.47 billion) for production of advanced chemical cell (ACC) batteries; this is expected to attract investments worth Rs. 45,000 crore (US$ 6.18 billion) in the country. In September 2021, the government approved PLI scheme worth Rs. 26,058 crore (US$ 3.53 billion) for auto industry and drone industry to boost India's manufacturing capabilities.
- **Competitive Advantage:** The positive developments in the manufacturing sector, driven by production capacity expansion, government policy support, heightened M&A activity, and PE/VC-led investment, are creating a robust pipeline for the country's sustained economic growth in the years to come.

- **Import oriented economy**: In its formative years i.e after independence India did not followed export oriented strategy like south east Asian countries.
- **Lack of skills:** Only around 4% of the total workforce of India has gone through formal skill training.
- **Income Inequality**: It has led to concentration of wealth in few hands, thereby resulting in low purchasing power ultimately generating less demand.
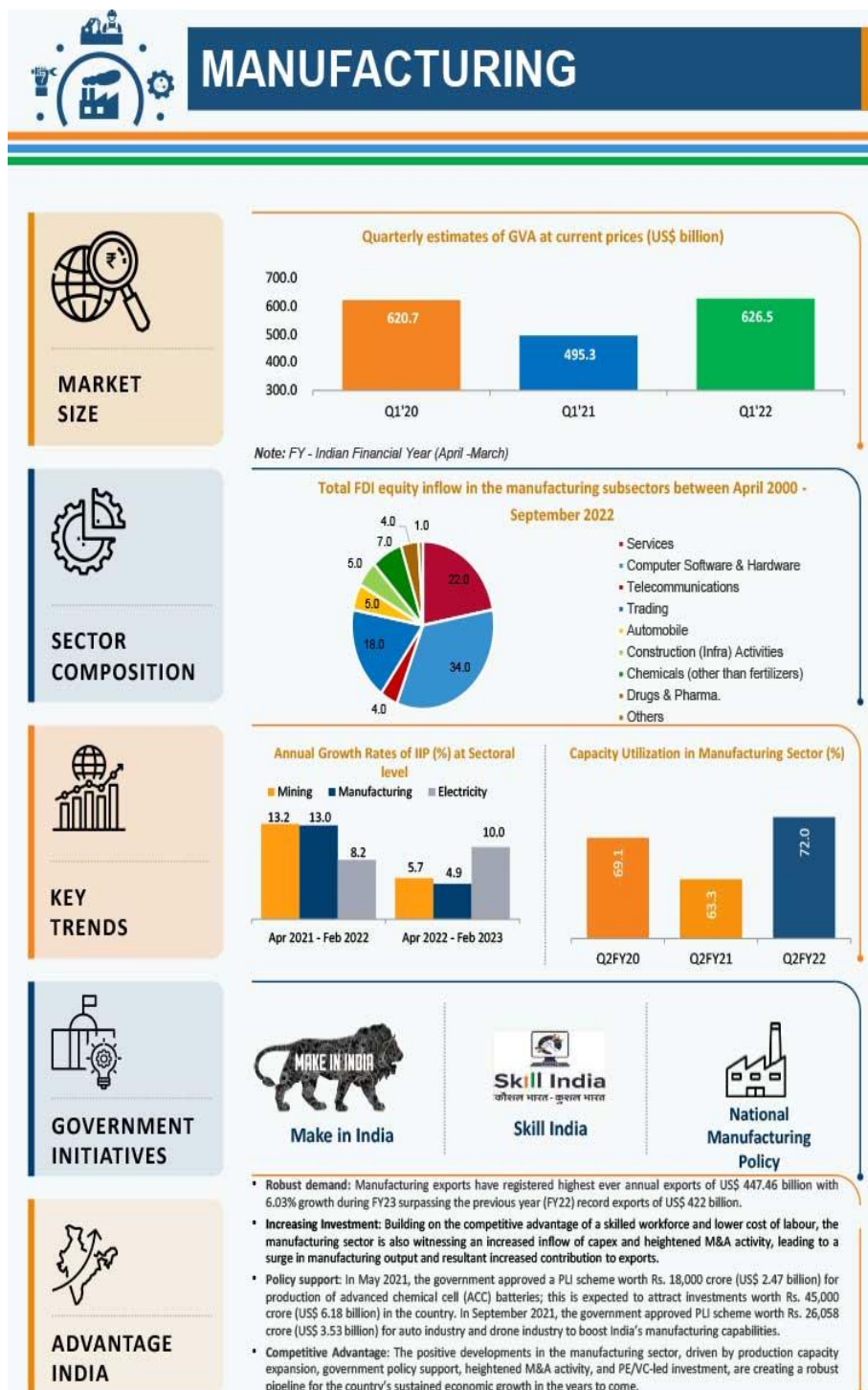
Government's initiatives regarding Manufacturing sector:

- In the **Union Budget 2023-24:** Start-ups incorporated within a time-period and meeting other conditions can deduct up to 100% of their profits. The income tax rate for new co-operative societies engaged in manufacturing activities has been lowered to 15%. The upper limit on turnover for MSMEs to be eligible for presumptive taxation has been raised to Rs. 3 crores. Relief in customs duty on import of certain parts and inputs like camera lens, lithium-ion cells. It proposes changes in the basic customs duty to rectify inversion of duty structure.

- **Ministry of Defence** has set a target of achieving a turnover of US$ 25 million in aerospace and defence Manufacturing by 2025, which includes US$ 5 billion exports.

- A new category of capital procurement **'Buy {Indian-IDDM** (Indigenously Designed, Developed and Manufactured)}' has been introduced in Defence Procurement Procedure (**DPP)-2016.**

- By 2030, the Indian government expects the **electronics manufacturing sector** to be worth US$ 300 billion.

- Moreover, the government's endeavours such as Modified Special Incentive Scheme **(M-SIPS), Electronics Manufacturing Clusters**, **Electronics Development Fund** and National Policy on Electronics 2019 **(NPE 2019)** have been a huge success.

- The Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors **(SPECS)** has been notified with an aim to strengthen the value chain for the manufacturing of electronic products in India.

Some of the major investments and developments:

- ❖ The combined index of **eight core industries** stood at 144.6 for Apr-Feb 2023 against 134.1 for Apr-Feb 2022.
- ❖ The Index of Industrial Production **(IIP)** from April-February 2023 stood at 137.1.
- ❖ In FY23, the Manufacturing Purchasing Managers' Index **(PMI)** in India stood at 55.6.
- ❖ In FY23 (until September 2022), **export of top 10 major commodities** (Engineering goods, Petroleum products, Gems and Jewellery, Organic and Inorganic chemicals, Drugs and Pharmaceuticals, Electronic goods, RMG of all Textiles, Cotton Yarn/Madeups, Rice, Plastic and Linoleum) stood at US$ 187.2 billion.

- **Make in India initiative**: To facilitate investment, foster innovation, build best in class infrastructure and make India a hub for manufacturing, design and innovation.

- **Industrial Corridor Development Programme**: To develop Greenfield Industrial regions/areas/nodes with sustainable infrastructure & make available Plug and Play Infrastructure.

ROBUST DEMAND
- Manufacturing exports have registered highest ever annual exports of US$ 447.46 billion with 6.03% growth during FY23 surpassing the previous year (FY22) record exports of US$ 422 billion.
- By 2030, Indian middle class is expected to have the second-largest share in global consumption at 17%.

INCREASING INVESTMENT
- Propelled by growth in priority sectors and driven by favourable megatrends, India's manufacturing sector has opened itself into new geographies and segments.
- Building on the competitive advantage of a skilled workforce and lower cost of labour, the manufacturing sector is also witnessing an increased inflow of capex and heightened M&A activity, leading to a surge in manufacturing output and resultant increased contribution to exports.

POLICY SUPPORT
- The Production Linked Incentive (PLI) scheme has been notified for Large Scale Electronics Manufacturing in India. The scheme aims to attract large investments in the mobile phone manufacturing and specified electronic components, including Assembly, Testing, Marking and Packaging (ATMP) units.
- Initiatives like Make in India, Digital India and Startup India have given the much-needed thrust to the Electronics System Design and Manufacturing (ESDM) sector in India.

COMPETITIVE ADVANTAGE
- The positive developments in the manufacturing sector, driven by production capacity expansion, government policy support, heightened M&A activity, and PE/VC-led investment, are creating a robust pipeline for the country's sustained economic growth in the years to come.

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- **Ease of Doing Business**: By Simplifying, Rationalizing, Digitizing and Decriminalizing Government to Business and Citizen Interfaces across Ministries/States/UTs.
- **PM Gati Shakti National Master Plan (NMP)**: A GIS based platform with portals of various Ministries/Departments of Government. Its approach is to facilitate data-based decisions related to integrated planning.
- **National Logistics Policy**: Aims to lower the cost of logistics and lead it to par with other developed countries.
- Schemes to encourage domestic manufacturing of pharmaceutical drugs including bulk drugs and medical devices are as follows; **Scheme for Promotion of Bulk Drug Parks**, Strengthening of Pharmaceutical Industry **(SPI)**, Promotion of **Medical Devices Parks**.
- **Modified Programme for Semiconductors and Display Manufacturing Ecosystem**: The Programme contained various schemes to attract investments in the field of semiconductors and display manufacturing.
- **FAME-India Scheme** (Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles): The Phase-II of FAME-India scheme proposes to give a push to electric vehicles (EVs) in public transport and seeks to encourage adoption of EVs.
- **Udyami Bharat Scheme**: empowerment of Micro Small and Medium Enterprises (**MSMEs**) - **MUDRA Yojana**, Emergency Credit Line Guarantee Scheme, Scheme of Fund for Regeneration of Traditional Industries **(SFURTI)**, Raising and Accelerating MSME Performance **(RAMP)** scheme.
- PM Mega Integrated Textile Region and Apparel **(PM MITRA)**: To set up 7 Mega Integrated Textile Region and Apparel (PM MITRA) Parks.

Challenges in Manufacturing sector

- **Competition:** India is late in focusing towards manufacturing sector. As a result other nations now have much developed manufacturing sector, which poses a stiff competition to India.
- **Regulations:** Manufacturing sector still faces regulatory issues like requirement of multiple licenses, red-tapism from bureaucracy, auditing rules, etc.
- **NPA's and lack of access to credit**: Banks and other financial institutions are marred by the problem of NPA's. They are unable to provide credit to manufacturing sector.
- **Logistics**: India's logistics cost is around 13-14% of GDP as compared to average 8% global costs. It has been one of the key reason due to which manufacturing sector is not taking off.

Way forward

	PEPPER IT WITH
	National Manufacturing Policy-2011, Make in India, LPG reforms 1990s, SEZ policy, Corporate tax rate reduction.

- **Skill development:** Workforce needs to be skilled in various domains so that the scarcity of skill labour can be rectified. This can be done by vocational training, introduction of policies and incentivizing businesses.
- **Export oriented economy**: Export focused manufacturing can open untapped avenues for MSME's. Capacity building of MSME's can be done by technology adoption, increased access to finance, mentorship and consultancy.
- **Investing in Infrastructure**: Greenfield and Brownfield infra investment in power, energy, rail, road and other sectors will lead to improved connectivity, reduced logistics cost, efficient supply chains and access to markets. This in turn will provide impetus to the manufacturing sector.

Corporate Debt Market Development Fund

News Excerpt

Finance Minister inaugurated Corporate Debt Market Development Fund (**CDMDF)** and initiated AMC Repo Clearing Limited **(ARCL).**

Pre-Connect

- Union Budget 2021-22 announced the creation of permanent institutional framework to enhance secondary market liquidity in Corporate Bond Market (CBM).
- Earlier this year, SEBI approved the framework of CDMDF.
- The corporate bond market has grown steadily in the last decade, with the outstanding stock of corporate bonds having increased four-fold from Rs 12 trillion to Rs 41 trillion in 2022. It includes REITs, InvIT's and Municipal debt securities.

About

Corporate Debt Market Development Fund (CDMDF)

- CDMDF is an alternative investment fund (**AIF)**, designed to cater to the requirements of the corporate bond market. It acts as a safeguard mechanism for securities and instills the confidence of investor in the market.

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➢ It has a total backstop facility of Rs 33,000 crore. Government contribution stands at Rs 30,000 crore while rest Rs 3000 crore will be provided by Asset Management Companies.

➢ It has twin objectives – CDMDF will acquire debt securities and enhance liquidity of secondary market.

➢ National Credit Guarantee Trust Company (NCGTC) will be the guarantor of the fund.

Govt. Bonds	• Treasury Bills (T-Bills), Government bonds,State Development Loans (SDLs).State Governments issue securities under UDAY(DISCOMs). Special GoI securities fo Public Sector Banks (PSBs).
Corporate Bonds	• Convertible Bonds, Non-Convertible Debentures (NCDs), Perpetual, Zero Coupon Bonds, Masala bonds, External Commercial Borrowings (ECBs) and Foreign Currency Denominated Bonds (FCBs).

Need of the fund:

- **Liquidity:** During pandemic, secondary market liquidity in corporate debt market declined significantly making it difficult to buy and sell securities.
- **Safety net:** For corporate debt market to grow, the investors and issuers must be assured of safety of their investment. CDMDF will provide the safety assurance to the stakeholders.
- **Growth of CBM:** The fund is needed for continued unrestricted growth of corporate bond market.
- **Trust:** The fund will build the trust among the stakeholders of the corporate bond market, thereby creating a environment conducive to long term investing.
- **Risk mitigation:** Fund will act as a cushion in market dislocations, by preventing sudden liquidity crunches and shortages.
- **Policy goals:** It aligns with the government commitment to boost the liquidity for secondary market and foster economic growth.
- **International recognition:** It will enhance India's image as an attractive financial investment destination and attract investors.

AMC Repo Clearing Corporation Limited (ARCL):

- Also known as Limited Purpose Clearing Corporation (LPCC) has been set up with the purpose of clearing and settlement of corporate bond repo transactions.
- It will develop an active repo market, which will, in turn, improve liquidity in the underlying corporate bond

SEBI's guidelines for CDMDF

The tenure of CDMDF will be 15 years (can be extended), initiated as a closed ended scheme.

✓ CDMDF to focus on low duration government securities, treasury bills and corporate bond with maturity not exceeding 7 days, during normal course of market. While during market dislocation, investment grade corporate debt securities to be purchased by CDMDF.

✓ Acquisition authority of CDMDF extends to listed corporate debt securities only, with a maturity of upto 5 years.

✓ Transactions at CDMDF should be conducted at fair prices and not at the distress prices.

Recent initiative regarding CDMDF:

- **Guarantee Scheme for Corporate Debt (GSCD)** for the purpose of providing guarantee cover against debt to be raised by Corporate Debt Market Development Fund (CDMDF).

- **Prevalent challenges in Corporate Bond Market:** According to **Bank for International Settlements –**

ALTERNATIVE INVESTMENT FUNDS

Category I Investment in Startups, SMEs and projects which are socially and economically viable

- Venture Capital Fund
- Infrastructure Fund
- Angel Fund
- Social Venture Fund

Category II Investment in Equity and Debt Securities

- Private Equity (PE) Fund
- Debt Fund
- Fund of Funds

Category III Investment aimed at short-term returns achieved by employing complex trading strategies

- Hedge Fund
- Private Investment in Public Equity Fund (PIPE)

- **Rating profile**: The corporate debt market is largely controlled by companies with strong credit ratings. Hence the corporations with high credit ratings are catered by CBM.
- **Mode of Issuance:** Privately issued bonds hold significant share as compared to public offerings. Public offerings have transparency and offers better price discovery.
- **Investor profile**: Majority of the investors are the domestic institutions such as insurance companies, banks, etc. The Participation of individual retail investors is limited.
- **Specialized Bonds:** India has been unable to attract the global pool of ESG (environmental, social, governance) funds.
- **Price transparency**: Lack of reliable and upto date information about financial markets. Also benchmark to figure out the value of bonds across different investors is not set.

Way forward:

- The CDMDF should expand its scope to other debt instruments viz **green bonds**, **social bonds**, etc. With so much focus on renewable energy and recent activation of social exchange in India, these debt instruments will give a boost to finances.
- It should work in tandem with **SEBI** and **RBI**, for the development of corporate debt market of India.
- CDMDF should **engage** with the market stakeholders – issuers and investors, to roll out customized initiatives according to their needs.

Backstop facility:
- ❖ It is a financial mechanism to provide a safety net against market dislocation and other crises.
- ❖ It instills confidence in market by assuring investors. For e.g., CDMDF provides backstop facility for investment grade corporate debt securities. If crises occur, CDMDF can step in and make purchases.

NCGTC:
- ❖ National Credit Guarantee Trustee Company Ltd is a private limited company incorporated under the Companies Act 1956, established by the Department of Financial Services, Ministry of Finance, as a wholly owned company of the Government of India, to act as a common trustee company for multiple credit guarantee funds.
- ❖ Credit guarantee programmes are designed to share the lending risk of the lenders and in turn, facilitate access to finance for the prospective borrowers.

PEPPER IT WITH
H R KHAN Committee on corporate bond market, NPA crisis, Equity market, Round-tripping, BEPS, onshoring/reshoring.

Index Funds

News Excerpt

The survey conducted by Motilal Oswal Asset Management Company **(MOAMC)** revealed that **87%** of the respondents **prefer Index funds**, while **42%** opt for Exchange Traded Funds **(ETFs).**

Pre-Connect
About Index Funds:

- Index funds are a type of **passively** managed **mutual funds** that aims to replicate the performance of **specific market index**, such as **NIFTY 50** or **SENSEX**. These are a tool for passive investing.
- Passive investing broadly refers to a **buy-and-hold portfolio strategy** for long-term investment horizons, with minimal trading in the market. Index investing is perhaps the most common form of passive investing, whereby investors seek to replicate and hold a broad market index or indices.
- Other types of Passive investing include – **ETF's** and **Mutual funds**. Some popular index funds in India are – HDFC index fund, Nippon India Index, ICICI, TATA Nifty 50, SBI Nifty, etc.

Index funds	ETFs
→ Passively managed mutual fund.	→ Passively managed investment fund.
→ Managed by fund managers.	→ Traded on stock exchanges like individual stocks.
→ Aims to replicate the performance of specific market index.	→ Traded throughout the day like stocks.
→ Traded at the end of the trading day.	→ No minimum investment requirements.
→ May have minimum investment requirements.	→ Offer wider variety of investment options – specialized sectors, commodities and international markets.
→ Available for a range of asset class – stocks, bonds and even commodities.	→ Provide real time transparency into their holdings.
→ Disclose their holdings on a quarterly basis.	

Category	Passive Investing	Active Investing
Process	Buy and hold securities for longer term	Frequent buying and selling of securities
Objective	Mirror significant stock indexes to be at par with the market	Investors try to outperform the market and reap more and more profits
Tenure	Long-term investment goals	Both short-term and long-term investment objectives

Reasons for popularity

➢ **Lower expense Ratios:** Expense ratio represents the portion of the funds' assets that are used to cover the costs associated with managing and operating the fund. Lower expense ratio means that a larger portion of the investment is retained, rather than being used to cover fund expenses.

➢ **Consistent returns:** The returns obtained from index funds are generally consistent in nature as compared to other passive investing tools such as ETF's and mutual funds. Thereby assuring a security of investment.

➢ **Change in tax laws regarding fixed income mutual funds:** Laws have influenced investor's decision to invests in index funds.

➢ **Transparent:** Index funds shows the volatility of the market right away, hence appears a safer alternative to invest.

Benefits provided by Index funds

✓ Index funds are often recommended for **long-term risk averse investors** because of their key advantages like – consistency and lower costs. Over the longer periods, stock market tends to appreciate and index funds provide **good returns**.

✓ They reduce the risk of individual stocks picking as index funds **offer diversification** over a wide range of stocks and sectors.

✓ They don't require constant **monitoring**, **research** and tactical **decision making** by the investors.

Challenges of over reliance on Index funds

▪ Index funds are designed to match the performance of their **underlying index**, this means they **won't outperform** the index. It limits their ability to produce good returns.

▪ Similarly, Index funds are constrained by the **composition** of their **underlying index**, this means if some stocks in the index **performs poorly**, index funds will **still hold** onto them. They do **not** have **flexibility** to adjust their portfolio.

▪ Index funds are highly **concentrated** in few stocks and sectors, it makes them **vulnerable** to **higher exposure** to the specific sectors.

▪ Index funds are **dominated** by **large cap stocks**, leaving out **mid cap** and **small cap ignored**.

Way forward

✦ There is a need of having **diverse portfolio** as compared to much dependence on index funds.

✦ Investors should be **educated** regarding the **lopsided nature** of their investment, so as to **minimize the risk** associated with it.

✦ Further, the authorities should create a **personalized risk assessment** of the investor, in line with the investment **objectives**, **risk tolerance** and **time of investment** of the investor.

> **PEPPER IT WITH**
> Bharat bond ETF, Sovereign gold bonds, Hedge funds, Investment banking.

India's gold demand

News Excerpt

In the **second quarter of 2023**, the demand for gold in India **fell by 7%** from last year, according to a report by the World Gold Council.

About

• The **World Gold Council** is an organization composed of major global gold **mining companies**. Its **primary role** is to promote **responsible mining** practices and establishing the Conflict-Free **Gold Standard**.

• A committee on **'Transforming India's Gold Market'** was constituted by **NITI Aayog** to recommend measures for tapping into the potential of the sector and provide a stimulus to exports, economic growth and employment. A report titled 'Transforming India's Gold Market' was finalized and submitted to the Government for consideration in February 2018.

• **Mandatory Hallmarking** of Gold Jewelry has come into force from **2021.** Recently, the Ministry of Consumer Affairs order stated, only hallmark unique identification number **(HUID)** Hallmarked jewelry is to be sold by the BIS registered jewelers from 01 April 2023.
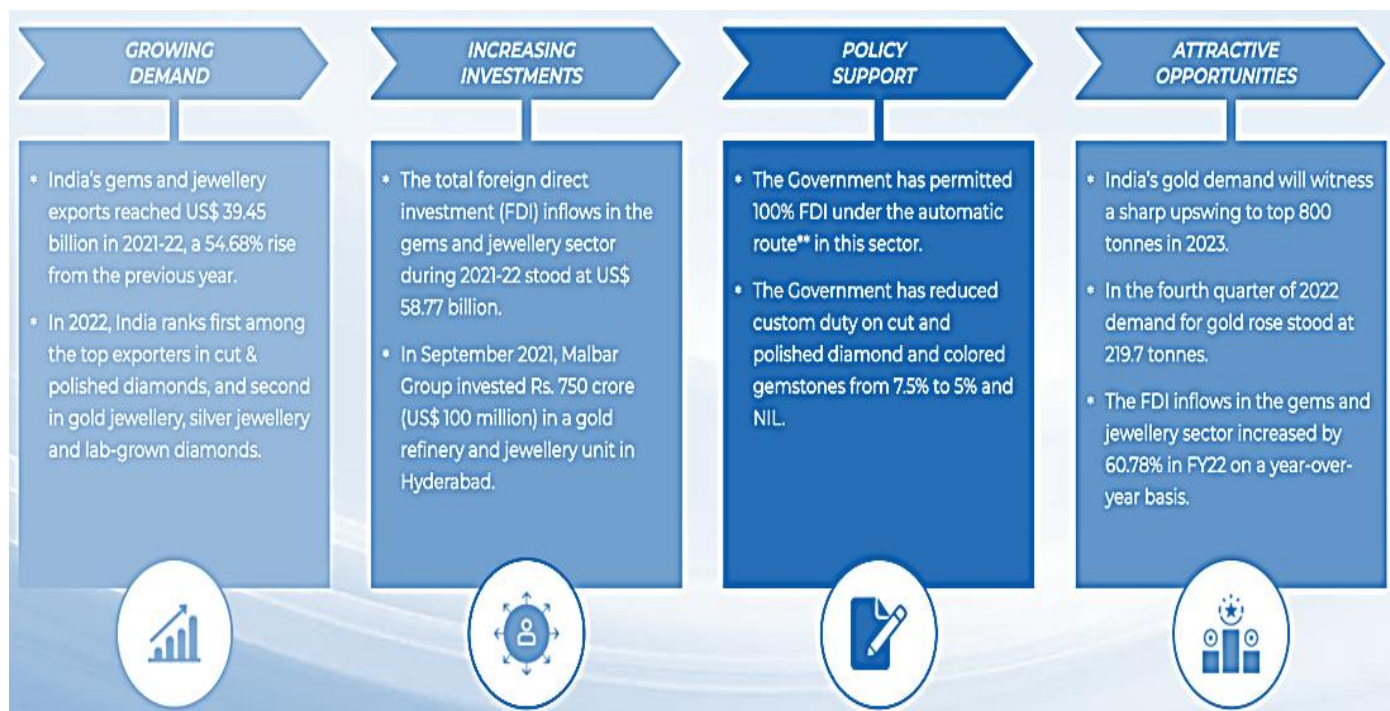
Gold market in India

➢ **According to IBEF**, as of February 2021, India's gold and diamond trade contributed **~7.5%** to India's Gross Domestic Product **(GDP)** and **14%** to India's total **merchandise exports**.

➢ India's gems and jewelry market size was at **US$ 78.50 billion** in FY21, and exports reached US$ 39.14 billion in 2021-22, a **54.13% rise** from the previous year.

➢ **Cumulative FDI inflows** in diamond and gold ornaments stood at US$ 1,213.06 million between April 2000-March 2022, according to the Department for Promotion of Industry and Internal Trade **(DPIIT).**

➢ The gems and jewelry sector are likely to **employ ~8.23 million** persons by 2022, from ~5 million in 2020.

➢ India's gold demand dropped to **158.1 tonnes** in the April-June quarter of 2023 from 170.7 tonnes in the same quarter of the previous year.

➢ The **gold demand value** in Q2 of 2023 was Rs 82,530 crore, an increase of 4 per cent in comparison with Rs 79,270 crore in the April-June period of 2022.

Causes of the decline in demand

✓ **High gold prices:** The affordability of gold was impacted by high prices in the second quarter of 2023, which led to the **decline** in demand.

✓ **2000 rupee note factor**: Announcement by RBI, regarding gradual **withdrawal of 2000 rupee** note from circulation led to panic buying of gold using the notes. Gradually the demand declined.

✓ **Central bank behavior**: Due to political and economic circumstances, **Central Bank of Turkey** was the **net seller** of gold in first quarter of 2023 and resumed purchasing in June. Hence there was a slowdown in buying from central banks, including the RBI.

Gold related schemes

▪ **Gold Monetization Scheme (GMS):** Aims to bring in **circulation** the gold held by households and institutions, simultaneously reducing the country's reliance on the import of gold.

▪ **Revamped Gold Deposit Scheme (R-GDS):** At least **1 gram** of Gold and **no maximum limit**. Interest and capital gains **exempted** from tax.

▪ **Revamped Gold Metal Loan Scheme (GML):** Instead of cash Jeweler borrows gold. The **sale proceeds** of the jewelry made, settles the GML.

▪ **Sovereign Gold Bond Scheme:** It seeks to encourage people to buy gold bonds instead of actual gold. The gold bonds will be **denominated** in multiples of gram of gold. Limit is from **two grams to 500 grams** per person per fiscal year.

• **Gold Coin and Bullion:** The government issues gold coins.

Paper gold:

❖ It refers to gold investments held in a **paper or digital form**, ownership of the precious metal without direct physical possession. Forms of Paper Gold are -

❖ **Gold Exchange Traded Funds**: These are **investment funds** that trade on stock exchanges.

❖ **Digital Gold:** When purchasing gold online, the buyer's acquired gold is stored in vaults managed by the seller, and it can be easily bought or sold using **digital platforms**.

❖ **Sovereign Gold Bonds (SGBs):** These are denominated in grams of gold and serve as an alternative to physical gold due to their ability to mitigate the risk of theft.

❖ **Gold Mutual Funds:** These funds typically allocate their assets to gold ETFs or foreign gold funds.

Government's Initiatives:

❖ India has signed an **FTA with the UAE** which will further boost exports and is expected to reach the target of US$ 52 billion.

❖ The Government has **reduced custom duty** on cut and polished diamond and colored gemstones from 7.5% to **5% and NIL**.

❖ The **Revised SEZ Act** is also expected to boost Gems and Jewelry exports.

❖ The government has **reduced import duty** for Gold & Silver (from 12.5% to 7.5%) and Platinum & Pallidum (from 12.5% to 10%) to bring down the prices of precious metals in the local market.

❖ Indian Government made **hallmarking mandatory** for Gold Jewelry and Artefacts.

❖ **Amendment** under the Prevention of Money Laundering Act **(PMLA)**, notifying dealers in precious metals and stones, will maintain records of cash transactions worth Rs. 10 lakh or more cumulatively with a single customer.

Gold dominated economy:

Positives	Negatives
❖ **Stability:** Gold is considered a stable asset over time. This translates to a stable value of currency over the long term, which gives confidence to businesses and investors.	❖ **Risk of Deflation:** Individuals and businesses delay their spending in hopes of even lower prices in the coming future, which brings the risk of deflation.
❖ **Cross border trade:** Gold provides a common standard across borders, hence facilitates international trade. It provides predictability by reducing uncertainties.	❖ **Affects global interactions:** Countries that have flexible monetary system and fixed gold standards often found economic engagement difficult.
❖ **Savings and Simplicity:** Gold backed currency provides a hedge against financial crises, relatively easy to understand and traditionally some part of savings of households is in gold.	❖ **Prone to geopolitical tensions:** Changes in geopolitical events – turmoil, regime change, gold mining, disasters affect the supply of gold. This led to the country's dependency on global events and affects sovereignty.
❖ **Control of Inflation:** Supply of gold is limited, making its production stable. It prevents the governments from printing excess money. Thereby controlling inflation.	❖ **Lack of flexibility:** In times of recession and financial crises, the government may find it difficult to bring out changes in monetary policy. Because of the limited supply of gold.

Gold vs Investment:

✦ Demand and investment in gold is driven by **safe-haven appeal, firstly** it holds onto its value or even appreciate during **volatilities and uncertainties** in the market. **Secondly** gold could be converted into jewelry at a later stage. Individuals, households and businesses prefer to store their wealth in gold.

✦ Another factor for investment in gold is its **liquidity**. It can be readily bought and sold in different markets in different **geographical regions**.

✦ Investment in general is a broad term that encompasses a wide range of assets **- stocks, bonds**, **real estate, commodities, SIP's, mutual funds, etc**. All these have different levels of risks and provide different returns, the **level of risk** is usually **directly proportional** to the **level of returns**. Risk in investment can be negated by holding **diverse portfolio**.

✦ In a nutshell, the debate of investment in gold vs investment in general depends on the **financial goals** and risk tolerance capacities of individuals.

Way forward:

> **Committee of NITI Aayog** in its report **'Transforming India's Gold Market'** recommended **five focus areas**: Make in India in Gold, Financialization of Gold, Tax and Duty Structure, Regulatory Infrastructure, Skill Development and Technology Upgradation.

> With gold playing such an important **role** in the Indian society and Indian economy, there is a need for comprehensive **gold policy.**

PEPPER IT WITH

Wealth tax, Black market-parallel economy, Fiat currency, Commodity money, Gold standard-IMF.

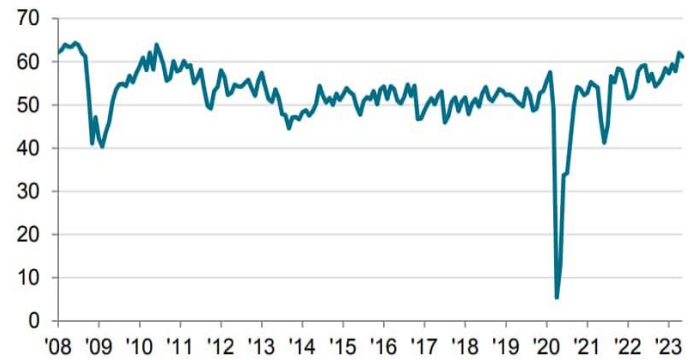## India's Purchasing Managers' Index (PMI)

News Excerpt
According to the latest survey of the S&P Global India services India's service sector surged to a **13-year high in July amid buoyant demand.**

Pre-Connect
- India's economy has historically depended heavily on the service sector, which generates **more than half of its GDP**.
- In July, the S&P Global India services Purchasing Managers' Index (PMI) jumped to **62.3**, which is higher than **June's 58.5** and **May's 61.2.**
- A poll conducted by **Reuters** had predicted the PMI to be around **58.0 for July**.
- This score is the highest since June **2010**.
- The continuous expansion of the service sector, evident by the PMI consistently staying above the **50-mark since August 2021,** showcases its resilience and importance in sustaining economic growth.

S&P Global India Services Business Activity Index
sa, >50 = growth since previous month

What is PMI and How is it Calculated?
- The Purchasing Managers' Index (PMI) is a key economic indicator that gives us insights into the **health of the Manufacturing and Service sector**.
- The S&P Global India Services PMI, is compiled by **S&P Global using responses from approximately 400 service sector companies.**
- These sectors encompass **consumer (excluding retail), transport, information, communication, finance, insurance, real estate, and business services.**
- The panel is categorized by sector and company **workforce size, relative to GDP contributions.**
- These surveys ask about various factors like **new orders, Employment Environment, supplier deliveries, Inventory Level, Price, Production and other factors affecting economy.**
- The data collected helps gauge whether these factors are **better or worse** than the previous month.

Meaning of PMI Numbers
- The PMI is a number that ranges from **0 to 100**. If it's **above 50, it indicates the manufacturing sector is growing (expanding),** while **below 50 suggests a contraction.**
- The further the number is from 50, the greater the extent of the growth. For instance, a PMI of 60 signifies more robust expansion than a PMI of 52.
- **Comparing current month's PMI with previous months helps understand growth rate**, with higher PMI indicating faster growth and lower PMI indicating slower growth.

Significance of PMI
- PMI is a **widely followed indicator** that provides valuable insights into overall economic health and specifically the manufacturing sector.
- It is a good way to **anticipate economic booms and downturns.**
- Monthly PMI provides **valuable insights for business owners, managers, investors, and traders, enabling informed decisions** and understanding of **economic trends.**
- **Central banks (RBI)** even use PMI **to make decisions about interest rates.**
- It's released early in the month and acts as a **leading indicator for economic activity.**
- It arrives before official data on industrial output, core sector manufacturing, and GDP growth.

Impact on Different Aspects

PMI isn't just for economists and banks. It influences various other areas:

- o **Equity Market:** PMI affects stock market movements.
- o **Bond and Currency Markets:** It also has an impact on bond and currency markets.
- o **Business Decisions:** For business owners, it aids decisions regarding raw material sourcing and inventory management.
- o **Job Seekers:** Job seekers can gain insights into whether job opportunities are increasing or decreasing.

Conclusion

- The PMI is an effective instrument for **analyzing economic trends, particularly those affecting the Service industry.**
- It is essential for many stakeholders due of its **broad influence and timely distribution.**
- So, keeping an eye on the PMI can give **useful information and aid in decision-making** in the fast-paced world of business and finance.

Interoperability of Cards

News Excerpt

Recently, The RBI has released a draft circular aiming to **revolutionize consumer financial management** by promoting interoperability in credit, debit, and prepaid cards, allowing consumers to choose their preferred networks.

Pre-Connect

- As per the RBI data, there were **87 million active credit cards in May 2023**, an increase of roughly **1.43% month over month.** On the other side, there were **974 million debit cards** in circulation, up **0.7% over the previous month.**
- The **rise of e-commerce** and the development of tools like the **Unified Payments Interface (UPI)** have increased the demand for flexible, safe, and frictionless payment solutions.

Relevance of the proposal

- ➢ It is a **customer-centric strategy** that gives people the freedom to select from a variety of card networks, including recognizable brands like American Express, Diners Club International, Mastercard, RuPay, and Visa, is at the core of the RBI's plan.
- ➢ Currently the customers have **no autonomy to choose their preferred card network** when applying for a credit or debit card. Instead, they are constrained by the issuing bank's choice of network affiliation.
- ➢ Present system **hinders healthy competition** and blocks innovation in the payments sector.
- ➢ New proposal mandates card issuers to give customers the option to choose their preferred card network either during the card issuance process or at a later time, the RBI's proposal aims to correct this problem.
- ➢ According to the RBI, the **current agreements between card networks and issuers do not adequately accommodate user choice.**
- ➢ The RBI also recommends that cards be provided **across numerous networks** to stop issuers from engaging into contracts that ban customers from using other card networks.
- ➢ This step makes sure people are not limited to a single network and may **take advantage of the unique benefits provided by many networks.**

> ❖ Interoperability is the technical compatibility that enables a payment system to be used in conjunction with other payment systems.
>
> ❖ Interoperability allows Prepaid Payment Instruments (PPI) Issuers, System Providers and System Participants in different systems to undertake, clear and settle payment transactions across systems without participating in multiple systems.

Choice and Interoperability

- ✓ It Gives people the choice to select their preferred card networks and gives them the ability to **customize their payment alternatives to suit their particular needs** and preferences.
- ✓ It includes **access to exclusive deals and benefits** connected to numerous networks.
- ✓ The **flexibility to change networks** in response to evolving circumstances gives users more leverage over their financial choices.
- ✓ The end user ultimately benefits from this **enhanced power over market dynamics**, which fosters healthy competition between card networks and issuers.

Impact on the Economy

- By allowing consumers to choose their preferred card networks, the RBI aims to **stimulate healthy competition** among card networks and issuers.
- **The competition can drive innovation**, improve service quality, and lead to the introduction of new benefits and rewards programs, ultimately **enhancing the consumer experience.**
- Increased interoperability can **boost digital transactions**, especially when integrated with platforms like UPI, which can contribute to the growth of the **digital economy.**
- The flexibility to switch networks based on specific needs, such as **international travel**, can lead to more informed financial decisions and optimized spending, positively influencing personal financial management.

Challenges

- **Technical integration of multiple card networks** and ensuring seamless interoperability can be complex and require meticulous coordination.
- Enforcing compliance by card issuers to provide options without bias and **ensuring transparent communication of benefits and risks to consumers** might pose challenges.
- **Balancing the interests of various stakeholders**, such as card networks, issuers, and consumers, while ensuring fair practices and preventing any anti-competitive behavior, requires careful consideration.
- Development of an **Online Dispute Resolution (ODR) system** designed to address customer grievances and provide a platform for monitoring the progress of contested transactions.

Concerns

- **Ensuring data security and privacy** as transactions are routed through different networks.
- **Standardizing security measures across various networks** is crucial to prevent vulnerabilities.
- The **possibility of confusion** among consumers regarding the benefits and features of different networks could arise.
- Some card networks might fear **losing market share** if consumers are allowed to easily switch between networks, which could impact their business models.

PEPPER IT WITH
RuPay cards, BHIM, AePS, NPCI, Neo bank, Challenger bank.

Conclusion

- The plan to expand card network options and interoperability is a **crucial step in changing how people handle their own finances.**
- People can **customize their payment experiences to suit their tastes, enjoy special perks, and contribute to a more competitive and innovative financial ecosystem** by having the freedom to choose and switch between card networks.
- The RBI's proposal has the potential to bring in a period of **increased payment flexibility and convenience for people looking to optimize their financial strategy** as it moves closer to implementation.

Reverse Book-Building Process

News excerpt

SEBI is reviewing delisting regulations to prevent the manipulation of shares. It may allow **fixed-price delisting** instead of the current reverse book-building method.

Pre-Connect

- **The SEBI (Delisting of Securities) Guidelines 2003** were published by the Securities and Exchange Board of India and govern the removal of securities from stock exchanges. The rules, among other things, give a promoter's voluntarily delisting a general structure.
- **The SEBI (Delisting of Equity Shares) Regulations 2009**, published by the Securities and Exchange Board of India, allow for the voluntary removal of equity shares from stock exchanges.
- In an effort to prevent manipulation of shares of a firm that has chosen to delist from the stock markets, SEBI is examining the rules for listed companies that choose to delist.

Delisting of securities

- Removing a company's securities from a stock market is referred to as delisting. When a company is delisted, the stock market no longer allows the trading of its securities. Delisting could be **obligatory or discretionary.**
- When a company decides to delist its **securities compulsorily rather than voluntarily,** it is penalized for failing to immediately submit required paperwork or satisfy other listing agreement criteria.
- If a company wants to delist its securities, it must **buy back 90% of all the outstanding shares.**

About Reverse Book Building

✓ Reverse Book Building is a mechanism by which the Acquirer/Company offers to buy back shares from its shareholders.

✓ **The SEBI (Delisting of Equity Shares) Regulations 2009,** published by the SEBI, set forth the general framework for voluntary delisting by a promoter or acquirer through a procedure known as Reverse Book Building. It also allows for the voluntary delisting of equity shares from stock exchanges.

✓ Reverse Book building happens in the same manner as book building happens, the only difference is here the shareholders place their sell orders along with a bid-ask price.

Cases that require to follow the Reverse Book building process

▪ The delisting of securities may occur in situations when the **public shareholding in the company falls below the minimal threshold** outlined in the listing criteria or listing agreement. Takeovers, mergers, and acquisitions, for instance, in which a promoter or another party purchases the majority of the company's shares.

▪ Cases where a **promoter or member of management has attempted to combine their shares of the company in a way that causes the public shareholding to fall below the minimal threshold** outlined in the listing agreement or conditions.

▪ Delisting is required as a result of **orders from stock exchanges or SEBI.**

Reverse Book Building Process

✛ The company owner engages **merchant bankers and trade members** in the delisting process.

✛ Shareholders deposit shares and submit bids via chosen trade members, meeting or exceeding the set minimum price.

✛ **Merchant bankers determine the final price** after a defined period, owner's discretion to accept or decline offers up to that point.

Problems companies face in delisting through reverse book-building process:

> **Market Manipulation:** Concerns arise as certain operators buy shares before delisting, inflating prices unsustainably, and disadvantaging others.

> **Unfair Pricing:** Current process and 90% delisting threshold can undervalue shares. Rising prices due to delisting anticipation raise fairness concerns.

> **Interests Imbalance:** Balancing the interests of promoters and shareholders in delisting is complex. Promoters may seek lower delisting prices, while shareholders want accurate value.

> **Threshold Challenge:** Requiring 90% for delisting complicates the process. Limited shareholder participation can prevent delisting, causing stalemates.

Keki Mistry committee recommendations

❖ Phasing out the stock exchange route for buybacks. This is because buybacks conducted through the stock exchange route are not ideal for investors.

❖ They lack proportional acceptance of shares to holdings, resulting in volatile stock prices during lengthy buyback periods. Additionally, investors remain uncertain about whether the company or others purchase their shares.

SEBI's Review and Proposed Changes

⇒ **Keki Mistry's** suggestions were given to SEBI, which acknowledged the necessity for a revision of the delisting rules.

⇒ Instead of depending entirely on the reverse book-building process, the regulator is considering allowing corporations to delist shares at a set price.

The Advantages of a Fixed Price Mechanism

> **It simplifies transactions and negotiations** by establishing a predetermined price, reducing the need for complex price discovery processes. This predictability promotes efficiency and ease of trade.

> **Fixed pricing can enhance market stability** and **investor confidence**, as it minimizes the fluctuations and uncertainties associated with variable pricing systems.

> For consumers, **fixed pricing provides transparency**, allowing them to make informed purchasing decisions without worrying about sudden price changes.

Conclusion

o The reverse book-building process and its drawbacks are the focus as SEBI works to reshape delisting requirements.

o The emphasis currently is on how a fixed price system might be able to help with these issues.

PEPPER IT WITH

Insider trading-SEBI regulations, TK Vishwanathan committee, T+1 settlement system.

o As stakeholders eagerly await the publication of a consultation paper on delisting norms, it is abundantly clear that the future of delisting in India is set to undergo a transformation that aims to **strike a balance between the interests of promoters, shareholders, and the integrity of the market as a whole.**

Sovereign Green Bonds (SGB)

News excerpt
The PFRDA Chairman recently stated that the regulator supports pension funds investing in **sovereign green bonds** (SGBs).

Pre-connect
- In 2008, the **World Bank** issued the first-ever labeled green bond to support the financing of projects addressing climate change.
- **The International Energy Agency's (IEA) 2021 World Energy Outlook suggests 70% of $4 trillion** needed for net-zero must go to emerging economies. Sovereign issuance can attract crucial capital inflow.

  In keeping with the ambition to significantly reduce the carbon intensity of the economy, the **Union Budget 2022-23** announced the issue of Sovereign Green Bonds.

  India's updated NDC targets include achieving **net-zero emissions by 2070**, reducing emission intensity by **45% by 2030**, reaching **50% cumulative electric power capacity**, and adding **2.5 to 3 billion tons of CO2** equivalent through expanded forest cover by 2030.

  The **'Panchamrit' plan**, announced at **COP26**, strengthens India's leadership in reducing global warming by aiming for a temperature increase of less than 1.5°C.

  Green bond global cumulative issuance reached **$4 trillion**, as of February 2023.

FINANCING CLEAN PROJECTS

- The proposed issuance of ₹16,000 cr green bonds in this fiscal is the first step by the govt to develop a credible bond market for financing green projects
- The bond issuance is timed around India taking over the G20 presidency
- As the fastest-growing major economy, India will continue to draw a lot of investors who eye decent returns on their investments

About Sovereign Green Bonds
➢ Green bonds are used to finance environmentally friendly projects by a variety of organizations, including governments and businesses.

➢ These bonds are **a subclass of green bonds** that fund programmes like the development of renewable energy sources, adaptation to climate change, and environmental preservation.

➢ They **assist governments with revenue generation** while promoting environmentally friendly development and addressing climate change.

➢ The ability of sovereign green bonds to provide both financial gains as well as positive environmental impacts attracts investors.

➢ These bonds strengthen transparency through **regular third-party verification** and project-specific reporting.

➢ Sovereign Green Bonds take advantage of the **growing market for environmentally friendly investments** to support global initiatives for a greener and more sustainable future.

Green Bond Mechanism

1. INVESTMENT
Bonds issued for existing or new projects

2. SCREENING PROCESS
Projects screened and selected based on their ability or potential ability to meet criteria (location, cash-flow stability, sectoral priority, etc.)

3. PROJECTS IDENTIFIED
Intended to contribute to adaptation, mitigation, resilience, or all outcomes

4. GREEN BOND FRAMEWORK
Work objectives, strategy, and process should comply with sustainable practices

5. REPORTING AND VERIFICATION
Financial allocation, use, and project impacts reported for transparency
External verification conducted for enhancing project credibility

Significance
✓ "Sovereign Green Bonds serve many purposes that support sustainable development. They encourage **low-carbon economies and improve climate resilience** by providing funding for activities addressing the effects of climate change, such as **critical infrastructure and renewable energy**."

Panchamrit Plan
During the COP26 event, the Prime Minister introduced Panchamrit, a collection of five commitments:
1. Reach 500GW non-fossil energy capacity by 2030
2. 50 per cent of its energy requirements from renewable energy by 2030
3. Reduction of total projected carbon emissions by one billion tonnes from now to 2030
4. Reduction of the carbon intensity of the economy by 45 per cent by 2030, over 2005 levels
5. Achieving the target of net zero emissions by 2070

- ✓ In order to protect ecosystems and biodiversity, these bonds also assist in **preserving the environment by funding habitat restoration and sustainable land use.**
- ✓ They demonstrate governmental commitment to **promoting global sustainability and developing global collaboration** because they are in line with the Paris Agreement and the United Nations Sustainable Development Goals.
- ✓ Sovereign Green Bonds **increase the amount of green financing available and motivate governments to give sustainability a high priority** by attracting environmentally conscious investors.
- ✓ They encourage the **expansion of the green finance market, fostering innovative thinking and entrepreneurial spirit** in the clean energy and technology industries.
- ✓ The bonds **foster accountability and transparency**, increase public knowledge of environmental issues, and encourage a more comprehensive concept of sustainable development.

Challenges

- ▪ Ensuring truthful and open projects, staying away from **misleading claims**, especially in the face of complex regulations.
- ▪ **Establishing uniform criteria** for assessing environmental effects while relying on validated techniques.
- ▪ Even with limited information, **getting reliable information** is essential for making wise decisions.
- ▪ Maintaining a balance between practicality and thoroughness, **avoiding exorbitant time and financial commitment.**
- ▪ **Resolving market fragmentation** for "green" investments and promoting the flow of funding to **sustainable projects.**
- ▪ Decreasing the **"green premium"** to draw in more investors while addressing the high costs of environmentally friendly activities.

Balancing environmental goals and financial viability is a concern:

- ✦ While the sovereign green bond program is lauded for its **environmental benefits, concerns linger about the financial viability** of green projects.
- ✦ The cost of arranging these bonds, along with the potential for higher coupon rates, might overshadow the touted financial advantages of the **greenium (green premium).**
- ✦ **Striking a balance between environmental impact and economic feasibility** is crucial to ensure the long-term success of the sovereign green bond program.
- ✦ There is a need to address the **challenges faced by investors in assessing the environmental impact of funded projects.**
- ✦ Establishing reliable impact monitoring and evaluation mechanisms will alleviate concerns and offer investors a clearer understanding of the program's contributions to sustainability.

SGB: Addressing Environmental concerns

- > **Environmental Transformation:** India's green bond initiative invests in renewable energy, clean transportation, water management, and biodiversity conservation to combat carbon emissions and climate change resilience.
- > **Nurturing Green Assets:** The program promotes green assets development, sustainable practices, and infrastructure advancements in various sectors, fostering a culture of environmental responsibility.
- > **Future Resilience Building:** India prioritizes sustainable water management and biodiversity preservation for future resilience, fostering climate-resilient nationhood.
- > **Legacy of Sustainability and Prosperity:** Sovereign green bond program creates a lasting legacy, fostering renewable energy and conservation for a cleaner, prosperous future, ensuring sustainable growth and a healthier environment for generations.

Way forward

- ⇒ **Global certification and standardization** must be developed to guarantee honest and reliable project evaluation.
- ⇒ **Through technology partnerships**, governments could improve data infrastructure while raising the standard of data on environmental impacts.
- ⇒ **Information sharing and investor awareness** efforts can increase investor engagement.
- ⇒ To unify the green bond market and increase liquidity and cross-border engagement, **global cooperation is essential.**
- ⇒ Regulation stability for private investment is a requirement of **long-term sustainability measures.**
- ⇒ Project expenses may be compensated by financial incentives, and accountability is ensured through **standardized impact measurement standards.**
- ⇒ **Developing competence** and **promoting knowledge exchange** allow for expert project appraisal.
- ⇒ Through the pooling of knowledge and resources, **strategic partnerships with international organizations, banks, and businesses** increase the effectiveness of sovereign green bonds.

> **PEPPER IT WITH**
> Bond, Green bond, International Energy Agency, Climate change, COP26

External benchmark-based lending rate (EBLR) mechanism

News excerpt

The Reserve Bank of India (RBI) has asked the banks to be transparent in resetting the **interest rate and EMIs of floating-rate home loans under the external benchmark-based lending rate (EBLR)** mechanism.

About EBLR

- The lending rates set by banks based on external benchmarks are known as external benchmark lending rates.
- The RBI mandated that banks develop a standard external benchmark for loans starting on October 1, 2019.
- The following are four external benchmarking mechanisms:
  - **The repo rate** was announced by the Reserve Bank of India.
  - The yield on a **91-day Treasury-bill**
  - The yield on the **182-day Treasury-bill**
  - Any **Financial Benchmarks India Pvt. Ltd. (FBIL)** developed market interest rate benchmarks.

Any one external benchmarks-
- Repo rate
- Government of India 3-Months Treasury Bill yield
- Government of India 6-Months Treasury Bill yield
- Any other benchmark market interest rate published by the FBIL.

+

Cost of CRR
Cost of Funds
Operating Cost
Profit Margin
Spread

=

Banks Lending Rate

- EBLR in banking is extremely relevant because banks cannot offer loans to customers lower than the EBLR rate. Banks use EBLR to decide the Home Loan interest rate and interest rates of other loans.

Shift from IBLR to EBLR

- Several issues with the IBLR (Internal Benchmark Lending Rate) have led to the shift to EBLR.
- Banks only **partially distributed the advantages of the RBI's reduction in the repo and reverse repo rates** to borrowers. In such a case, the borrowers were at a loss.
- The loan rate is affected by several factors. These factors could include the **bank's spread, its current financial picture, its list of depositors, and its non-performing assets (NPAs).**
- Since several factors were connected to the internal benchmark rate (IBLR), **no actual change in effective interest rates could be made.**
- Transmission of lending rates is **hampered by the requirement for greater transparency** in the determination of internal benchmark rates.

> **Internal Benchmark Lending Rate (IBLR):**
>
> The Internal Benchmark Lending Rates are a set of reference lending rates that are calculated after considering factors like the bank's current financial overview, deposits and non-performing assets (NPAs), etc. BPLR, Base rate, and MCLR are examples of Internal Benchmark Lending Rates.

Benefits of EBLR for the Borrowers and the Banks:

- ✓ The EBLR rate has various advantages for both **borrowers and lending banks.**
- ✓ The spread over the EBLR is entirely up to the discretion of the banks.
- ✓ Since the EBLR is an external rate, **loan applicants will be notified sooner of a policy rate reduction action** affecting lending rates.
- ✓ For borrowers, the interest rate calculation procedure is clearer and simpler to grasp.
- ✓ The interest rates that various banks charge can be compared by borrowers. This makes it **easier for consumers to compare different loan options** because they are aware of each bank's profit margin relative to the fixed rate of interest.

How does EBLR impact the borrower's EMI outgo?

- Based on the rise in outstanding loans related to external benchmarks, banks indicated a strong improvement in transmission as a result of the ongoing liquidity surplus conditions.
- A Home Loan taken out before October 1, 2019, is most likely to be linked to a **Marginal Cost of Funds-based Lending Rate (MCLR).**
- The MCLR Home Loan is linked to a one-year MCLR rate and banks add their margin/spread on the MCLR rate to get the customer the final interest rate.
- A borrower can switch his Home Loan linked to MCLR to an external benchmark by informing his bank.

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MCLR:
- The RBI implemented the MCLR, or Marginal Cost of Fund-based Lending Rate, system of calculating the interest rate on credit extended in April 2016.
- The MCLR is used for all rupee loans that are disbursed and credit (loan) limits that are renewed after April 1, 2016.
- Banks currently use the MCLR as their internal benchmark rate when granting credit and home loans. Another name for it is a regime with floating interest rates.

The Impact of EBLR on the Economy

➕ **The transmission of monetary policy will noticeably improve** as a result of the significant rise in EBLR-based lending.

➕ The transmission of the monetary policy illustrates how **adjustments to the policy rates by the central bank impact different areas of economic activity,** such as lending and inflation.

Proposed RBI's measures for greater transparency in home loans and EMI:

> The RBI has identified instances of **lenders significantly extending loan tenures without proper consent or communication with borrowers.**

> To address this issue, the RBI is planning to establish a conduct framework that all regulated entities must follow.
>   1. Clearly communicate with borrowers for resetting the tenor and/or EMI
>   2. Provide options for switching to fixed-rate loans or foreclosure of loans
>   3. Disclose various charges incidental to the exercise of the options
>   4. Ensure proper communication of key information to borrowers.

Conclusion

⇒ Transparency and borrower-centricity are ushered in with the implementation of the External Benchmark-Based Lending Rate (EBLR) mechanism by the RBI.

⇒ **Borrowers get a deeper understanding** of how interest rate computations work by connecting floating-rate loans to external benchmarks. In the face of fluctuating interest rates, the option for borrowers to switch to fixed-rate loans ensure financial flexibility.

PEPPER IT WITH

Monetary policy transmission, Bank spread, NPA crisis, P J Nayak committee, Nachiket Mor committee, Indradhanush reforms, EASE reforms.

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INTERNATIONAL RELATIONS

UNSC – First meeting on Artificial Intelligence (AI)

News Excerpt

The United Nations Security Council **(UNSC)** held its **first meeting** on the **threats AI poses** to international peace and stability.

Pre-Connect

- In India, **NITI Aayog** circulated a **note** to establish a cloud computing platform **AIRAWAT** (Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform).
- NITI Aayog in its document National Strategy on AI has mentioned **"Principles of responsible AI"** - Protection and Reinforcement of Positive Human Values, Accountability, Transparency, Privacy, Inclusivity, Equality and Reliability.
- **USA** published a blueprint of **AI Bill of Rights**; it outlined principles for an effective use of AI.
- Similarly, **UK** released a **whitepaper** regarding responsible use of AI, specifically mentioning the principles to be followed by the private sector in usage of AI.
- Last year, **China** enacted a law to regulate the **algorithms**, based on AI.

Why need for regulations:

- **Industrial Revolution 4.0** is built on the **foundation of Artificial Intelligence**, the AI has weakened the difference between the **human intelligence** and **machine learning.**
- AI is being used in various sectors like **healthcare**, **education**, **judiciary**, etc. It is being used to **diagnose diseases**, assisting in **analysis** and helping judges with **legal research** (SUPACE and SUVAS portal).
- It is still an **evolving concept**, which creates a lot of **skepticism** regarding its future uses. Hence, a **sense of urgency** and caution is seen in regulating AI. For eg threat of losing jobs, career switches, etc.
- Role AI played during the **pandemic** in research of **vaccine** and scaling up its **manufacturing**. E.g US company **Moderna** was among the first to release an effective COVID-19 vaccine. **AI algorithms** and robotic automation helped them move from manually producing around 30 mRNAs each month, to being able to produce around 1,000 a month.
- AI can also help accelerate **achieving SDG** faster.

Key concerns regarding AI:

Political concerns:

- AI can be used to **negate freedom and democracy** by censoring, constraining, repressing or disempowering people; posing a threat to peace and stability of the nation. For e.g.

- ❖ **National Strategy on AI**: It proposes to develop an **ecosystem** for the **research and adoption** of Artificial Intelligence i.e., **#AI FOR ALL**.
- ❖ NITI Aayog has identified **five sectors** viz. **healthcare**, **agriculture**, **education**, **smart cities and infrastructure** and **transportation**, to focus its efforts on implementation of AI.

India's initiatives with AI:

- ❖ MeitY, NASSCOM, and DRDO created the **roadmap for AI** in India.
- ❖ Centre for Artificial Intelligence and Robotics **(CAIR).**
- ❖ Biometric identification, Facial recognition, Criminal investigation, Crowd and Traffic Management, Digital agriculture.
- ❖ US-India Artificial Intelligence Initiative.
- ❖ **National Artificial Intelligence (AI) Mission** will include creating **Centers of Excellence (CoE)** - National Centre for Transformation AI
- ❖ **MCA 21, version 3.0.** use of the latest technologies like data analytics, AI, and ML.
- ❖ **NRF** formed under National Education Policy **(NEP) 2020**, to boost research across segments, including AI
- ❖ **NCERT** in pursuance of The National Education Policy 2020, introducing **curriculum of artificial intelligence** course at a secondary level.
- ❖ **Supreme court** is using **AI tools SUPACE** (Supreme Court Portal for Assistance in Court's Efficiency) and **SUVAS** (Supreme Court Vidhik Anuvaad Software).

Political action	Possible impact
China is racially profiling ethnic minorities through facial recognition techniques **(FRT)** and creating separate habitations for them.	**Socio-economic parameters** of the community will degrade and at times they can possibly **retaliate**, affecting the harmony and **creating rifts** in societies.
Europe is using AI in identification of migrants and denying them entry into the European borders.	It will further lead to **migrant crises**, disregard of **Geneva convention** and create **ethical concern**s.

Ethical and Moral concerns:

- ✓ AI poses moral questions of **accountability** in several cases. For e.g
- ✓ If a **self-driving car** hits someone, who will be held responsible? the owner of the car or the programmer who made a code for the car.
- ✓ If a **disease is not diagnosed** through AI algorithms, who will be held responsible ? The **examiner** or the **coder** of the algorithm.
- ✓ Firstly, AI can be **used in battlefield** against humans. Secondly, who will be held responsible for the **lethal decisions** on battlefield?
- ✓ **Deepfakes** of women and children used in pornography.

Technological concerns:

- ▪ **Technological hegemony** can be created by **developed nations** using AI at the cost of developing nations. By the time technology reaches developing nations, various **barriers** can be cropped up for developing nations to limit AI's use.
- ▪ **For e.g** Developed nations reaped the **benefits** of industrial revolution at the cost of **climate change**. By the time technological advancement began in developing nations, various **limitations** on the name of **sustainable development** have been put on developing nations.
- ▪ Another key concern is **mass layoffs** and **job displacement** by companies, raising the issue of **unemployment**.
- ▪ AI gives rise to various **cybercrimes**. A recent example is of scamming money from people by creating deepfake videos of their close ones asking for money.

Security concerns:

- ▪ AI could aid **reckless quest** for **proliferation** of weapons of mass destruction by **state and non-state actors** alike. Various **treaties** signed and agreed upon till now could become **redundant** if this happens. E.g **statute of IAEA**, **outer space treaty**, **NPT,** etc.
- ▪ **Infiltration** across the borders is a concern, furthermore the Fake Currency Notes **(FCN)** designed through AI can break a nation's economy.

Way forward:

- ✛ As suggested in the meeting, an **independent body** to **oversee, regulate** and **enforce AI regulations** can be created. This body should consist of **experts**, who are well versed with the concept of AI.
- ✛ UNSC Secretary General has said, the UNSC will come up with a **legally binding agreement** regarding AI by **2026** which will **ban AI in weapons of war**. Meanwhile, a globally agreed set of **international rules** can be created.
- ✛ AI should be **tied to principles** of upholding **freedom and democracy**, respect for **human rights, rule of law** and security, protection of **intellectual property rights, privacy** and **trustworthiness**.

Applications — **Considerations**

PLANET — Environment & Natural Resources
- Climate modelling
- Smart fishery
- Conservation
- Land usage monitoring
- Data center electricity
- Smart grid
- Digital twin
- Smart city

Well-being
- Drug discovery
- Precision medicine
- e-Health
- Surveillance
- Citizen score
- Autonomous vehicle
- Deepfake / Misinformation
- Predictive justice
- Slaugtherbot

PEOPLE / Inclusivity
- Disaster forecast
- Smart farming
- Supply chain
- Personalized learning
- Virtual teacher
- Unequal data representation
- Profiling
- Labor market
- Big nudging

PROSPERITY — Economic Growth
- Business intelligence
- Digital government
- Decision-making
- Automation/Robotics
- Adaptive manufacturing
- Chatbot
- Cyberwar
- Cybersecurity
- Trustworthy AI

PEPPER IT WITH

ChatGPT, Internet of Things, IBM's deep blue machine, RAISE 2020 (Responsible AI for Social Empowerment), Global Partnership on Artificial Intelligence (GPAI), Asilomar AI principles, GDPR.
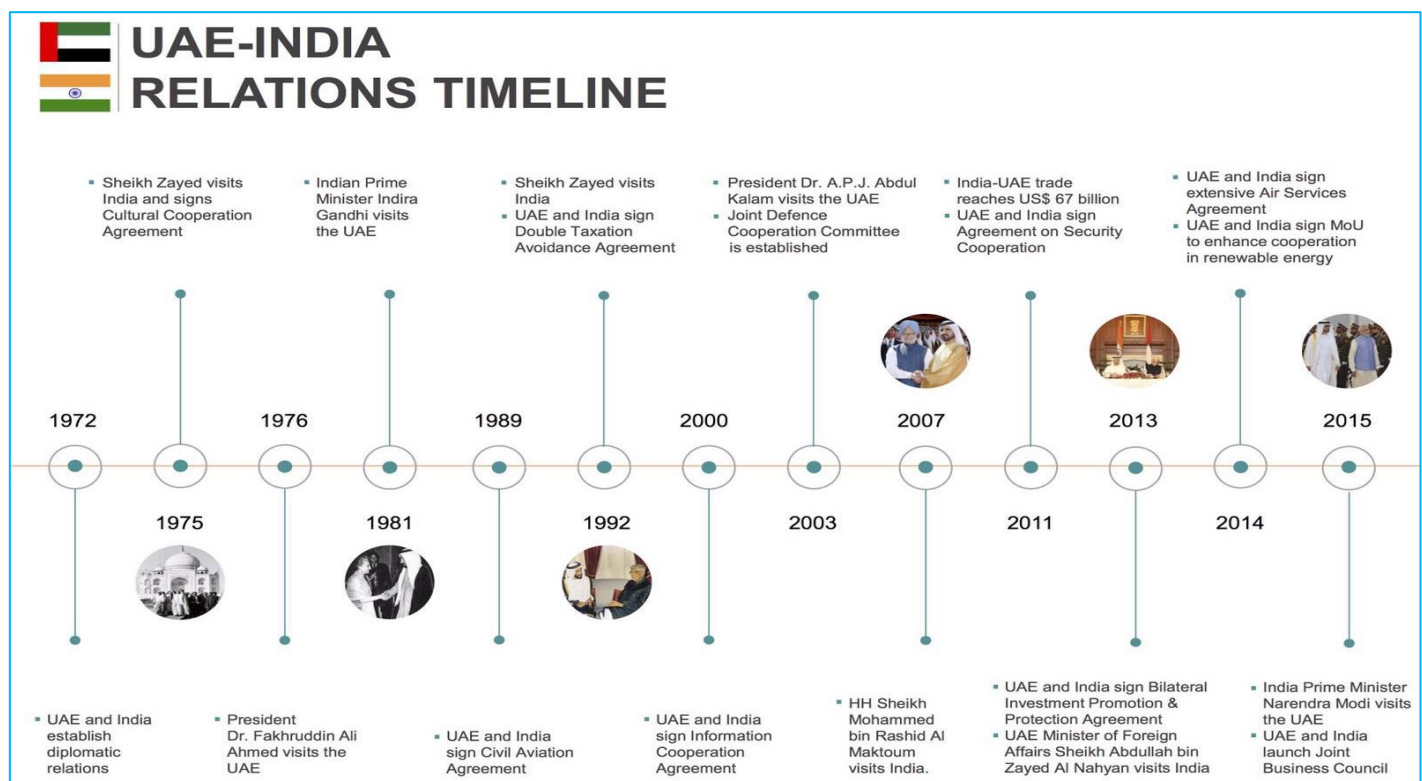
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India-UAE deal to trade with local currencies

News Excerpt
During PM's recent visit to UAE, Reserve Bank of India **(RBI)** and its counterpart the **Central Bank of the UAE** signed **two** memorandums of understanding (MoUs).

Pre-Connect
- **India-UAE trade** rose to **$85 billion** in **2022**. The UAE was India's **third largest** trading partner and **second-largest** export destination in FY2022-23. Conversely, India was the UAE's second largest trading partner.
- UAE is the **fourth largest investor** in India. Its cumulative **FDI inflows** between April 2000 and September 2022 stood at **around $15.2 billion**.
- India received close to **$90 billion in remittance** flows from around the world in **2022**, with the **UAE** being the second-largest source contributing **18%** of it.
- The major items of **export from India** to the UAE include mineral fuels, mineral oils and products, bituminous substances, mineral waxes, pearls, precious stones, metals, electrical machineries and equipment. The major items **imported by India** are petroleum crude and petroleum related products.

UAE-INDIA RELATIONS TIMELINE

1972 – Sheikh Zayed visits India and signs Cultural Cooperation Agreement
1975 – UAE and India establish diplomatic relations
1976 – Indian Prime Minister Indira Gandhi visits the UAE
1981 – President Dr. Fakhruddin Ali Ahmed visits the UAE
1989 – Sheikh Zayed visits India; UAE and India sign Double Taxation Avoidance Agreement
1992 – UAE and India sign Civil Aviation Agreement
2000 – President Dr. A.P.J. Abdul Kalam visits the UAE; Joint Defence Cooperation Committee is established
2003 – UAE and India sign Information Cooperation Agreement
2007 – India-UAE trade reaches US$ 67 billion; UAE and India sign Agreement on Security Cooperation
2011 – HH Sheikh Mohammed bin Rashid Al Maktoum visits India.
2013 – UAE and India sign Bilateral Investment Promotion & Protection Agreement; UAE Minister of Foreign Affairs Sheikh Abdullah bin Zayed Al Nahyan visits India
2014 – India Prime Minister Narendra Modi visits the UAE; UAE and India launch Joint Business Council
2015 – UAE and India sign extensive Air Services Agreement; UAE and India sign MoU to enhance cooperation in renewable energy

About:
➢ **Local Currency Settlement System (LCSS):** 1st MOU facilitates LCSS, it is a trade in local currencies between two countries. For e.g an exporter in India can make an invoice in **Rupees (INR)** and an importer in UAE can make the payment in **Dirhams (AED)**. Hence, reducing the reliance on third party currency.

➢ **Interlinking of Payment Systems:** 2nd MoUs links India's Unified Payments Interface **(UPI)** with its UAE-counterpart Instant Payment Platform **(IPP)**. This is alongside the linking of card switches, that is, **RuPay switch** and **UAESWITCH**. The agreement would also explore the linking of payment messaging systems of the two countries.

Internationalization of Rupee:
❖ **Masala Bond:** Introduced in 2014, aim was to fund infrastructure projects and internationalize the rupee.
❖ **Currency Swap Agreements:** India has currency swap agreements with various countries, some being Japan, Sri lanka, Australia, Singapore, etc.
❖ **IFSC in Gujarat:** GIFT city has increased the usage of rupee in international transactions.
❖ **India-Russia** is using **Vostro accounts** in bilateral trading activities.
❖ **NPCI** signed an agreement with **Singapore Pay Now** to activate UPI payments in Singapore.
❖ **NPCI** allowed **international numbers** of resident Indians of **10 countries** to avail **UPI facilities**

Possible outcomes of the initiative:

✓ **Bilateral Trade**: India and UAE, have signed **"Comprehensive Economic Partnership Agreement"** which aims to increase bilateral trade. Now, the signing of LCSS will definitely give the CEPA a boost.

✓ **Reliance on Dollar**: With the two countries trading in their respective local currencies, their reliance on dollars will **decrease** further **strengthening the INR and AED**.

✓ **Oil diplomacy:** India, the world's **third biggest oil importer** and **consumer**, currently pays for UAE oil in dollars. Trading in local currencies will give a boost to the oil trade between both the countries.

✓ **Global grouping:** With such close interlinking of the economy of both countries and UAE being a major power in GCC; India can exert a **sense of authority** over Pakistan.

Risks associated:

▪ **Currency Fluctuations:** Using local currencies can reduce but **doesn't eliminate exchange rate risks**. Both currencies can still fluctuate in their values against each other. This fluctuation can impact on the profitability and value of transactions.

▪ **Diplomatic ire:** West Asia is a region known for its **geopolitical complexities** and **conflicts**. India's engagement with UAE could potentially **attract the ire** of other nations in the region.

▪ **Settlement Risk:** Due to different settlement timing and mechanism, there is a **risk of settlement failure** when rapid movement of funds between different payment systems takes place. Leading to transaction **disputes** and financial **losses.**

▪ **Geopolitical and Cultural Risks:** Interlinking payment systems make financial **transactions vulnerable** to geopolitical **tensions** while differences in **business practices** and **regulatory environment** could lead to delays in payment processing.

Significance:

✓ **For Exporters and Importers:** The focus on denominating **export contracts** and **invoices** in the local currency helps **avert** exchange-rate risks, which further **facilitates** the scope to discover **competitive pricing**. It will cover all **current** and permitted **capital account transactions.**

✓ **For Financial Institutions:** It could lead to enhanced avenues for **cooperation** among the **banking systems,** thereby contributing to the **expansion** of trade and economic activity for both countries and development of the **INR-AED** foreign exchange **market**.

✓ **For Resident Indians: UPI-IPP linkage** would enable fast, convenient, safe, and cost-effective cross-border fund transfers. **Card switches** will facilitate **mutual acceptance of domestic cards** and processing of card transactions. Broadly, the arrangement would help optimize **transaction costs** and settlement **time** for transactions.

✓ **For Remittances**: Formal remittances involve high fixed costs and hence are expensive to provide, **low-income** individuals **refrain** from remitting, or are incentivized to use cheaper informal alternatives. It is challenges like these that the UPI-IPP linkage would try to address in real-time.

Way forward

The **regulatory authorities** and **financial institutions** should conduct a thorough **risk assessment** of trading with local currencies and then only go forward with the arrangement.

Meanwhile there is a need to develop robust **cybersecurity measures** and establish **contingency plans** for cyberattacks and technical failures.

India has to do a **deft balancing act**; it needs to **connect** with **other stakeholders** in West Asia and **engage** with them strategically.

> **PEPPER IT WITH**
> SWIFT, UPI 2.0, NPCI, AePS, De-dollarisation

Colombo Security Conclave

News Excerpt

A joint expedition of ocean scientists from India, Bangladesh and Mauritius was organised by the Indian National Centre for Ocean Information Services (INCOIS), Ministry of Earth Sciences under the regional framework of Colombo Security Conclave (CSC).

Pre-Connect

- CSC evolved out of trilateral meetings between NSAs (National Security Advisors) and Deputy NSAs from India, Maldives, and Sri Lanka, starting in 2011.
- Since its revival and re-branding as the CSC in 2020, Mauritius was added as a member of the grouping, with Bangladesh and the Seychelles as observers.

Agenda of CSC: In March 2022, the group adopted an agenda of five pillars.

- Maritime safety and security

- Countering terrorism and radicalisation
- Combating trafficking and transnational organised crime
- Cybersecurity and protection of critical infrastructure and technology
- Humanitarian assistance and disaster relief.

Significance:

➢ CSC comprises Indian Ocean islands and littoral nations, thereby it has potential to counter China's growing presence and influence in the region.

➢ The small group provides an opportunity for India to address its own strategic concerns in the Indian Ocean while providing an opportunity for the island and littoral nations to address their own challenges.

➢ Since July 2021, the CSC's exercises have included on maritime search and rescue; cybersecurity; coastal security; and investigation of terrorism cases.

Challenges:

✓ If the CSC does expand its membership, it should not duplicate the work of the other Indian Ocean region multilateral groups like IORA, IONS, otherwise it might impact the effectiveness of the limited membership group.

✓ The group is vulnerable to domestic political changes unless it can better institutionalise itself within the participant's systems.

✓ With the CSC subsuming the former India-Sri Lanka-Maldives maritime security dialogue, India does not currently hold a regular and dedicated bilateral maritime security dialogue with any of the other five CSC countries.

✓ CSC lacks 'concrete roadmap', with a 'defined charter of objectives' to institutionalise cooperation.

✓ India's dominant role in the grouping, which creates sensitivities among some members who do not want the group to be viewed as anti-China, limiting the willingness of the group's smaller nations to cooperate on sensitive security issues.

Conclusion:

Mini-lateral forums like CSC are significant in accentuating India's image as the 'Preferred Security Partner' (PSP) to its maritime neighbours. From an Indian perspective, the growing subregional framework through the CSC is a further example of the importance of the six countries in India's strategic vision for the Indian Ocean.

PEPPER IT WITH

Shangri-La Dialogue (Asia Security Summit), Vision SAGAR, Net security provider, 9-dash line, Malacca strait, 2+2 dialogue, QUAD

Multilateral Development Banks

News Excerpt

Recently finance minister said that in **G20 presidency**, the **primary focus** of India is **strengthening** Multilateral development banks **(MDBs).**

Multilateral development Finance

MDBs are **international financial institutions** formed with the **objective** of encouraging **economic development** in developing economies. The **two types of MDBs** are –

first, which are largest and best-known institutions, **global MDB's** (e.g., world bank group).

Second, the banks which are formed by developing and low-income countries together to provide credit to their members and other countries, **regional MDB's** (e.g., Asian Development bank, AIIB, New Development bank, Caribbean Development Bank).

- Some important MDBs where **India is a member** – Asian Development Bank (ADB), World Bank Group, African Development Bank (AfDB), New Development Bank (NDB), International Monetary Fund (IMF), etc.
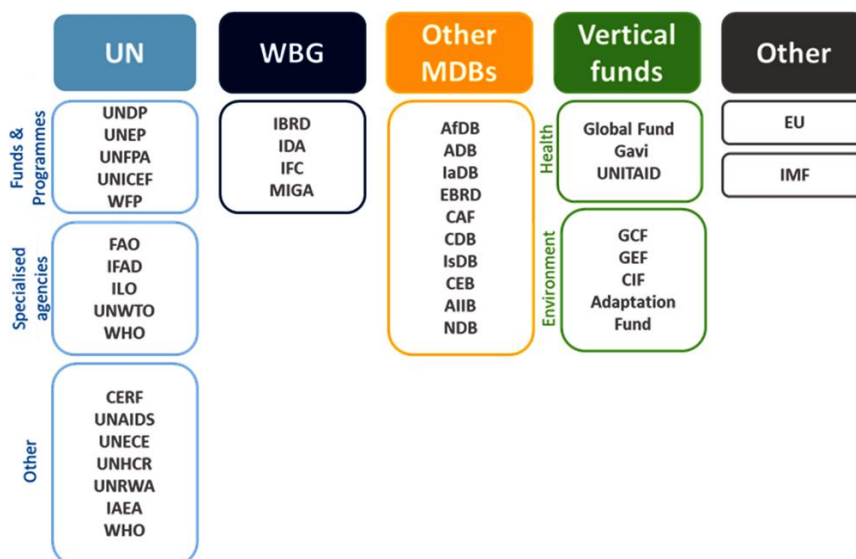
- Recently under G20 Finance Track Discussions, talks on escalation of debt issues in vulnerable economies and the importance of managing global debt vulnerabilities were held.

Need for MDBs:

- **Development projects:** Funding to development projects such as infrastructure, transportation, energy, water, healthcare, education, etc is necessary for the growth of the country. Countries are not able to gather resources from themselves, hence need of MDBs.
- **Stability and Resilience**: Countries are struggling to maintain reserves and going through balance of payments crises, recent example can be cited of **Sri Lanka**. MDBs could provide a helping hand to them and navigate them through their worst of their times.
- **Poverty alleviation**: It requires financing of several projects such as education, healthcare, and sanitation. By extending the credit facilities to the underdeveloped economies and the economies in transition, living standards of the people could be raised.

- **Sustainable development**: There is a need to maintain a balance between economic development and environment protection. Arrangements of finances for the projects that supports clean and renewable energy, water treatment and biodiversity conservation is the need of the hour.
- **Capacity Building**: Building the capacities of nations by not only providing them with financial support but also with technical expertise is required. MDBs can help governments with formulation of policies and regulations, and their implementation.

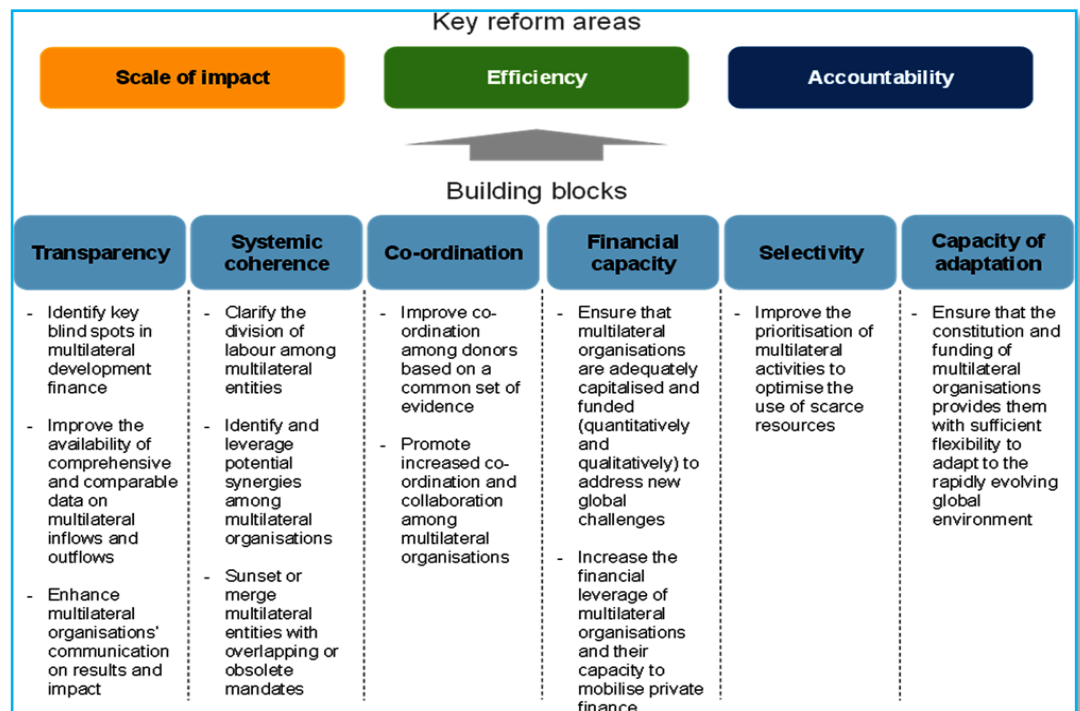| Global MDB's	Regional MDB's
• **Worldwide membership with countries from various geographic regions as its member. E.g IMF and World bank group.** • **Broader mandate. E.g infra, healthcare, education, poverty reduction, etc.** • **Significant funding sources due to global membership.** • **Complex governance structure, representation based on shareholding.**	• **Limited members**, that too from a particular geographic region. E.g **ADB**, **AfDB**, **NDB.** • **Specialized mandate**. e.g regional challenges. • **Limited funding sources** as compared to global MDB's. • **Decision making** is influenced by the **priorities and interests** of regional member countries.

G20 meet and the MDBs:

G20 finance track discussed various challenges faced by MDBs.

- MDBs face increasing demand from the donor and borrower countries to **expand** their **lending operations**. MDBs are currently not adequately equipped in meeting the rising demands.
- Member countries have different development goals, priorities and agendas. **Consensus building** and **rationalizing priorities** among them is a tedious task.
- **Some countries** are unable to manage their debt and get involved in a **debt crisis**. MDBs are not having proper tools to **analyse** the **debt vulnerabilities** of the nation's going through debt crises.
- MDBs are also prone to **political stability** and **conflict** in the nations, as these lead to stalled projects and **ensuring continuity** of the project is a challenge for MDBs.
- MDBs are not effectively utilizing their **links with private channels** such NGOs, developmental aid agencies and businesses. The coordination mechanism is fragmented which results in **non-flow of funds**.

Advantages of MDBs

✓ MDBs have played a key role in contributing to **infrastructure development** of several **African** and **Asian countries**. Infrastructure development does not only lead to better infrastructure but also **accelerates** the **economic development** of the nation.

✓ MDBs are **tool of cooperation** and **collaboration** among countries, enabling them to collectively address the issues affecting them.

✓ MDBs support projects that **streamline** trade processes, **logistics and supply chains** and provide financial assistance to help countries to expand their **export capacities**. Thus, helping in **trade facilitation**.

✓ They collect financial resources and **pool** them, which enables the countries to get access to **larger volume of funds**. In absence of MDBs, countries would not be able to gather such large pool of finances.

✓ **Private sector participation**: MDBs encourage private sector participation by providing guarantees and risk mitigation.

✓ MDBs prioritize gender equality and social inclusion in their projects, thus helping in bridging gaps and creating equal opportunities for marginalized sections of society.

Key reform areas

| Scale of impact | Efficiency | Accountability |

Building blocks

Transparency	Systemic coherence	Co-ordination	Financial capacity	Selectivity	Capacity of adaptation
- Identify key blind spots in multilateral development finance - Improve the availability of comprehensive and comparable data on multilateral inflows and outflows - Enhance multilateral organisations' communication on results and impact	- Clarify the division of labour among multilateral entities - Identify and leverage potential synergies among multilateral organisations - Sunset or merge multilateral entities with overlapping or obsolete mandates	- Improve co-ordination among donors based on a common set of evidence - Promote increased co-ordination and collaboration among multilateral organisations	- Ensure that multilateral organisations are adequately capitalised and funded (quantitatively and qualitatively) to address new global challenges - Increase the financial leverage of multilateral organisations and their capacity to mobilise private finance	- Improve the prioritisation of multilateral activities to optimise the use of scarce resources	- Ensure that the constitution and funding of multilateral organisations provides them with sufficient flexibility to adapt to the rapidly evolving global environment

MDBs and the New Tech:

▪ **Unified Payments Interface (UPI):** UPI's easy to use interface through mobile devices can help MDBs penetrate in the **underserved regions**. MDBs can use digital payments of UPI to **disburse payments** of the projects to increase **transparency** and **accountability**. The funds can be efficiently disbursed to the beneficiaries through UPI, also the **lower transactions cost** of UPI is lower as compared to traditional payments methods.

▪ **Digital Public Infrastructure (DPI):** DPI's can **provide digital platforms** to MDBs to check the **progress** of the project, **monitor** its implementation and **track** its outcomes. DPI enables real time **sharing of data**, best practices, and **research findings**. The large amount of data generated from DPI can help in **informed decision-making** process. DPI allows citizens to engage in planning, assessment, and feedback process, which further helps ensuring that project meets the **local needs**.

▪ **Virtual Digital Assets (VDAs):** VDA's operate on **blockchain technology**, which can be used to create and enforce **smart contracts**. MDB's could explore decentralized finance **(De-Fi) applications** powered by VDA's such as decentralized lending, borrowing and other financial services to complement traditional funding sources.
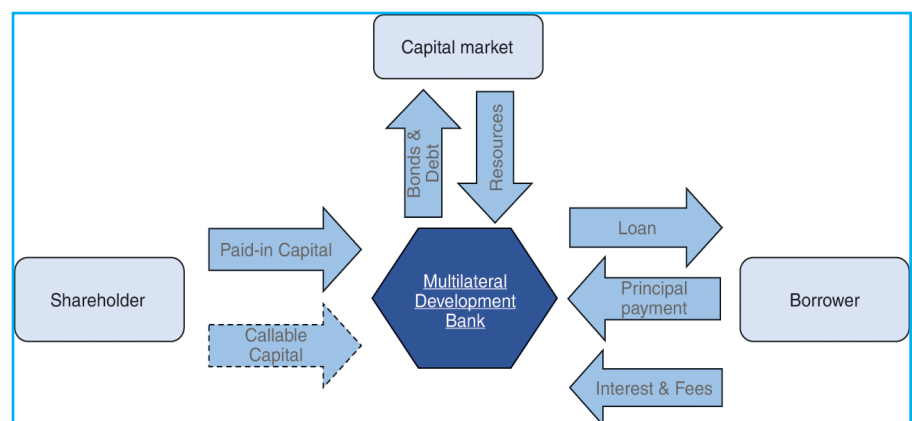
Way forward

- Indian G-20 Presidency has set up an **Independent Expert Group on Strengthening MDBs**. The Expert Group, in the **Volume-I of their Report** has proposed a **triple agenda** for the MDBs –
- **firstly**, Efforts to tackle global challenges, alongside MDB's core mission of poverty reduction and shared prosperity.
- **Secondly**, to triple their sustainable lending level by 2030.
- **Thirdly**, to enhance their financial strength to capital adequacy improvements and general capital increases.
- Indian presidency of G20 should try to foster **recommitment to multilateralism**.
- **Adoption of UPI, DPI and VDA's** in the framework of MDB's could lead to enhancement of their functioning, efficient use of the resources and strengthening of their vulnerabilities.

> **PEPPER IT WITH**
>
> BRICS Bank, AIIB, Asian Development Bank, Minilateralism, Reserve Tranche Position-IMF

Jeddah Peace Talks: Ukraine - Russia

News Excerpt

More than 40 countries, including China, India, the United States, Brazil, and European countries, but not Russia, took part in Red Sea port city of Jeddah talks.

Pre-Connect

- Russia's territorial gains in Ukraine peaked in March 2022, when it controlled some 22% of pre-2014 Ukraine. Since then, Ukraine recaptured some land in Kharkiv and Kherson.
- But still, Russia controls some 17% of Ukraine and it also managed to secure a land bridge between mainland Russia to Crimea, which Moscow annexed in 2014.
- The West has recently announced the supply of more advanced weapons to Ukraine, deepening its involvement in the conflict.
- In response, Russian President Vladimir Putin announced the suspension of his country's participation in the New Start treaty, which could trigger a nuclear arms race.

Objective

Main goal of Ukraine and its western partners is to build consensus among major powers, especially in the Global South, on working towards a fair and durable peace.

500 days of war in Ukraine
Russia's invasion of Ukraine is a far-reaching human tragedy that shows no sign of drawing to a close, 500 days on

- **REFUGEES** Over **8 million**, 5.9m internally displaced, **17.6m** in need of humanitarian aid
- **ECONOMY** Shrunk by **30%**
- **RECONSTRUCTION** Estimate **$411 billion**

Key Highlights:

- After the talks, diplomats said there was broad acceptance about respecting the central pillars of international law such as Ukraine's sovereignty and territorial integrity, and that there was agreement to meet again.
- A senior Ukrainian official that talks in Saudi Arabia to make headway towards a peaceful settlement of the war with Russia had been productive.
- But Moscow called the meeting a doomed attempt to swing the Global South behind Kyiv.

Earlier Peace negotiations

- ✓ **Peace plan proposed by China:** China came out with a 12-point plan for the "political settlement of the Ukraine crisis". It was seen as an attempt to placate criticism of its silence on Russia's actions, as a repetition of its already expressed positions on the war and as skewed in favour of Moscow. While Kyiv outrightly rejected the proposal.

- ✓ **Peace initiatives proposed by Africa:** Leaders of seven African countries, led by South African President Cyril Ramaphosa, visited Russia and Ukraine with a 10-point proposal which suggested the recognition of Russia and Ukraine's sovereignty, and the release of prisoners.

> **Volodymyr Zelenskyy's peace plan**
> - Russia must withdraw from all occupied territories for talks to begin.

- ✓ **Brazilian President Luiz Inacio Lula da Silva** suggested that he could lead a **"peace club"** of countries who are not involved in the war and are militarily non-aligned, to broker discussions between the two sides.

Has the time for effective peace negotiations on Russia-Ukraine come?

- As per United Nations Secretary-General Antonio Guterres, he does not think peace negotiations in the Ukraine war are "possible at this stage" as both sides are "convinced that they can win"
- Currently Ukraine is optimistic about its counteroffensives banking on the West's support and Mr. Putin continues his fight with a fifth of Ukrainian territory captured and a future mobilisation looming as he remains largely unopposed back home.
- Analysts point out that Ukraine does not trust Russia to uphold ceasefire deal, also believing that any break from the battlefield would give Russia time to recoup and come back it more force.

Challenges in Jeddah Peace Talks

- Russia, which had already rejected the 10-point peace plan, did not appear to be among those invited to the Jeddah talks.
- It is being seen as a constructive way of promoting third-party mediation by players apart from the West.
- Saudi Arabia's decision to host the talks also appears to be a part of Saudi Crown Prince Mohammed bin Salman's posturing as a global leader who can wield influence beyond his region.
- Beijing has been a beneficiary of the conflict as Russia is seen as its junior power, relying on it for diplomatic support in the face of the West and for helping its economy by buying goods amid Western sanctions.

India's stand on Russia-Ukraine war:

- > India has refused to condemn Russia, maintained defence and trade ties, as well as expressed its uneasiness with the war and called for respecting the territorial integrity of all nations.
- > Despite U.S. sanction amid the conflict, India has been continuously importing Russian crude oil.

Way Forward

According to Ukrainian President Volodymyr Zelenskyy's peace plan, Russia must withdraw from all occupied territories for talks to begin. Moscow demands recognition of the annexed Ukrainian territories. Amid these maximalist positions, there is hardly any room for direct talks. This is where the international community could make a difference. It should work with Russia and Ukraine to

> **PEPPER IT WITH**
>
> Heart of Asia conference, Paris peace conference, ICC, Geneva Convention, Black Sea Grain deal

build an agenda for future talks. The coming together of Ukraine's western backers, neutral developing powers and Russia's close partners could be the first step in building this consensus.

Nepal - BRI struggle

News Excerpt

Nepal fails to acquire even a **single project** under Belt and Road Initiative **(BRI).**

Pre-Connect

- Recently **India** in Shanghai Cooperation Organization **(SCO) meeting**, **not signed** the paragraph supporting BRI. India has cited various reasons for not supporting BRI –
- **Sovereignty concerns:** China Pakistan Economic corridor **(CPEC)** project under BRI passes through Pakistan occupied Kashmir **(PoK) region**.
- **Strategic encirclement**: BRI's **maritime component** through port construction and infra development visualizes to encircle India's sea routes specially in Indian Ocean Region **(IOR).**
- **Economic imbalances:** BRI will **favor China** in terms of investment, trade and infra development creating economic imbalances in Asia with respect to India.
- **Debt trap**: India is concerned about **other nations**, as BRI is leading to debt trap in several countries.

About

Nepal's struggle with BRI

- ➤ There are instances regarding labelling of existing projects in Nepal under BRI by China. **Pokhara International Airport** began construction before Nepal signed BRI, however **China termed it as a BRI project**.
- ➤ **Nepal** is in the midst of **geopolitical influx** with – China's proactive foreign policy, India's traditional influence and growing engagement with USA.

Chinese cross-border bailouts by country
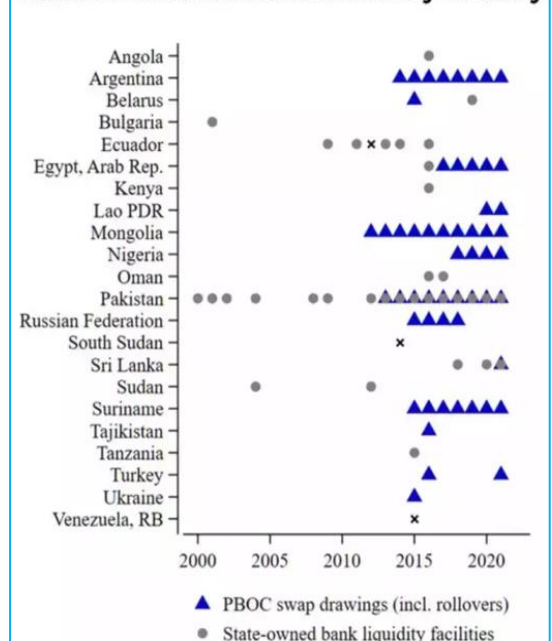
Key concerns related with BRI

✓ **Geopolitical concerns:** BRI would lead to **China's involvement** in various geographical regions of the world. China by building ports and infra in countries, can exert **political pressure** on them to align with China. **USA** as a global power is **particularly concerned** of this.

✓ **Regional power Dynamics:** It will reshape the regional influence of China in Asia, leading to strategic **rivalries** and increased **competition** among the nations. Goal of **India** to be a **Net Security Provider** in the IOR would be affected.

✓ **Economic dependency:** Several countries of **Asia** and **Europe** already have a **trade deficit** with China. With the expansion of BRI countries might become **over reliant on China**, leading to an uneven distribution of benefits and debt traps. Further there is a **lack of transparency** in **project financing**.

✓ **Social impact:** Large scale infra projects could lead to **displacements** of **local communities**.

✓ **Environmental impact**: According to the **report by WWF**, BRI projects require significant resource extraction which could lead to deforestation, habitat destruction, pollution, and other effects on ecosystem.

Alternatives of BRI:

▪ **Asia Africa Growth Corridor (AAGC):** It is an economic cooperation agreement between India, Japan, and several African countries. It aims to build quality infrastructure in sectors like healthcare, agricultural, disaster management, etc. in African countries.

▪ **Millennium Challenge Corporation (MCC)**: USA and Nepal have signed MCC in 2017. MCC is a USA foreign assistance agency that forms partnerships with developing countries to give impetus to economic development.

▪ **Blue Dot Network (BDN):** It was launched by USA, Japan, Australia, UK, Spain. It is a mechanism to certify infra projects that meet robust international quality standards.

▪ **Global Gateway Project:** European Union unveiled its project in 2021. It aims to support infra development around the world. The project aims to mobilize 300 billion euros in investments between 2021 and 2027.

▪ **Partnership for Global Infrastructure and Investment (PGII):** Earlier termed as Build Back Better (BBB), it is an initiative of G7 countries which aims to raise about $ 600 billion for global infra projects in low- and middle-income countries in the next five years.

▪ Meanwhile **India** has **accelerated** the amount of money that it lends to countries in Asia to spend on infra projects. According to a **report in Financial Times**, India has nearly **tripled** its **Line of credit** extension to countries in the last 8 years.

Way forward

✦ **India** needs to **bolster** its initiatives in the infra sector among the countries. It also needs to **collaborate** with the different stakeholders viz **Multilateral Development Banks**, **Private sector,** and **developed countries** to provide a viable **alternative to BRI**.

✦ Meanwhile, India and other nations can **negotiate with China** regarding abandonment of the **predatory provisions of BRI** and create a **transparent lending mechanism.**

Components of BRI:

❖ China Pakistan Economic Corridor (CPEC), China Myanmar Economic Corridor and China Nepal Economic Corridor, all part of Silk Road Economic Belt.

❖ Maritime Silk Road.

❖ Silk Roadster (platform for people to people exchange).

❖ Silk Road Embarkment, Silk Road Empowerment, Silk Road Enjoyment, Silk Road Enlightenment, Silk Road Enhancement.

BRI as a tool for debt trap:

As per the report by Observer Research Foundation **(ORF)** -

❖ **Sri Lanka:** Sri Lanka owed China around $ 8 billion, China agreed to a debt-to-equity swap getting a 70% stake in Hambantota port, under a lease agreement for 99 years.

❖ **Malaysia** cancelled a $ 20 billion railway link and two pipeline projects that was being funded by China.

❖ **Myanmar** has rolled back plans for a $ 7 billion Chinese backed port on its west coast.

❖ **Pakistan,** home to various projects under BRI with projects around $ 60 billion; faces its worst debt crises yet with government seeking loan from the IMF to bail itself out.

❖ China has even cancelled the country's debt and reschedule the payment installment if the debtor country awards it contracts for additional projects in exchange as in the case of **Cambodia.** Thereby keeping a country entangled in debt spiral.

❖ According to **statistics from Aid Data** (US based research institute), China has been helping countries that have either geopolitical significance, such as strategic location, or lots of natural resources. It has been lending billions to bailout "BRI countries".

PEPPER IT WITH

The String of Pearls, Pivot to Asia, Soft power, West Seti project, Kalapani dispute, Economic blockade

Niger Political Crisis

News Excerpt

The President, Mr. Bazoum, and his family were detained by elite troops in Niger, whom declared that they now held power.

Pre-Connect

- Niger was a French colony until 1960. It faced a long period of instability post-independence and was rocked by four military coups between 1974 and 2010.
- Mahamadou Issoufou came to power in 2011, winning legislative election.
- In 2021, Mr. Bazoum was elected President, in the first democratic transfer of power since the country's independence.

About Niger:

➤ It is a landlocked country in West Africa.

➤ It is a unitary state bordered by Libya to the northeast, Chad to the east, Nigeria to the south, Benin, and Burkina Faso to the southwest, Mali to the west, and Algeria to the northwest.

➤ Over 80% of its land area lies in the Sahara.

➤ The hotter and drier climate with desert area causes more frequent fires in some regions.

International relations

✓ It is a member of the African Union and the West African Monetary Union.

✓ It also belongs to the Niger Basin Authority and Lake Chad Basin Commission, the Economic Community of West African States, the Non-Aligned Movement, the Organisation of Islamic Cooperation, and the Organization for the Harmonization of Business Law in Africa (OHADA).

Sahel region, Africa

Responses to the crisis from other agencies

- **European Union** announced the suspension of security and funding cooperation with Niger and would not recognise the military junta.
- **Western allies** and international organizations have stood by Mr. Bazoum, saying that they did not recognize the coup-plotters as the leader of Niger.
- **African Union** demanded the Niger's military return to their barracks and restore constitutional authority.

Military Junta's rationale behind the military takeover

- There were continued deterioration of the security situation in the country.
- Poor economic and social governance.

Factors that led to military takeovers of elected regimes in the Sahel region

⇒ **Political instability:** High unemployment, political unrest, Weak governments (often composed of elites of certain ethnic communities) and threats from radical Islamist groups all contribute to political instability.

Regional impacts of Niger Crisis:

- ❖ Pose threat to the stability of other Western African countries.
- ❖ Spread of terrorism in the region.
- ❖ Niger was last stronghold of democracy in Sahel.
- ❖ Promote more military coups and authoritarianism.

Challenges to the development of Niger:

- ❖ Landlocked position
- ❖ Desert terrain
- ❖ Low literacy rate
- ❖ Jihadist insurgencies
- ❖ World's highest fertility rate due to birth control not being used
- ❖ Rapid population growth

⇒ **Economic strife:** As of 2021, over 41.8 percent of Niger's population is living in extreme poverty. There is prevalent social discontent due to deteriorating socio-economic conditions, including high living costs - in a country where poverty and hunger are widespread, as well as growing insecurity.

⇒ **Ethnic clash:** Across the Sahel, ethnic tensions are on the rise; as some communities have increased their promotion of hate speech, others have gone as far as to establish armed groups specifically focused on ethnic protection.

⇒ **Natural Resources:** Throughout the Sahelian strip, conflicts over access to natural resources between nomadic and sedentary communities continue to multiply on transhumance routes.

⇒ **Climate change:** In parallel with rising temperatures and erratic rainfall, incidences of violence have recently been increasing in the Sahel. In fact, there is strong evidence that climate change, which is drying up sources of livelihoods, also fuels conflict.

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⇒ **Governance issues:** Political leaders' engagement in frequent corruption; Government's inabilities to register economic and social progress.

Have military takeovers lessened the violence in Sahel region:

There is no concrete evidence that military takeovers restore stability and bring down violence.

> The crisis monitoring group, **Armed Conflict Location & Event Data Project (ACLED)**, points out that successive military coups in the recent past have caused regional instability and the weakening of state institutions.

> It recorded that in 2022, the number of reported deaths from political violence increased by 77% in Burkina Faso and 150% in Mali from 2021.

> **Africa Centre for Strategic Studies (ACSS)** points out that some coups have become a means of grabbing power by politicised security elites on the pretext of restoring security and order.

> This trend is evident in the fact that even though Niger was seen as managing insurgencies and extremism better than its neighbours Mali and Burkina Faso, the Nigerien putschists also cited the worsening security situation as a reason for their uprising.

Why is the West concerned about Niger's coup

o **Anti-French sentiment:** France's relations with the military rulers grew hostile in Mali and Burkina Faso.

  o Mali last year expelled the French ambassador when he disagreed with the junta's decision to remain in power until 2025.

  o Burkina Faso's military government also announced its decision to end its military agreement with France.

o **America's Africa strategy:** Niger was key partner for Washington's fight against Islamist insurgents, who have killed thousands of people. U.S. military personnel have been training local forces to fight militant groups.

o **Western countries** poured resources into Niger to bolster its security forces in the face of a growing insurgency linked to al-Qaeda and Islamic State.

o **European Union** also decided last year to set up a three-year military training mission in Niger, to which Germany contributes troops. Italy also has about 300 soldiers in the country.

Role of Russia in the crisis

a) Multiple pro-coup protestors in Niger were seen waving **Russian flags in the protests** outside the National Assembly.

b) Notably, the **anti-French sentiment in the Sahel** has been seen as a reason for Russia making inroads into the region.

c) Mercenaries from **Russia's private military Group Wagner** are already active in Mali, from where the French have withdrawn troops after a decade.

d) **Burkina Faso** is reportedly involved with the Wagner group to deal with surging jihadist violence. After officially announcing the end of the French operation in November 2022, Burkina Faso turned towards Moscow taking steps like Mali.

Recent African coups

(i) Mali – 2020, 2021 (ii) Chad – 2021
(iii) Guinea – 2021 (iv) Sudan – 2021
(v) Burkina Faso– 2022 (vi) Niger-2023

Niger central to Sahel security

West African nations have imposed sanctions and threatened force if Niger's coup leaders do not reinstate ousted President Mohamed Bazoum following the latest coup in the jihadist-plagued Sahel

Tillabéri region: Regular target of atacks by Al Qaeda and Islamic State-linked terrorists

Germany: About 200 troops

U.S.: About 1,100 troops at two locations including drone base

France: 1,000-1,500 troops as part of Operation Almahaou in Tillabéri region

Italy: 300 troops

Attacks by Boko Haram terrorists

200km / 125 miles

Way Forward

Encourage all parties involved in the crisis to engage in meaningful dialogue. Mediation by neutral parties, such as respected leaders, international organizations, or diplomatic envoys, can help facilitate communication and negotiations.

Engage with regional and international partners to seek their support and expertise in resolving the crisis. Diplomatic pressure and collaboration can often provide valuable insights and resources.

PEPPER IT WITH

Sri Lanka crisis, Rohingya crisis-Myanmar, Deep state, Skyes Picot agreement

ENVIRONMENT

Issues with GM Crops

News Excerpt

India has seen a robust debate on GM crops in the last two decades. Environmentalists, scientists, politicians, farmers, consumers and the higher judiciary have asked probing questions about the safety, efficacy and even the very necessity of GM food.

Pre-Connect

- Transgenic crops are plants that have been altered using genetic engineering techniques.
- These crops have undergone the insertion of specific genes into their DNA, granting them novel characteristics or traits that are absent in the species through conventional breeding methods.
- In India, all activities associated with GMOs and their products are regulated by the Union Ministry of Environment, Forest and Climate Change (MoEFCC) under the provisions of the Environment (Protection) Act, 1986.
- The Genetic Engineering Appraisal Committee (GEAC) under MoEFCC is entrusted with reviewing, monitoring, and approving various activities involving GMOs, including their import, export, transport, manufacture, use, or sale.
- GEAC endorsed the commercial cultivation of genetically modified mustard. Additionally, GM foods are subject to regulations by the Food Safety and Standards Authority of India (FSSAI) in accordance with the Food Safety and Standards Act, 2006.
- Various acts and rules, such as the Environment Protection Act (1986), Biological Diversity Act (2002), Plant Quarantine Order (2003), GM policy under Foreign Trade Policy, Food Safety and Standards Act (2006), and the Drugs and Cosmetics Rule (8th Amendment, 1988), contribute to the regulatory framework governing GM crops in India.

Comparison between GM Crops and Conventional Crops

GM Crops	Conventional Crops
- Modified using genetic engineering techniques, altering DNA directly. - Faster development due to targeted gene insertion. - Highly precise modification of specific traits. - May face resistance from pests over time. - Can conflict with traditional practices in some regions.	- Bred through natural crossbreeding over generations. - Gradual development due to lower, involving many generations to achieve desired traits. - Relies on natural genetic variation, less precise. - Limited to existing traits within the species. - May require more chemical inputs.

Current Status in India

- Within India, only Cotton is presently commercially cultivated as a genetically modified (GM) crop. Experiments are underway for additional crops like brinjal, tomato, maize, and chickpea, utilizing transgenic technology.
- However, an ongoing legal case in the Supreme Court questions the authorization of transgenic food crops, seeking to halt GM mustard due to concerns about prohibited herbicide usage.
- Historical cases involve the GEAC's endorsement of GM mustard in 2017 after additional testing, and the government's indefinite suspension of GM brinjal in 2010.

The Regulatory Process for Transgenic Crops in India

- The development of transgenic crops entails the insertion of transgenic genes into plants to achieve a consistent, protective response.
- This process involves a blend of scientific methodology and chance. Prior to open field trials, safety assessments by committees are carried out.
- These trials occur within agricultural universities or controlled plots managed by the Indian Council for Agricultural Research (ICAR).
- For transgenic plants, superiority over non-GM counterparts and environmental safety for commercial approval are prerequisites. Open field trials assess adaptability across diverse seasons and geographical conditions.

Significance of Genetic Modification (GM) Technique

- **Enhanced Vaccine Production**: GM technology has transformed the pharmaceutical sector by enabling the production of safer and more economical vaccines and therapeutics. This advancement has facilitated the mass manufacturing of essential drugs like human insulin, vaccines, and growth hormones, enhancing accessibility to life-saving pharmaceuticals.

- **Weed Control**: GM technology has also been pivotal in developing herbicide-tolerant crops. Crops such as soybean, maize, cotton, and canola have been genetically modified to withstand specific broad-spectrum herbicides, allowing effective weed management while safeguarding the cultivated crop.
- **Ensuring Food Security**: GM crops are being engineered to adapt to evolving environmental circumstances. Researchers are working on varieties of rice, maize, and wheat capable of enduring extended droughts and heightened monsoon seasons, ensuring food security in challenging climates.
- **Addressing Saline Soils**: GM techniques have been employed to create salt-tolerant plants, offering a potential solution for cultivating crops in saline soils. By introducing genes that eliminate sodium ions from water and maintain cellular equilibrium, plants can thrive in high-salinity environments.

Key Concerns

- **Nutritional Deficiency**: GM foods can occasionally lack optimal nutritional value despite their heightened production and focus on pest resistance. This discrepancy arises because priority is often placed on enhancing specific traits rather than nutritional content.
- **Ecosystem threat**: GM production can introduce risks to ecosystems and biodiversity. It may disrupt genetic flow and endanger native varieties, leading to a loss of diversity over time.
- **Allergic Reactions**: Genetically modified foods possess the potential to trigger allergic reactions due to their biological alteration. This can be problematic for individuals accustomed to conventional varieties.
- **Wildlife Impact**: Wildlife is susceptible to the consequences of GM crops. For example, genetically modified plants engineered to produce plastics or pharmaceuticals can endanger animals like mice or deer that consume residual crop material left in fields post-harvest.

PEPPER IT WITH
Transgenic crops, Genetically modified organism (GMO), Genetically engineered (GE), bioengineered

Way Forward

In light of ongoing advancements, the regulatory framework requires enhancement for the benefit of domestic and export consumers. Approvals for technology should be streamlined, and decisions based on scientific evidence should be implemented. Rigorous monitoring is imperative to ensure strict adherence to safety protocols, and enforcement should be robust to prevent the proliferation of unauthorized GM crops.

IMD-Heat Index

News Excerpt

IMD introduced the Heat Index, a valuable tool that considers humidity's influence on temperatures.

Pre-Connect

About Heatwaves

- Heatwaves encompass prolonged periods of extremely high temperatures, carrying the potential for detrimental effects on human well-being, the ecosystem, and the economy.
- Due to its tropical nature, India is especially susceptible to heatwaves, a phenomenon that has grown in both frequency and intensity over recent years.
- IMD Criteria for Declaring Heat Wave in India:
  - Heat wave is considered if the maximum temperature of a station reaches at least 40°C or more for Plains and at least 30°C or more for Hilly regions.
- Based on Departure from Normal:
  - Heat Wave: Departure from normal is 4.5°C to 6.4°C.
  - Severe Heat Wave: Departure from normal is >6.4°C.
- Based on Actual Maximum Temperature:
  - Heat Wave: When actual maximum temperature ≥ 45°C.
  - Severe Heat Wave: When actual maximum temperature ≥47°C.

About Heat Index

- The Heat Index serves as a metric that combines temperature and humidity to compute the perceived or "sensational" temperature for individuals.
- It aids in comprehending how humidity amplifies the effects of elevated temperatures and contributes to human unease amid hot conditions.
- The India Meteorological Department (IMD) has introduced the Heat Index as a trial initiative.

➤ The objective is to offer basic advice for areas encountering escalated apparent temperatures that lead to discomfort among the populace.

Categorization of Heat Levels:

✓ The Heat Index categorizes the apparent temperature into different levels using color codes:
  o Green: Experimental heat Index less than 35°C.
  o Yellow: Experimental heat Index in the range 36-45°C.
  o Orange: Experimental heat Index in the range 46-55°C.
  o Red: Experimental heat Index greater than 55°C

PEPPER IT WITH
Local Winds, Loo, Summer Solstice

Conclusion

Through comprehension of the Heat Index, people and communities can adopt preemptive measures to safeguard public health amidst heatwaves. This facilitates the making of well-informed choices and the development of strategies to manage heat-related situations, ultimately ensuring the health and safety of the populace.

Global Biofuels Alliance

News Excerpt

India announced the launch of the Global Biofuel Alliance, aimed at promoting international collaboration and accelerating the development and adoption of biofuels.

Pre-Connect

- The India-led coalition comprises public and private stakeholders with the common goal of boosting biofuel usage, fostering development, and raising awareness.
- Members encompass India, USA, Brazil, European Union, International Energy Agency (IEA), Biofuels Alliance (comprising 20 nations advocating sustainable low-carbon bio-economies), Indian Sugar Mills Association, and Society of Indian Automobile Manufacturers.
- USA and Brazil are biofuel pioneers in production and consumption, with Brazil even utilizing 100% ethanol for its vehicles.

About Biofuel

➤ Any hydrocarbon fuel that is produced from an organic matter (living or once living material) in a short period of time (days, weeks, or even months) is considered a biofuel.
➤ Biofuels may be solid, liquid or gaseous in nature.
  o Solid: Wood, dried plant material, and manure
  o Liquid: Bioethanol and Biodiesel
  o Gaseous: Biogas
➤ These can be used to replace or can be used in addition to diesel, petrol or other fossil fuels for transport, stationary, portable and other applications. Also, they can be used to generate heat and electricity.
➤ Some of the main reasons for shifting to biofuels are the rising prices of oil, emission of greenhouse gases from fossil fuels and the interest in obtaining fuel from agricultural crops to increase the income of farmers.

Advantages

✓ **Reduced Greenhouse Gas Emissions**: Biofuels typically emit fewer greenhouse gases compared to fossil fuels. The carbon dioxide released during their combustion is balanced by the carbon dioxide absorbed by the plants during their growth, creating a carbon-neutral or low-carbon energy cycle.
✓ **Diversification of Energy Sources**: Biofuels provide an alternative to fossil fuels, reducing dependency on finite and environmentally damaging resources like coal, oil, and natural gas. This diversification enhances energy security and stability.
✓ **Domestic Production**: Biofuels can be produced domestically, reducing reliance on imported oil and contributing to energy independence for countries.
✓ **Job Creation**: The biofuel industry generates employment opportunities in agriculture, research, technology development, and processing, thus benefiting local economies.
✓ **Waste Utilization**: Biofuels can be produced from agricultural residues, food waste, and other organic materials that might otherwise end up in landfills, providing an environmentally friendly way to utilize waste.
✓ **Rural Development**: Biofuel production often occurs in rural areas, providing farmers with additional income sources and supporting rural development.

✓ **Energy Security**: Using biofuels reduces a nation's reliance on oil imports, contributing to energy security by using locally available resources.

✓ **Support for Agriculture**: Biofuel crops create demand for agricultural products, potentially boosting farming communities and agricultural economies.

✓ **Air Quality**: Biofuels produce fewer air pollutants such as sulfur, particulates, and volatile organic compounds, contributing to improved air quality and human health.

✓ **Carbon Sequestration**: Certain biofuel crops, like switchgrass, can sequester carbon in their roots and soil, acting as a carbon sink and mitigating climate change.

Key Concern

▪ **Food vs. Fuel Conflict**: The use of crops for biofuel production can compete with food production, potentially leading to higher food prices and food security concerns, particularly in regions with limited agricultural resources.

▪ **Land Use Change**: Converting natural habitats or agricultural land for biofuel crop cultivation can lead to deforestation, habitat loss, and disruption of ecosystems, resulting in biodiversity loss and increased greenhouse gas emissions.

▪ **Water Usage**: Some biofuel crops require significant amounts of water for cultivation, potentially straining local water resources and contributing to water scarcity issues.

▪ **Impact on Soil Quality**: Intensive biofuel crop cultivation can lead to soil erosion, degradation, and loss of fertility, affecting agricultural productivity and long-term sustainability.

▪ **Monoculture**: Focusing on a limited number of biofuel crops can lead to monoculture farming practices, which reduce biodiversity and increase vulnerability to pests and diseases.

Way Forward

The way forward for biofuels involves addressing key concerns while maximizing their potential as a sustainable and renewable energy source.

PEPPER IT WITH
E20 Fuel, National Policy on Bio-Fuels, Biorefineries

✚ Emphasize the development and production of advanced biofuels that use non-food feedstocks, such as algae, agricultural waste, and dedicated energy crops. These feedstocks can minimize the food vs. fuel conflict and reduce competition with traditional agriculture.

✚ Promote sustainable agricultural practices for biofuel feedstock cultivation. This includes avoiding deforestation, protecting natural habitats, and utilizing degraded or marginal lands for cultivation.

Microplastic Pollution

News Excerpt

The Union Ministry of Environment, Forest and Climate Change (MoEFCC) stated that in India, Municipal areas generate 133,760 metric tonnes per day, out of which less than 10% is recycled.

Pre-Connect

- Plastic debris can come in all shapes and sizes, but those that are less than five millimeters in length (or about the size of a sesame seed) are called "microplastics."

- Primary microplastics are tiny particles designed for commercial use, such as cosmetics, as well as microfibers shed from clothing and other textiles, such as fishing nets.

- Secondary microplastics are particles that result from the breakdown of larger plastic items, such as water bottles.

- The Global Partnership on Marine Litter (GPML) was initiated during the Earth Summit in 2012 following a request outlined in the Manila Declaration.

- As part of this declaration, 65 signatory nations reasserted their dedication to crafting policies aimed at diminishing and managing issues related to wastewater, marine litter, and pollution originating from fertilizers.
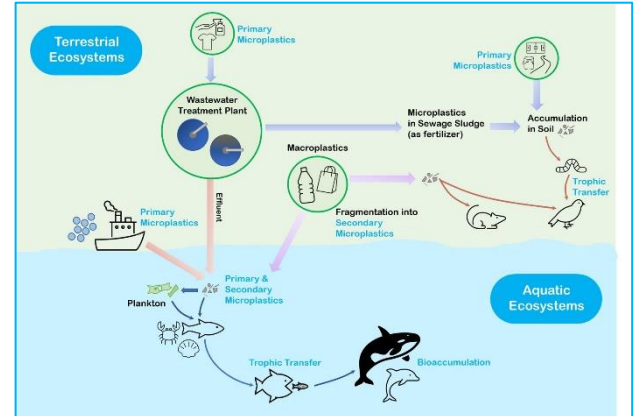

Global distribution of microplastics

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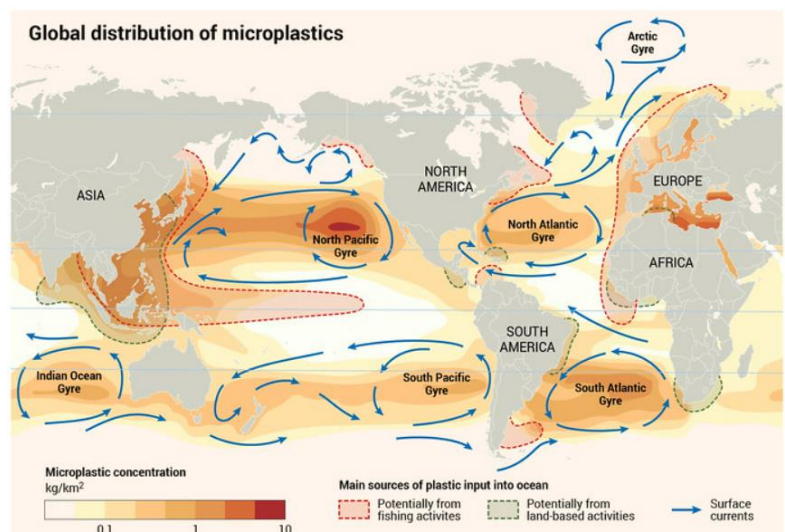
Microplastic: A global problem

➢ As per United Nations Environment Programme (UNEP), more than 430 million tonnes of plastic produced annually.

➢ Two-thirds are short-lived products that soon become waste, filling the ocean and, often, working their way into the human food chain.

➢ Indian scientists documented a higher abundance of microplastics swirling farther out in the Bay of Bengal waters than nearshore sites.

Sources of Microplastic

✓ **Cosmetics and Personal Care Products**: Microbeads, tiny plastic particles used as exfoliants in products like face scrubs, body washes, and toothpaste, can directly enter water bodies when washed down the drain.

✓ **Textiles**: Synthetic fabrics such as polyester, nylon, and acrylic shed microfibers during washing and wearing. These fibers are released into wastewater and eventually reach aquatic environments.

✓ **Industrial Processes**: Certain industrial processes generate microplastics, such as plastic pellet handling and processing, as well as microplastics used in abrasive blasting (e.g., for cleaning surfaces).

✓ **Plastic Pellets**: Small plastic pellets used as raw materials in plastic manufacturing are often accidentally released into the environment during transportation or handling.

✓ **Degradation of Larger Plastics**: Larger plastic items like bottles, bags, and packaging materials break down over time due to weathering, sunlight, and mechanical action. This process results in the fragmentation of plastics into smaller microplastic particles.

✓ **Land-based Litter**: Litter and debris from urban areas can be transported by wind, rain, or rivers, eventually reaching water bodies where they break down into microplastics.

Impact

Environmental Problems	**Pollution of Ecosystems:** Microplastics are found in various environmental compartments, including oceans, rivers, lakes, and soils. Their presence disrupts the natural balance of ecosystems and can lead to long-term environmental degradation.
	Physical Harm: Larger microplastics can physically harm organisms by blocking their digestive tracts, leading to malnutrition, reduced reproductive success, and even death.
Risks to Marine Life	**Ingestion**: Marine organisms often mistake microplastics for food, leading to their ingestion. This includes filter-feeding organisms (e.g., mussels, oysters) and larger animals (e.g., fish, turtles, marine mammals).
	Bioaccumulation: Chemical pollutants that attach to microplastics can be absorbed by organisms when ingested. As these organisms are consumed by larger predators, the pollutants can bioaccumulate and magnify up the food chain.
	Habitat Destruction: Accumulations of microplastics in coastal areas and ocean gyres can degrade habitats, such as coral reefs and seafloor ecosystems, affecting marine biodiversity.
Risks to Human Health	**Food Chain Contamination**: Microplastics enter the human food chain through seafood consumption. If the fish or shellfish consumed are contaminated with microplastics and associated toxins, it could pose health risks to humans.
	Inhalation and Ingestion: Microplastics have been detected in the air, drinking water, and even food products. If inhaled or ingested, they could potentially accumulate in human tissues and organs.
	Potential Toxicity: Microplastics can adsorb and transport chemical pollutants, including endocrine-disrupting chemicals and persistent organic pollutants. If these pollutants are released within the body after ingestion, they could have adverse health effects.

Microplastic and SDGs

▪ **SDG 14**: Life Below Water: Microplastics can harm marine life, disrupt ecosystems, and pose risks to aquatic organisms. Addressing microplastic pollution is essential for conserving marine biodiversity and promoting sustainable ocean ecosystems.

- **SDG 15**: Life on Land: Microplastics can also impact terrestrial ecosystems when they enter soils, affecting soil health and potentially entering the food chain. Reducing microplastic pollution contributes to protecting land-based ecosystems and biodiversity.
- **SDG 12**: Responsible Consumption and Production: Managing microplastic pollution involves promoting sustainable production practices, reducing plastic waste, and encouraging responsible consumption of products containing microplastics.
- **SDG 6**: Clean Water and Sanitation: Microplastics can contaminate water sources, affecting water quality and posing risks to aquatic organisms. Mitigating microplastic pollution supports access to clean water and sanitation.
- **SDG 13**: Climate Action: Addressing microplastics is connected to reducing greenhouse gas emissions associated with plastic production and waste management. This contributes to global efforts to combat climate change.

Challenges

Managing and recycling microplastics present several significant challenges due to their small size, widespread distribution, and complex composition.

- o Microplastics are extremely small and can be found virtually everywhere, including oceans, freshwater bodies, soil, and even the air. This widespread distribution makes it challenging to collect and manage them effectively.
- o Microplastics come in various shapes, sizes, and compositions, including polyethylene, polypropylene, and other polymer types. This diversity complicates the recycling process since different types of microplastics may require different recycling methods.
- o Due to their small size and the vast areas they are distributed in, effectively collecting microplastics from the environment is a challenging task. Traditional plastic waste collection methods may not be suitable for capturing these tiny particles.
- o Microplastics often become contaminated with organic matter, sediment, and other pollutants. This contamination makes sorting and separating microplastics from other materials difficult, especially when considering recycling.

> **PEPPER IT WITH**
>
> Ideonella sakaiensis, polyethylene terephthalate (PET), Mechanical recycling, Chemical Recycling

Way Forward

- Research and Monitoring: Invest in research to better understand the sources, pathways, and impacts of microplastics in different ecosystems.
- Waste Management and Recycling: Develop specialized technologies for the collection and separation of microplastics from various environments, including water bodies, soil, and air and invest in research and innovation to create efficient recycling methods specifically designed for microplastics.
- Innovative Technologies: Explore innovative technologies such as advanced filtration systems, magnetic techniques, and robotic solutions for microplastic collection and removal.

Mapping the Yamuna floodplains

News Excerpt

Last month Yamuna River water incursion in nearby areas of Delhi put focus of policymakers towards Flood Plain Zoning legislation.

Pre-Connect

- Constitutional mandate: Floodplain zoning is firmly within the state government's ambit as it is deals with the land along the riverbanks and land is a state subject under entry 18 of List II.
- The Model Bill on Flood Plain Zoning (MBFPZ): This bill envisages zoning of flood plain of a river according to flood frequencies and defines the type of use of flood plain.
- The Central Water Commission (CWC): CWC has unremittingly impressed upon the states to take follow-up action to implement the flood plain zoning approach.

About Flood Plain Zoning

- ➤ The objectives of flood plain zoning is–
  - o To limit and regulate the encroachment of the respective zone that frequently comes under the effect of flood.
  - o To allow selected activities in the zone which come under the influence of the flood less frequently in such manner that they are susceptible to flood damages.
  - o To demarcate the zones that is subjected to flood only on rare occasion.

> Moreover, Flood plain zoning legislation limits the constructions activities and development in flood zones to lessen the risks associated with flooding.
> Additionally, legislation also looks for the specific building standards and construction materials to reduce potential flood damage.
> Floodplain zoning ensures that land on the floodplain isn't urbanized.
> The rampant riverbed and floodplain encroachments caused a huge loss of lives, property and infrastructure. Swollen rivers ruptured their banks and floodwaters gushed through houses built on the floodplains.
> The lack of regulation and enforcement of land use in the floodplains added to the severity of the damage.

Floodplain Zoning

Land uses increase in value as distance from river increases
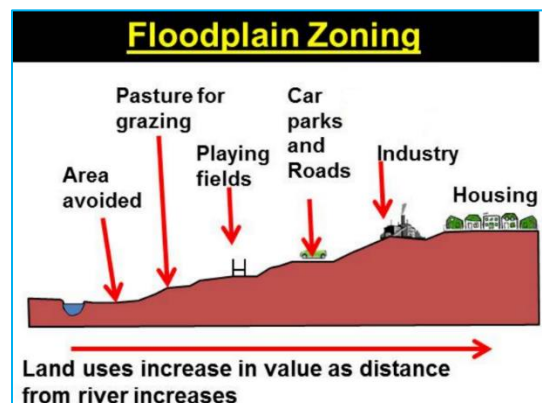
Key Benefits of Flood Plains

✓ Natural floodplains provide flood risk reduction benefits by slowing runoff and storing flood water. They also provide other benefits of considerable economic, social, and environmental value that are often overlooked when local land-use decisions are made.

✓ Effective implementation of flood Plains legislation would reduce the risk of flooding to the man-made structures. Flood can't be avoided but its damages can be managed.

✓ Naturally, Flooding creates good agricultural land in flood plains, as they get sediment carrying floodwaters that enrich the soil. In fact, floodplains are lands built up from soil left by floods.

✓ Floodplains often contain wetlands and other important ecological areas which directly affect the quality of the local ecosystem. Floodplains provide many important benefits for people and nature.

Implications of lack of Flood Plain Zoning

▪ **Loss to human life and crops**: In absence of land regulation seasonal flood cause havoc on the riverine community. For instance–an analysis by the Data Centre of the Central Water Commission (CWC) showed that in the last 65 years (1952-2018) floods killed 109,412 people in the span. Over 258 million hectares of crops were damaged and 81,187,187 houses were raged. The total economic losses due to crop, house and other property damages came to Rs 4.69 trillion.

▪ **Economic losses**: Unplanned and unregulated development gets affected by flooding. Due to flooding Infrastructure got damaged. In November, 2019, the Union Minister of State for Jal Shakti told the Rajya Sabha that India suffered a loss of Rs 95,736 crore in 2018 floods. This was 2.6 times more than the financial loss due to floods in 2017.

▪ **Potential threats**: In a study published in journal Nature Communications 2019, researchers estimated that coastal flooding risk in India had increased significantly. Some 36 million people in India were under risk, which was six times more than the earlier estimates.

Bottleneck for implementation of zoning laws

➕ Despite the sound rationale and the concomitant benefits of undertaking floodplain zoning and regulation, the ruling dispensation in the states has chosen to remain oblivious to it.

➕ It has been more than four decades since the bill had been shared, and so far only three states—Manipur (1978), Rajasthan (1990), and Uttarakhand (2012)—have enacted legislation for floodplain zoning, while others, particularly the flood-affected Bihar and Assam, have shown varying degree of opposition.

➕ There are predominantly two reasons for this:
  o The constraints arising from evacuating the people who occupy the floodplains and resettling these people elsewhere considering the paucity of land.
  o Zone planning could restrict economic development as certain land uses are prohibited. If land cannot be used for building, the current housing shortage will continue.

➕ The sheer scale of relocation and rehabilitation that needs to be carried out by adhering to the guidelines for each floodplain zone, is a daunting task even at its very inception.

Conclusion

An overhaul of the current floodplain zoning policy architecture is the need of the hour. There are several

structural gaps in existing policies. Any policy measure that seeks to achieve the governance objectives of restricting the losses caused by floods and regulating land use within floodplains should look to fill these gaps. Globally, floodplain zoning has emerged as an important strategy at the basin level land use management. India needs to adopt a forward-looking and proactive policy design to regulate the floodplains.

PEPPER IT WITH
River Flodd plains, NGT, Namami Gange Programme, Central Water Commission

Carbon Capturing

News Excerpt
Carbon capture and utilization (CCU) technology is needed to clean up industries like cement and chemicals.
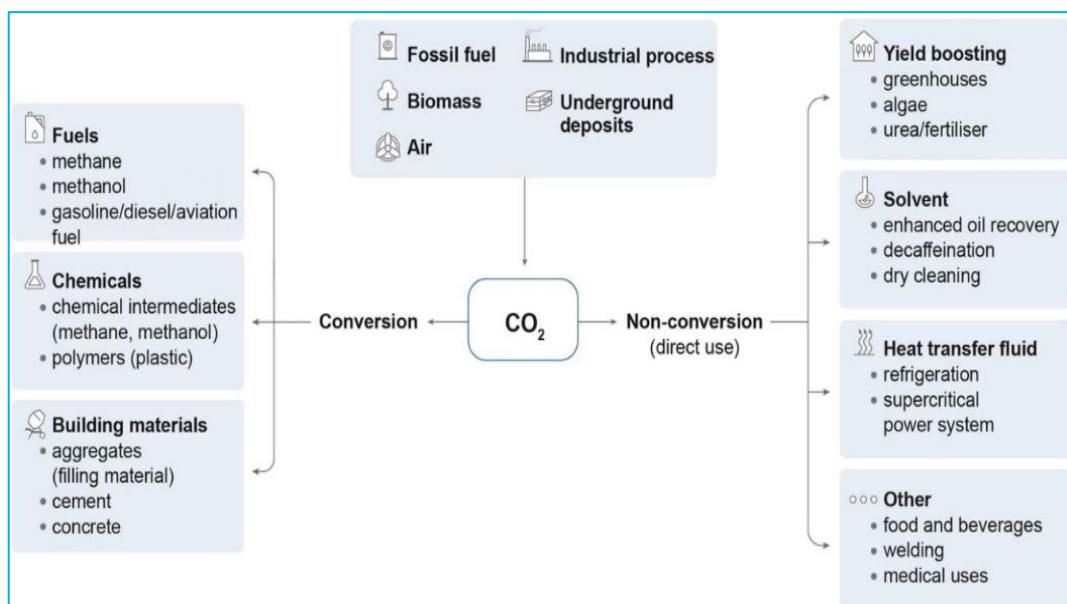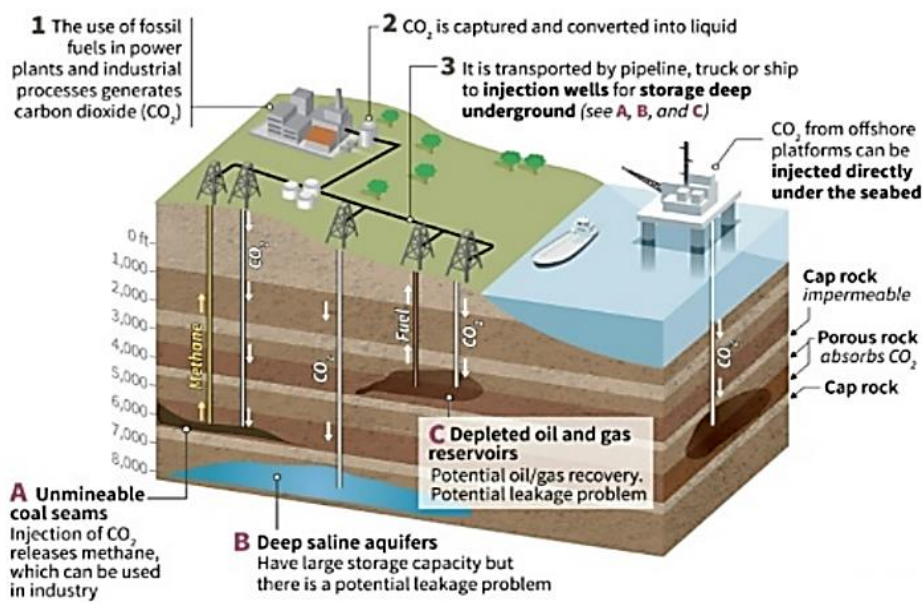
Pre-Connect
- CCU is considered an important tool to help countries halve their emissions by 2030 and reach net-zero by 2050.
- These goals are crucial to meet the Paris Agreement targets for restricting global warming to 2 degrees Celsius (°C), and preferable to 1.5°C, over pre-industrial levels.
- To halt global warming, removal of carbon is an important aspect. In this context CCU might help.

About CCU
- Carbon capture and utilisation (CCU) technologies suck carbon dioxide (CO_2) from the atmosphere and convert it into fuel or other valuable products.
- CCU encompasses methods and technologies to remove CO_2 from the flue gas and from the atmosphere, followed by recycling the CO_2 for utilization and determining safe and permanent storage options.
- CO_2 captured using CCU technologies are converted into fuel (methane and methanol), refrigerants and building materials. The captured gas is used directly in fire extinguishers, pharma, food and beverage industries as well as the agricultural sector.
- CO_2 can be captured directly from the atmosphere. If not being used on-site, the captured CO_2 is

How carbon capture and storage works

compressed and transported by pipeline, ship, rail or truck to be used in a range of applications, or injected into deep geological formations (including depleted oil and gas reservoirs or saline formations) which trap the CO_2 for permanent storage.
- CO_2 capture is an integral part of several industrial processes and, accordingly, technologies to separate or capture CO_2 from flue gas streams have been commercially available for many decades.
- Using CO_2 to improve crop yields in agricultural greenhouses and enhanced oil recovery are two examples of mature CCU technologies.

Analytica
CCU, Net Zero and Issues

✓ These carbon capturing systems are energy intensive and the resultant product can also release CO2 into the atmosphere. CCU may not be enough to capture the carbon. CCU systems will also consume electricity and either emission at generation stage or mining of metals (in case of renewable) will cause pollution.

✓ Replacing a conventional fuel with a synthetic fuel like methanol produced via CCU is likely to be a successful mitigation strategy only if clean energy is used to capture CO2 and convert it into synthetic fuel.

✓ CCU technologies might divert attention from more effective emission reduction options like carbon capture and permanent storage and reducing consumption.

✓ Finances and pledges to net zero can be affected if the CCU give sub-optimal results.

✓ CCO promotes the culture of 'first pollute' and then 'clean'. This practice may cause irreversible damages to the Ecosystems.

Advantages of CCU

▪ CCU can support a rapid scaling up of low-carbon hydrogen production to meet current and future demand from new applications in transport, industry and buildings. CCU is one of the two main ways to produce low-carbon hydrogen.

▪ CCU could provide deep emissions reductions from cement production. It is also the most cost-effective approach in many regions to curb emissions in iron and steel and chemicals manufacturing. Captured CO2 is a critical part of the supply chain for synthetic fuels from CO2 and hydrogen – one of a limited number of low-carbon options for long-distance transport, particularly aviation.

▪ For emissions that cannot be avoided or reduced directly, CCU underpins an important technological approach for removing carbon and delivering a net-zero energy system.

Challenges for India

✦ Despite the significance of CCU in achieving global temperature reduction targets and urgency with which climate change has to be addressed, the investment and development of the CCUS project pipeline are not as fast as it should be.

✦ Most carbon capture & utilisation technologies may be counterproductive. CCU techs might divert attention from more effective emission reduction options.

PEPPER IT WITH
Carbon Capturing, Carbon Border Mechanism, Net Zero Emission, Carbon sequestration

Way forward

There is a need to develop and evolve an ecosystem supporting CCU facilities in the Indian market. Success of CCU is not only impeded by technology which will be advancing in coming years but also by the lack of a policy ecosystem. The ecosystem should be built and strengthened around the essential pillars, namely, R&D, policy, finance, and governance.

Food Waste and Climate Change

News Excerpt

Every year, the world throws away around 931 million tons of food, most of it ending up in landfills this is creating a big Climate problem.

Pre-Connect

• Food waste is a waste of resources, time, and money. Food waste means all of the environmental impacts of food production without any of the benefits of people being fed.

• A throwaway food when it decomposes produces around a tenth of the world's climate-warming gases, according to the United Nations.

• Estimates suggest that 8-10% of global greenhouse gas emissions are associated with food that is not consumed.

• Nations around the globe pledged in 2015 to halve food waste by 2030, but few are on track to do so.

• Among the top five biggest food wasters per capita, at least three of the United States, Australia, and New Zealand have increased their food waste since 2015.

• The average American wastes more than 700 calories of food per day – about a third of recommended daily intake according to a 2020 study.

• 7% of all food available at consumer levels was wasted in 2019 according to the report by the Food Waste Index.

• In India, an average person wastes 137 grams of food every single day. According to estimates, food wastage cost around Rs 92,000 crores a year.

How Food Waste Impacts Climate Change

➢ The greenhouse gases (GHG) from the food industry account for 25 to 30% of the total emissions that have led to today's climate crisis.

➢ According to a report by the Intergovernmental Panel on Climate Change (IPCC) the loss and waste of food caused between 8 and 10% of the emissions of the gases responsible for global warming in the period 2010-2016.

➢ According to a study on Climate Change and Land, the reasons for food waste differ according to the country and its level of development.

Effects of Food Waste

✓ **Biodiversity loss:** To maximize agricultural yields, farmers have increasingly invaded wild areas in search of more fertile lands which has led to the loss of biodiversity.

✓ **Water footprint:** If 30 percent of all the food produced goes to waste, then it means that more than 30 percent of freshwater used in the production and processing of food also goes to waste.

✓ **Increased carbon footprint and the acceleration of climate change:** The food produced and then later goes to waste is estimated to be equivalent to 3.3 billion tons of greenhouse gas emission, accelerating the impacts of climate change. Food waste is the third biggest emitter of greenhouse gases.

✓ **Economic consequences:** According to FAO's report estimates, the economic losses associated with food wastage are about $750 billion per annum.

Solutions to Food Waste

▪ **Balancing food production with demand:** The emphasis should be on the production of small batches or the use of the cook-to-order option.

▪ **Technology Development:** Harvesting, storage, and processing should also be improved by governments and NGOs by availing subsidies and training on better production practices, especially in developing countries.

▪ **Food waste reduction initiatives:** Supermarkets, retail food outlets, big restaurants, and individual consumers all alike can also work on their own tailored and creative efforts to reduce their food wastage footprint.

▪ The recycling of food packaging materials can equally reduce the over-exploitation of virgin material.

Way Forward

✦ Governments and NGOs across the world should launch campaigns for reducing food footprints.

✦ The UN and FAO have already launched such a campaign by emphasizing the "Think Eat Save Reduce Your Foodprint" campaign slogan.

✦ Moreover, with more and more such campaigns, societies at large will be informed on ways for reducing footprint and get the real facts about environmental impacts.

✦ At last, reducing and preventing food waste can increase food security, foster productivity and economic efficiency, promote resource and energy conservation, and address climate change, which in turn, could also decrease climate change-related shocks to the supply chain.

Food Waste Index

It is produced jointly by the United Nations Environment Programme (UNEP) and WRAP. It seeks to support efforts to halve food waste by 2030. It aims at supporting the goals of SDG 12.3.

Key Highlights of 2021 Report are:

❖ The report estimates that around 931 million tonnes of food waste was generated in 2019, 61 per cent of which came from households, 26 per cent from food service and 13 per cent from retail.

❖ Household per capita food waste generation is found to be broadly similar across country income groups, suggesting that action on food waste is equally relevant in high, upper-middle and lower-middle income countries.

❖ Previous estimates of consumer food waste significantly underestimated its scale. While data doesn't permit a robust comparison across time, food waste at consumer level (household and food service) appears to be more than twice the previous FAO estimate.

Contribution of each commodity to carbon footprint and food wastage

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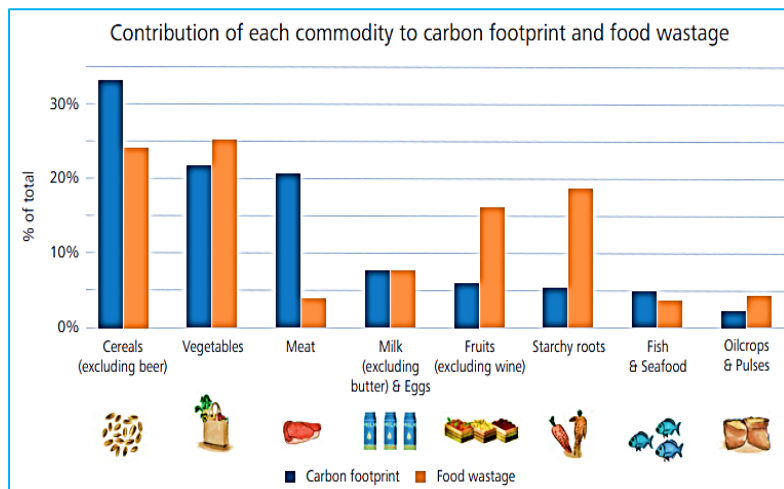
PEPPER IT WITH

Global Carbon Footprint, Green House Gases, UNEP, FAO, IPCC, Public Distribution System, Food Corporation of India. Food Loss Index

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Steel Slag Road Technology

News Excerpt

According to Union Minister of State for Science and Technology, India has developed the world's latest Steel Slag Road Technology.

Pre-Connect

- The technology to use steel slag for road construction was created by the Council of Scientific and Industrial Research (CSIR)-Central Road Research Institute (CRRI), which aims to tackle the issue of slag generated by steel plants.
- Border Roads Organisation (BRO) is utilising steel slag, the waste produced during steel production, to construct stronger and more durable roads along the India-China border in Arunachal Pradesh.
- Tata Steel provided the steel slag free of cost, which was then transported from Jamshedpur to Arunachal Pradesh by Indian Railways.
- NITI Aayog stated that the CSIR-CRRI steel slag road technology will help the BRO develop long-lasting heavy-duty roads in important border areas.
- The National Highways Authority of India (NHAI) has also successfully used this technology in road construction on National Highway-66 (Mumbai-Goa)

About Technology

- Steel slag technology involves the utilization of slag, a byproduct generated during the steelmaking process, for various beneficial applications.
- Steel slag is produced when impurities in raw materials such as iron ore and scrap metal are oxidized and removed during the steel production process.
- This results in a molten slag that, upon cooling, solidifies into a material with diverse properties.

Difference between Regular Road and Steel Slag Road

Regular Road	Steel Slag Road
Regular roads are typically constructed using conventional materials such as natural aggregates (crushed stone, gravel, sand), bitumen (asphalt), and cement (for concrete roads).	A steel slag road incorporates steel slag as a substitute for some or all of the natural aggregates used in construction. Steel slag is a byproduct of steel production and can be processed to be used in road construction.
A regular road usually consists of layers, including a subgrade (native soil), sub-base (usually aggregates), base course (more aggregates), and surface layer (asphalt or concrete). Each layer serves a specific purpose in terms of stability and load-bearing capacity.	A steel slag road follows a similar layer structure as a regular road. However, the key difference is the use of steel slag in one or more of these layers.
Regular roads provide structural strength, durability, and a smooth driving surface. The materials used are selected based on factors like traffic volume, climate, and expected lifespan.	Steel slag has properties that can enhance road construction. It can provide improved stability, better drainage, and resistance to rutting and cracking. It also has the potential to contribute to the road's long-term durability.
The environmental impact of regular roads can include resource consumption (such as mining aggregates), energy use in asphalt production, and the potential for heat island effect due to asphalt's heat-absorbing properties.	Incorporating steel slag into road construction can have environmental benefits. It reduces the demand for virgin aggregates, conserving natural resources and reducing the environmental impact of mining. Additionally, using steel slag in cement production can lower CO_2 emissions.

Advantages

- Construction and Infrastructure: Steel slag can be used as a substitute for natural aggregates in construction materials like concrete, asphalt, and road base. It enhances the durability and strength of these materials while reducing environmental impact.
- Cement Production: Steel slag can replace some of the clinker (main ingredient) in cement production, reducing the energy consumption and CO_2 emissions associated with cement manufacturing.
- Soil Improvement: Steel slag can be applied to agricultural land to improve soil fertility and structure due to its mineral content.

Limitations

- Steel slag is not entirely eco-free, but it can be considered a more environmentally friendly option compared to some other waste materials.
- The variability in steel slag properties due to different steelmaking processes and raw materials can impact its suitability for specific applications.
- Proper processing and quality control are essential to ensure that steel slag meets the required standards for its intended uses.
- In some cases, leaching of certain elements from steel slag can be a concern, especially if the slag is used in applications where it is in contact with water or soil.

Conclusion

- Resource Conservation: Utilizing steel slag as a substitute for natural aggregates in construction materials reduces the need for mining and conserves valuable natural resources, contributing to a more sustainable and circular economy.

PEPPER IT WITH
Cools and Hot asphalt road technology, geotextile roads, Waste to Wealth Mission

- Environmental Benefits: The application of steel slag in industries such as construction and cement production can lead to significant reductions in greenhouse gas emissions and energy consumption, particularly when used as a clinker substitute.
- Waste Minimization: Steel slag technology mitigates the need for landfilling and reduces the pressure on waste management systems. It transforms a potentially problematic waste stream into a valuable asset.

SCIENCE & TECHNOLOGY

AI as a Doctor

News Excerpt

Recently, AI has been in news for discussions regarding when AI can really work as a doctor.

How is AI being used in the medical field?

- AI algorithms and other applications powered by AI are being used to support medical professionals in clinical settings and in ongoing research.
- Currently, the most common roles for AI in medical settings are clinical decision support and imaging analysis.
- There are already a number of research studies suggesting that AI can perform as well as or better than humans at key healthcare tasks, such as diagnosing disease.
- Today, algorithms are already outperforming radiologists at spotting malignant tumours, and guiding researchers in how to construct cohorts for costly clinical trials.
- However, for a variety of reasons, we believe that it will be many years before AI replaces humans for broad medical process domains.

Types of AI relevant to healthcare

- **Machine learning** – It is a statistical technique for fitting models to data and to 'learn' by training models with data. Machine learning is one of the most common forms of AI
- It is basically of two types:
  1. Neural networks and
  2. Deep learning

Neural Networks

- ✓ A more complex form of machine learning is the neural network – a technology that has been available since the 1960s has been well established in healthcare research for several decades and has been used for categorization.
- ✓ It views problems in terms of inputs, outputs and weights of variables or 'features' that associate inputs with outputs.
- ✓ It has been likened to the way that neurons process signals, but the analogy to the brain's function is relatively weak.

Deep Learning

- A common application of deep learning in healthcare is recognition of potentially cancerous lesions in radiology,
- Deep learning is increasingly being applied to radiomics, or the detection of clinically relevant features in imaging data beyond what can be perceived by the human eye.
- Both radiomics and deep learning are most commonly found in oncology-oriented image analysis.
- Their combination appears to promise greater accuracy in diagnosis than the previous generation of automated tools for image analysis, known as computer-aided detection or CAD.

Natural language processing

- **In healthcare,** the dominant applications of NLP involve the creation, understanding and classification of clinical documentation and published research.
- NLP systems can analyse unstructured clinical notes on patients, prepare reports (eg on radiology examinations), transcribe patient interactions and conduct conversational AI.

Rule-based expert systems

- **In healthcare**, they were widely employed for 'clinical decision support' purposes over the last couple of decades and are still in wide use today.
- Many electronic health record (EHR) providers furnish a set of rules with their systems today.

Physical robots

- Surgical robots, initially approved in the USA in 2000, provide 'superpowers' to surgeons, improving their ability to see, create precise and minimally invasive incisions, stitch wounds and so forth.
- Important decisions are still made by human surgeons.
- However. **Common surgical procedures using robotic surgery include gynaecologic surgery, prostate surgery and head and neck surgery.**

Robotic process automation

- Robotic process automation (RPA) doesn't really involve robots – only computer programs on servers.
- It relies on a combination of workflow, business rules and 'presentation layer' integration with information systems to act like a semi-intelligent user of the systems.
- **In healthcare, they are used for repetitive tasks like prior authorisation, updating patient records or billing.**

Diagnosis and treatment applications

Patient engagement and adherence applications

- o Patient engagement and adherence has long been seen as the 'last mile' problem of healthcare – the final barrier between ineffective and good health outcomes.
- o The more patients proactively participate in their own well-being and care, the better the outcomes – utilisation, financial outcomes and member experience.
- o These factors are increasingly being addressed by big data and AI.

Can AI replace Doctors in future?

⇒ **AI will alter how people define what it means to be a doctor**.Surely, some duties will change, while others will disappear totally. But neither a robot nor an algorithm can ever fully take the place of a doctor.

⇒ **They cannot imitate or swap out empathy**: One of the fundamental components of high-quality healthcare is empathy. It encourages healing and raises patient satisfaction. Sadly, the fundamental argument against autonomous AI in healthcare is that empathy is impossible for a machine to achieve.

⇒ **The working practices of doctors are evolving:** Making a diagnosis and creating a treatment plan are not simple processes, even if data, measurements, and analytics now play a large role in a doctor's job and will do so considerably more in the future. The innovative and problem-solving activities required of being a doctor are jobs that robots and algorithms will never be able to complete. There are numerous different patient types, and they all have various lifestyles.

⇒ **Skilled professionals are required for complex digital technology:** Whether or not there are robotics or AI involved, there will be a need for competent, qualified medical practitioners as increasingly sophisticated digital health solutions become available.

⇒ **Robots can't deal with a lack of data:** In actual cases, machine learning models are trained. Their performance improves as more data is supplied to them. Patients may not want to disclose certain information, or their circumstances may be unusual. Robots haven't yet been taught how to handle a shortage of data. And that's where we humans, with our intuition and creative thinking, come in.

Laws/Regulations in India for AI

> **It does not have any specific law regarding application of AI.**
> The Ministry of Electronics and Information Technology (MeiTY) is the regulatory body of AI in India.
> It has the responsibility development, implementation and management of AI laws and guidelines in India.
> There are certain provisions mentioned under Intellectual Property Law and several provisions as Section 43A & 72A of Information Technology Act, 2000 which implies that if anyone commits crime by using AI, then he will be liable under IT Act, criminal law and other cyber law.

Conclusion

⇒ Healthcare can benefit greatly from artificial intelligence. It can accurately process enormous amounts of data, is always accessible, and can automate tedious time-consuming operations. Yet, when it comes to empathy, inventiveness, and non-linear thought, human doctors are unmatched.

⇒ If we combine these two "superpowers," it's difficult to envision what healthcare could accomplish.

> **PEPPER IT WITH**
> Robotic surgery, AI-Asilomar principles, eSanjeevani, National health policy 2017, Satyanarayana committee, National Digital Health Mission

⇒ AI technology is quickly becoming a major player in the healthcare sector. The ability to maintain human health and reduce the frequency of medical visits is one of the biggest potential advantages of AI.

⇒ Although AI won't completely replace human doctors, it will increase physician performance and give people more access to healthcare at reduced rates. To fully utilize AI and serve humanity in the best and most advantageous way, proper regulations and a legal framework are necessary.

Use of AI Technology by UIDAI

News Excerpt

Recently, UIDAI has been using Artificial Technology to tackle the issue of Payment frauds.

Pre-Connect

- To prevent AePS frauds by the use of spoofed fingerprints during Aadhaar authentication, the UIDAI has rolled out an in-house Artificial Intelligence/Machine Learning technology-based Finger Minutiae Record – Finger Image

Record (FMR-FIR) modality which is able to check the liveness of a fingerprint to detect the use of cloned fingerprint during the authentication process.

- The technology uses a combination of both **finger minutiae** and **finger image** to check the liveness of the fingerprint captured.
- The measure was implemented after instances of people creating fake fingerprints using silicone to syphon off money from unsuspecting individuals' bank accounts were reported.

What are Fingerprint images and Fingerprint minutiae?

➢ The fingerprint image contains minutiae points, core points, ridges and valleys, background area, foreground areas, local features and global features. In a fingerprint image, the ridges appear as dark lines while the valleys are the light areas between the ridges.

➢ Finger Minutiae points are the locations where a ridge becomes discontinuous. A ridge can either come to an end, which is called as termination or it can split into two ridges, which is called as bifurcation.

What is AePS?

✓ The AePS is a bank-led model that allows online interoperable financial transactions at Point of Sale (PoS) or micro-ATMs through the Business Correspondent (BC) of any bank using the Aadhaar authentication.

✓ It was taken up by the National Payments Corporation of India (NPCI) - a joint initiative of Reserve Bank of India (RBI) and Indian Banks' Association (IBA).

What is the need of this technology?

▪ As more frauds related to the Aadhaar-enabled Payment System (AePS) come to the fore, the Unique Identification Authority of India (UIDAI), has turned to artificial intelligence-based systems in a bid to limit the cases — this includes developing technologies around fingerprinting and facial recognition.

▪ Minister of State for Finance Bhagwat Karad told Parliament on Monday (July 31) that to prevent AePS frauds by the use of spoofed fingerprints during Aadhaar authentication, the UIDAI has rolled out an in-house Artificial Intelligence/Machine Learning technology-based Finger Minutiae Record – Finger Image Record (FMR-FIR) modality which is able to check the liveness of a fingerprint to detect the use of cloned fingerprint during the authentication process.

▪ In May this year, Airtel Payments Bank collaborated with the National Payments Corporation of India (NPCI) to roll out a facial recognition-based authentication measure for such transactions. The technology has been developed in-house by the UIDAI.

Some Data Related to Payment Frauds.

✦ According to the Home Ministry, in the financial year 2020-21, 2.62 lakhs financial crimes, such as money laundering, bribery, corruption and different kinds of frauds, were reported.

✦ The number jumped to 6.94 lakhs in 2022, a report, released by the Standing Committee on Finance — headed by BJP MP Jayant Sinha.

✦ Citing data it received from the supervised entities of the Reserve Bank of India (RBI), the committee noted that payment-related frauds are on the rise in India – In FY21, the volume of such frauds was a little over 700,000, which by FY23, increased to close to 20 million.

✦ However, due to limited awareness about cyber frauds, a significant number of people do not report them to authorities, the committee said.

✦ According to the information submitted to it by the Indian Cybercrime Coordination Centre (I4C), in the year 2022, out of 6,94,424 complaints related to financial frauds only in 2.6 per cent of cases an FIR was registered.

✦ The details shared by Karad with Parliament revealed that between November 2021 and March 2023, more than 2,000 complaints related to AePS were received by the offices of the RBI's ombudsman.

How AePS system is failing?

⇒ Here, in this system, a business correspondent, a key member in the payment supply chain, is the culprit.

⇒ A business correspondent (BC) is an informal bank agent equipped with a biometric Point-of-Sale (PoS) machine, which works like a micro ATM.

⇒ If someone needs Rs 500, they have to give their bank details to the BC along with their Aadhaar-based biometric details and the BC will give them the Rs 500.

⇒ However, officials aware of the matter said often, BCs misrepresent the amount they have paid an individual and input a higher amount in their system. Unsuspecting individuals, especially in rural areas, do not always have the wherewithal to ask for a receipt that the BC is supposed to generate after each transaction.

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Way Forward

> Technology alone cannot solve the problems of Cyber Related Crimes and Frauds as it has its own limitations.

> Raising Awareness among the people is very necessary.

> Lack of reporting is also a problem. People should report the cases to the related authorities so that the proper action can be taken against the fraudulent.

> Personal and financial information should be kept secured. This includes using strong and unique passwords for online accounts, regularly updating them, and enabling multi-factor authentication whenever possible.

> It is also crucial to exercise caution while sharing sensitive information online and to be wary of phishing emails, messages, and suspicious websites.

PEPPER IT WITH

Cyber frauds, Voice Recognition Technology, CERT-IN, Face recognition technology, Two-factor authentication (2FA)

Space Junk

News Excerpt

Recently, a Space Debris was found in a Western Australia beach, claimed by India's space agency to be from one of its Polar Satellite Launch Vehicles (PSLV).

Pre-Connect

- The Subject of "Space" comes under the list 3 of Schedule 7 of the Indian Constitution i.e.- the Residual list.
- The Indian Space Research Organisation, commonly referred to as **ISRO** is the **National Space Agency of India.**
- It operates under the **Department of Space (DOS)** which is directly overseen by the Prime Minister of India, while the Chairman of ISRO also acts as the executive of DOS.

About Space Debris

➢ Space debris, also known as Space Junk is any piece of machinery or debris left by humans in space.

➢ It can refer to big objects such as dead satellites that have failed or been left in orbit at the end of their mission.

➢ It can also refer to smaller things, like bits of debris or paint flecks that have fallen off a rocket.

Recent Case of Space Debris in Western Australia

✓ India has confirmed that an object that washed up on a Western Australian beach recently was from one of its rockets.

✓ The giant metal dome was found at Green Head beach, about 250km (155 miles) north of Perth, in mid-July - prompting speculation about its origins.

✓ Australian Space Agency (ASA) said that the object was "most likely" the third stage of a PSLV, which are used by India to launch satellites into orbit.

What Australia can do with the Debris?

▪ There are diverse views and plan on what to do with this Space Debris by various Stakeholders.

▪ **Western Australia** – It has already indicated it would be happy to keep it. The state's premier, Roger Cook, suggested to local media that the object could be stored in the state museum alongside debris from Nasa's Skylab station, which was discovered in 1979.

▪ **Locals** -said they might be interested in turning it into a local tourist attraction, according to the Australian Broadcasting Corporation (ABC).

▪ The object is currently in storage with the ASA. It is still not clear which mission it was used in, nor how long it had been in the water before washing up at Green Head.

Problems associated with the Space Debris

✦ **Space debris represents a risk to spacecraft -** Collisions with debris have become a hazard to spacecraft; the smallest objects cause damage akin to sandblasting, especially to solar panels and optics like telescopes or star trackers that cannot easily be protected by a ballistic shield.

✦ **It can cause Property loss or damage –** Space debris can fall on earth and can damage properties. It could cause great heritage loss if falls on heritage like Qutab minar, Taj Mahal, Agra fort etc.

✦ **It can lead to loss of Human lives –** If fall on a densely populated place, it can really lead to a great human fatality and catastrophe.

✦ **It can lead to Space War-** Space debris is harming various costly and expensive space satellites and programmes. Due to this many countries are getting threats.

✦ **It has increased the cost of the Space Projects**-Currently, depending on the orbit, up to 10% of the costs of a mission correspond to tasks focusing on reducing impact risks with space debris. If this continues to grow, costs will increase.

Solutions to the problem of Space Debris

> **Technological fixing**: This include removing space debris from orbit with nets, harpoons, or lasers.

> **Managerial Fixing**: Deorbiting a satellite at the end of its life .

> **By Imposing Taxes**: Implement an orbital-use fee—a tax on orbiting satellites. Orbital-use fees could be straight-up fees or tradeable permits, and they could also be orbit-specific, since satellites in different orbits produce varying collision risks.

> **Reducing the number of mission-related debris** released in spacecraft deployment and operations (e.g., clamps, covers for lenses or sensors, de-spin devices, pyrotechnic release hardware, wraparound cables) may be one of the easier ways of decreasing the future debris hazard to space operations.

> **Reducing the Creation of Debris from Degradation -** The products of spacecraft surface deterioration include paint flecks and other surface materials that come loose from a space object under the influence of the space environment.

India's initiatives on Space Debris:

⇒ **Project NETRA-** It is an early warning system in space to detect debris and other hazards to Indian satellites.

⇒ **Centre for Space Debris Research** – It has been set up by ISRO to monitor and mitigate the threat of space debris.

⇒ **System for Safe and Sustainable Operations Management (IS 4 OM)** set up by ISRO in the year 2022 to continually monitor objects posing collision threats, predict the evolution of space debris, and mitigate the risk posed by space debris.

⇒ ISRO also carried out **21 collision avoidance manoeuvres** of Indian operational space assets in 2022 to avoid collisions with other space objects.

Global Initiatives

> **ESA Initiatives -** Since the mid--1990s, ESA has performed **collision avoidance for their LEO satellites** via **ESA's Clean Space initiative**, the agency is committed to the development and testing of novel technological concepts aimed at the mitigation of space debris generation. Those activities are grouped under the **CleanSat project.**

> **The United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS), 2010** –It was established where the working group primarily focused on limiting the generation of space debris in the environment. The UN COPUOS guidelines are voluntary and non-binding fundamental principles which means that it has no legal obligation for the States and their nationals to comply.

> **The Inter-Agency Space Debris Coordination Committee (IADC)** is an inter-governmental forum whose aim is to co-ordinate efforts to deal with debris in orbit around the Earth founded in 1993.

> **The Outer Space Treaty –** It provides the basic framework on international space law, including the following principles:

- The exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind;
- Outer space shall be free for exploration and use by all States;

Way Forward

o The problem of outer space safety suffers today from two broad problems.

o One is that broad international agreement on global space governance that was once possible through International Treaty and International Agreements, as in the 1960s and 1970s when the Outer Space Treaty and its four subsidiary agreements were reached and ratified, seems to be extremely difficult to achieve today.

o Today, the path forward seems to focus much more on soft law. Thus progress is more likely to involve national.

> **PEPPER IT WITH**
> The Kessler syndrome, REMOVEdebris, Deorbit mission, India's Anti-Satellite (ASAT) missile-Mission Shakti

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Cell-Free DNA: Promises to transform how we find diseases.

News Excerpt

Recently, Cell-free DNA has been in news as it promises to transform how we find diseases.

About Cell-Free DNA

- Cell-free DNA are short fragments of DNA released into the bloodstream through a natural process of cell death.
- During pregnancy, the mother's blood contains cell-free DNA (cfDNA), both from her own tissue and from the fetus via the placenta. Approximately 2-20% of total cfDNA in maternal blood is placental.
- It was first discovered by Mandel and Métais in 1948.
- cfDNA can be found in plasma and other body fluids such as, Cerebral Spinal fluid, Pleural Fluid, urine, saliva and others.

- Scientists have been aware of such degraded fragments of nucleic acids in body fluids since 1948. But only in the last two decades or so, since genome sequencing technologies started to become more accessible, have they really figured out what to do with that knowledge.

c-f DNA in blood

➤ cfDNA can be generated and released from a cell in a number of possible situations, including when a cell is dying and the nucleic acids become degraded. Since an array of processes modulates the degradation, the amount, size, and source of the cfDNA can vary across a range as well.

➤ The release of cfDNA could occur together with a variety of processes, including those required for normal development, those related to the development of certain cancers, and those associated with several other diseases.

Applications of cfDNA.

✓ **It helps in keeping a check on baby's health:** It helps in **screening foetuses for specific chromosomal abnormalities**, an application known as **non-invasive prenatal testing**.They can then use it **to understand specific chromosomal abnormalities** that involve changes in the chromosomal copy number. Such changes can lead to conditions like Down's syndrome.

✓ **In Early Cancer Detection:** Another emerging application of cfDNA is in the early detection, diagnosis, and treatment of cancers.**In Genome-wide Mutational Incidence for Non-Invasive detection of cancer', or 'GEMINI'.** They adopted a whole-genome-sequencing approach to cfDNA extracted from patients.

✓ **In Organ Donation and Transplantation:** It helps in understanding why a body is rejecting a transplanted organ. Here, some cfDNA obtained from the donor who is donating the organ – called donor-derived cfDNA, dd-cfDNA – could provide an early yet accurate estimate of how well the organ is being taken up. This is an attractive proposition because changes in the levels of cfDNA in the blood would precede any biochemical or molecular markers that researchers currently use as a proxy for organ acceptance. That is, the cfDNA could send a signal earlier than other markers if something is going to go wrong.

✓ **As a Biomarker:** cfDNA could be used as a biomarker for neurological disorders like Alzheimer's disease, neuronal tumours, stroke, traumatic brain injury, and even metabolic disorders like type-2 diabetes and non-alcoholic fatty liver disease.

> **Types Of cf-DNA**
> - Circulating tumor DNA (ctDNA),
> - Cell-free mitochondrial DNA (ccf mtDNA)
> - Cell-free fetal DNA (cffDNA) and
> - Donor-derived cell-free DNA (dd-cfDNA)

> **PEPPER IT WITH**
> Mitochondrial DNA transfer, induced Pluripotent stem cell, Proton therapy for cancer, CRISPR CaS 9

Worldcoin - Biometric Project

News Excerpt

OpenAI CEO Sam Altman has formally re-introduced Worldcoin, a project of his that was eclipsed by the popularity of ChatGPT.

Pre-Connect

- Altman previously introduced the beta version of World coin in October 2021, but the project met with criticism and concerns, while there was little to no information about the WLD crypto.
- In December 2022, Altman launched OpenAI's chatbot ChatGPT. This project captured global attention and Altman has since become a person of note in the booming artificial intelligence industry.

About World coin

➤ World coin is an initiative to create a digital network in which everyone can claim some kind of stake, and join the digital economy.

➤ Using a device called "Orb," World coin volunteers known as 'Orb operators' scan a person's iris pattern to collect their biometric data and help them get a World ID through the World app.

➤ With the app, scanned participants can collect a cryptocurrency called World coin [WLD] at regular intervals or make transactions with their World ID where possible.

➤ This process is called "**proof of personhood**" and makes sure that people do not sign themselves up multiple times in exchange for crypto.

> **World coin scan irises**
> - World coin explained that they are using biometric information to avoid duplication.
> - The company claimed that India had "proven the effectiveness of biometrics" through its Aadhaar system.
> - it uses a technology known as zero-knowledge proofs (ZKPs) to maintain users' privacy.

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World coin's working procedure

✓ To make the World coin network possible, users need to be willing to scan irises and/or get their own irises scanned.

✓ Volunteers sign up to be "Orb operators" in their locality and receive basic training and a biometric device with which to scan irises. Orb operators can even rent out the Orb to others to let them scan eyeballs as well.

✓ Those who have their irises scanned and collect a World ID can use this to claim the WLD crypto, which they may use for transactions (if possible and legal) or hold on to the asset in the hope that its price might rise, as it did after launching.

✓ However, users can also buy or sell WLD without getting scanned or using the app. In this sense, it resembles a standard digital currency.

Criticism of World coin:

▪ Even if a person's biometric scans were deleted for privacy reasons, the unique identifier for the scan would match future scans of the same person's eyes.

▪ World coin scanned the eyes of underprivileged people in emerging economies across South America, Asia, and Africa during the COVID-19 pandemic.

▪ The report observed that several people whose irises were scanned did not understand the project's aims, or were tempted by Orb operators who promised rewards such as cash and Air pods in exchange for scans.

Conclusion

In conclusion, while the introduction of World coin and similar initiatives may present innovative solutions for economic inclusion, it is essential to strike a balance between the potential benefits and the risks associated with biometric data in terms of national security, individual safety, and national aspirations.

Presence of World coin in India

• World coin lists 18 locations — largely in Delhi, Noida, and Bangalore — where Orb operators are scanning people's eyes.

• Some locations include popular malls and metro stations in these cities.

PEPPER IT WITH

Non-fungible tokens, Blockchain technology, cryptocurrency, Internet of things, software as a service.

India's first satellite network portal site

News Excerpt

The Gujarat government signed a memorandum of understanding with **OneWeb India Communications Pvt Ltd** for setting up a 'satellite network portal site' in Gujarat.
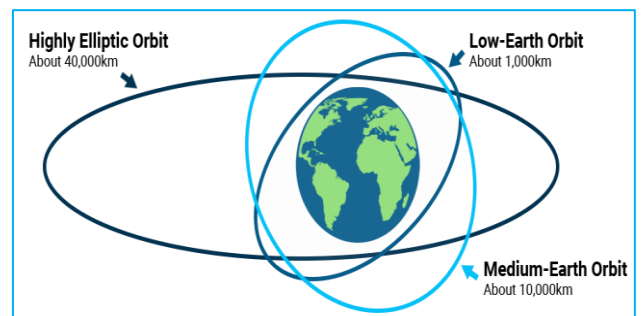
Pre-Connect

• According to India's inequality report of Oxfam international, **Rural internet usage in India stands at 31%,** while **urban usage is 67%.**

• **Merely 9% of students have internet-equipped computers**, and **25% can access it through various devices,** revealing digital disparities between urban and rural areas and within the student population.

• Satellite broadband technology, including **low Earth orbit (LEO) constellations like StarLink, Kuiper, and OneWeb,** is gaining prominence for global communication.

• **LEO satellites, positioned 500-1,200 km above Earth,** offer high-speed and low-latency connectivity, reducing data transmission delays.

• According to an estimate India requires at least **2 satellite network portals (SNPs)** due to its vast geography.

• Current shift towards LEO satellite communications signifies a growing reliance on advanced satellite technologies for seamless connectivity.

Highly Elliptic Orbit About 40,000km

Low-Earth Orbit About 1,000km

Medium-Earth Orbit About 10,000km

OneWeb:

OneWeb is a Low Earth Orbit (LEO) satellite startup that wants to create a world-wide network of communication. By leveraging LEO satellites, it provides broadband Internet connectivity with a decreased latency of less than 100 ms.

Satellite Broadband Technology:

➢ Satellite broadband technology involves using **satellites in space to provide high-speed internet access to remote or underserved areas on Earth.**

➢ This technology has **evolved with the emergence of low Earth orbit (LEO) satellite constellations** like StarLink, OneWeb, and Kuiper.

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➤ These constellations consist of numerous small satellites orbiting closer to Earth, enabling faster data transmission and reduced latency compared to geostationary satellites.

How does satellite internet work?

✓ Satellite internet works by transmitting an internet signal from an internet service provider to a satellite in space.

✓ The signal is then beamed back to users on Earth, where it is captured by a satellite dish.

✓ The satellite dish is typically connected to a modem, which then connects the user's computer or other devices to the internet signal.

✓ This process is repeated every time data is sent or received, allowing users to access the internet via satellite.

Satellite Network Portals (SNPs):

❖ Satellite network portals are online platforms that offer users access to satellite services.

❖ They serve as gateways for managing satellite communication aspects like satellite internet and navigation.

These portals provide tools for tasks such as tracking satellite positions, analyzing imagery, and configuring settings, aiding users in effectively utilizing satellite technology.

Potential in India

▪ **As per ICRA's 2021 report**, the number of satellite internet users is anticipated to increase by **almost six times, hitting approximately 2 million by 2025.**

▪ Satellite broadband holds significant potential, especially for **bridging the digital divide in rural and remote regions** where traditional infrastructure is lacking.

▪ It can provide reliable internet **access to areas with challenging terrain or inadequate connectivity** options.

▪ This technology can encourage **e-learning, telemedicine, e-commerce, and communication services, empowering communities and boosting economic growth.**

Significance

✦ Satellite broadband's significance lies in its ability to **offer global coverage, overcoming terrestrial limitations.**

✦ In a vast country like India, where laying cables and building infrastructure can be challenging, **satellite broadband can rapidly extend connectivity.**

✦ It contributes to the **government's Digital India initiative**, facilitating equitable access to information and services.

Challenges

⇒ **Cost:** High initial expenses make satellite technology implementation too expensive for end users.

⇒ **Spectrum Allocation:** Efficient allocation of frequency spectrum is crucial to prevent interference and ensure optimal performance.

⇒ **Regulatory Hurdles:** Regulations around satellite deployment, spectrum usage, and licensing need to be streamlined to encourage investment and innovation.

⇒ **Latency:** Even though LEO satellites have less latency, there are still problems, especially for applications that need real-time communication.
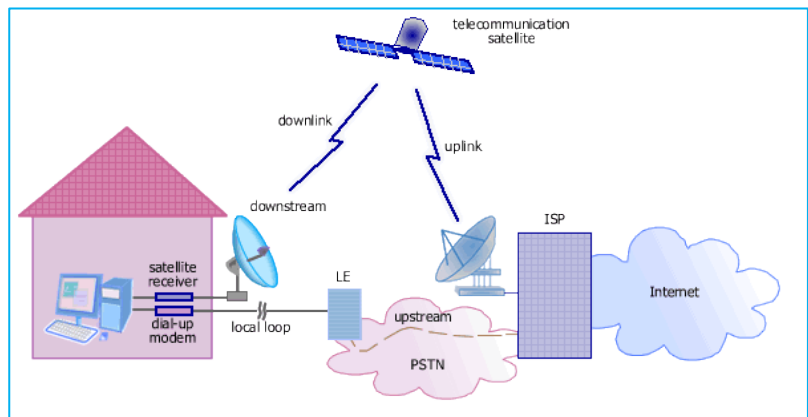
Way Forward:

> **Affordability:** It is important to work to reduce user prices so that more people can receive satellite broadband.

> **Infrastructure Sharing:** Collaborations between satellite operators can result in more effective resource use and lower costs.

> **Policy Reforms:** Governments should provide enabling regulations to promote private sector investment and satellite technology innovation.

PEPPER IT WITH

Remote sensing, Li-Fi, RFID, INSAT series, GSAT Series- ISRO, National Digital Communications Policy, 2018, BHARATNET

> **Last-Mile Connectivity:** Widespread access must be made possible by integrating satellite broadband with local networks and taking it the last mile.

> **Skill Development:** Satellite broadband technology's acceptance and sustainability will be boosted by teaching local populations how to utilise and maintain it.

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Superconductive properties

News Excerpt

Researchers have demonstrated the ability to grow high-quality thin films of a recently discovered superconductor material.

About Superconductivity

- Superconductivity refers to a state in which a material offers zero, or near-zero, resistance to electric current. A current is nothing but the movement of charged particles, electrons in most cases, in a particular direction.
- Superconducting materials show very interesting behaviour under magnetic field which allows the functioning of systems like the MRI scan machine and the superfast Maglev trains that float above the tracks.

Current status of superconductors

- As of now, superconductivity can be achieved only at very low temperatures, more than 250 degrees Celsius below zero.
- The first material to have been discovered to show super conductive properties was Mercury, which becomes a superconductor at close to 270 degrees Celsius below zero.
- Most of the other materials commonly used as superconductors – Lead, Aluminium, Tin, Niobium, and several others – also become superconducting at comparable temperatures, called critical temperature.
- In some cases, materials can exhibit superconductivity at slightly higher temperatures as well, but under increased pressure conditions. Even the materials that are classified as 'high-temperature' superconductors, as of now, show superconductive properties only well below -150 degrees Celsius.

Chart 1 | The chart shows the materials ordered by their critical temperature (Tc), the temperature below which they become superconducting (in kelvin)
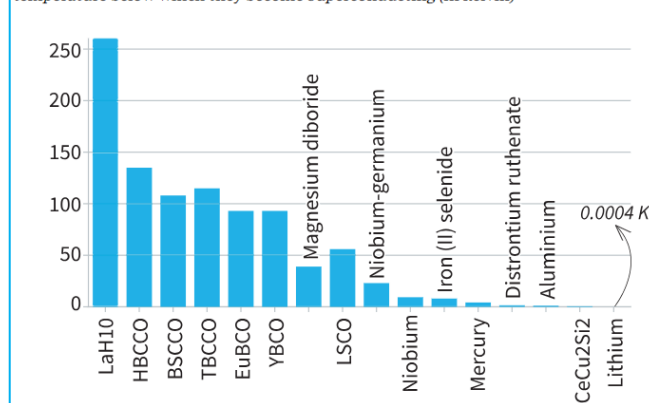
Types of Superconductors

Type 1 Superconductor	Type 2 Superconductor
These Superconductors are called soft superconductors.	These superconductors are called **hard superconductors**.
Only one critical field exists for these superconductors	Twi critical fields Hc1 (lower critical field) and Hc2 (upper critical field) exist for these superconductors.
The critical field value is very low.	The critical field is very high.
These superconductors exhibit a perfect and complete Meissner effect.	These do not exhibit a perfect and complete Meissner effect.
These materials have limited technical applications because of their very low field strength value.	These materials have wider technological applications because of their very high field strength value.
Example: Pb, Hg, Zn, etc.	Example: Nb3, Ge, Nb3Si. Y1Ba2Cu3O7, etc.

Properties of Superconductors

- **Meissner Effect:** In 1993 Meissner discovered that not only did superconductors exhibit zero resistance but also spontaneously expel all magnetic flux when cooled through the superconducting transition, that is, that is they are also perfect diamagnets. We call this the Meissner effect.
- **Effect of Magnetic Field:** Removal of the superconducting state does not only occur by raising the temperature but also by subjecting the material to a magnetic field.
- **Frequency effect:** Superconductivity is observed for direct current (D.C.) and up to radio frequencies. It is not observed for higher frequencies. For a superconductor, the resistance is zero only when the current is steady or varies slowly.
- **Entropy:** Entropy increases on going from a superconducting state to a normal state.
- **Thermal Conductivity:** In an ideal superconductor, there is a marked drop in thermal conductivity when superconductivity sets in.
- **Isotope Effect:** It has been observed that the critical temperature of superconductors varies with isotopic mass.

Reasons behind the quest for a room-temperature superconductor

- In fact, superconductors are already being used, but their use is limited because of the extreme conditions that must be created.

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- Elimination of this resistance can result in super-efficient electrical appliances, removal of transmission losses in power cables, and massive gains in energy.

Way Forward

Scientists are looking for a material that can display superconductivity at room temperature (usually considered to be between 20 and 25 degrees Celsius) and under normal pressure conditions. But room-temperature superconductivity does not necessarily have to be at room temperature.

The term is commonly used to describe superconductive properties in conditions that are easy to create. For example, a minus 5 or minus 10 degrees Celsius temperature conditions are not very difficult to create, nor are 70- or 90-degrees Celsius conditions. Any material that would display superconductivity in an easily obtainable condition would qualify as the superconducting solution that the world is searching for.

> **PEPPER IT WITH**
>
> Ohm's law, Bose-Einstein condensate, Plasma state of matter, AT&C losses in electricity transmission, Cryogenic technology.

Semiconductor Tech

News Excerpt

Recently, the **Foxconn Technology Group** has withdrew its support from its joint venture with Vedanta, Ltd. to establish a semiconductor manufacturing plant in Gujarat.

Pre-Connect

- **The AtmaNirbharta vision** (self-reliance) in electronics and semiconductors received a boost with the Union Cabinet's approval of the **Semicon India program,** allocating **INR 76,000 crore.**
- **Semicon India aims to financially support companies investing in** semiconductor, display manufacturing, and design. The goal is to establish India's presence in the global electronics value chain.
- **The India Semiconductor Mission (ISM),** an autonomous division of **Digital India Corporation**, aims to develop semiconductor and display facilities. It introduces four schemes: supporting semiconductor and display fab setup, creating compound semiconductor/sensors fabs, and a design incentive scheme.
- Scheme for setting up of **Semiconductor Fabs** in India provides fiscal support to eligible applicants for setting up of Semiconductor Fabs which is aimed at attracting large investments for setting up semiconductor wafer fabrication facilities in the country. Following fiscal support has been approved under the scheme:
  - 28nm or Lower - Up to 50% of the Project Cost
  - Above 28 nm to 45nm - Up to 40% of the Project Cost
  - Above 45 nm to 65nm - Up to 30% of the Project Cost
- Additionally, the government has also approved **modernisation of Semi-Conductor Laboratory**, **Mohali** as a brownfield Fab.

About Semiconductor

- A semiconductor is a substance that has **specific electrical properties** that enable it to serve as a foundation for computers and other electronic devices.
- It is typically a **solid chemical element or compound that conducts electricity under certain conditions** but not others. This makes it an ideal medium to control electrical current and everyday electrical appliances.
- **Conductor and insulator** are substances that **conduct and repel electricity,** respectively, in semiconductors.
- **A diode, integrated circuit (IC) and transistor** are all made from semiconductors.
- The conductance can vary depending on the current or voltage applied to a

What is a Semiconductor?

A semiconductor is a material, whose conductivity properties lie between the conductor and insulator.

Semiconductor Examples are: Silicon, Germanium, Gallium Arsenide etc.

Semiconductor
- Extrinsic (n≠p)
  - P-type (p>n)
  - N-Type (n>p)
- Intrinsic (n=p)

Semiconductor Components
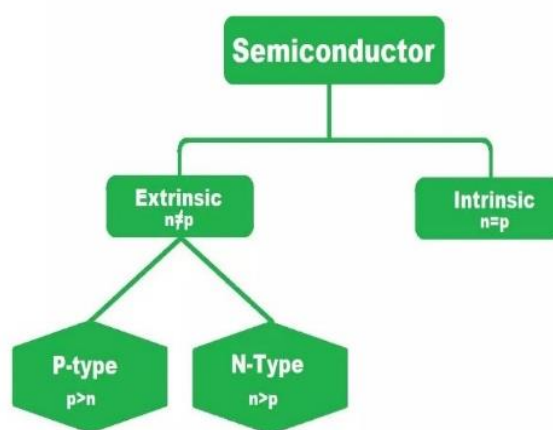
"n" stands for negative (free electrons)
"p" stands for positive (holes)

control electrode or on the intensity of irradiation by **infrared (IR), visible light, ultraviolet or X-rays.** The specific properties of a semiconductor depend on the impurities "known as dopants" added to it.

Significance of Semiconductors technology

✓ Semiconductors hold immense significance across various sectors, including **aerospace, automotive, communications, clean energy, information technology, and medical devices**, among others.

✓ Their critical role has led to a global chip shortage due to **demand surpassing supply**, resulting in economic setbacks and job losses.

✓ The Indian government allocated ₹76,000 crore through the **Production-Linked Incentive (PLI)** scheme in December 2021 to promote domestic semiconductor manufacturing.

✓ These semiconductors, along with displays, serve as the foundation for modern electronics, driving the ongoing digital transformation in **Industry 4.0.**

Why is it important to promote Semiconductor Industry?

▪ The foundation of the modern information age, semiconductor chips allow electronic devices to **compute and regulate operations** that make daily living easier.

▪ ICT (information and communication technologies) are developed as a result of these chips, which **promotes worldwide connectivity.**

▪ They are essential for the transfer of power and communications, both of which have an impact on the **nation's security.**

▪ Indian integration into the **global value chain** would result from supporting the semiconductor ecosystem, which would have an impact on all sectors of the economy.

▪ The semiconductor business is mostly controlled by a small number of nations, therefore increasing domestic production is essential.

Applications of Semiconductors in Daily Life

✚ **Computing:** The semiconductor sector manufactures memory chips and microprocessors, which are the primary parts of computers, servers, and data centres. These devices are used throughout a variety of industries, including manufacturing, logistics, banking, and healthcare.

✚ **Communications:** Semiconductors are used in the production of satellite systems, cell phones, and other communication tools. They are also utilised in the construction of wireless communication systems, network hardware, and other data transmission equipment.

✚ **Energy:** Semiconductors are used in the production of solar cells and other renewable energy sources. In power management devices like voltage regulators and power supply, semiconductors are also employed.

✚ **Automotive:** The sensors, safety systems, and engine control modules found in car electronics all make use of semiconductors. They are also used in electric and driverless cars.

✚ **Healthcare:** Medical implants, gadgets, monitoring, imaging, and diagnostic equipment all use semiconductors.

Challenges Faced by Semiconductor industry

> The semiconductor and display manufacturing sector **demands substantial capital investments, involves high risks, long payback periods, and rapid technological changes.**

> Government **fiscal support** for this sector remains insufficient compared to the necessary investment scale. India lacks fabrication capacities, possessing only one outdated fab.

> Setting up a **semiconductor fabrication facility** is **exorbitantly expensive and resource-intensive, requiring significant water, power, land, and skilled labor.**

Way forward

⇒ India should work to establish itself as a key player in a **reliable, multilateral semiconductor ecosystem**, which calls for advantageous trade policies.

⇒ Utilizing current expertise and resources, financial support should concentrate on various chip-making processes, such as **design centers, testing facilities, and packaging.**

⇒ Create a whole ecosystem that includes semiconductor **design, fabrication, testing, and R&D.**

⇒ **Boost communication amongst linked sectors** to create a strong chip manufacturing ecosystem.

⇒ **Stress the advancement of chip design** while acknowledging its crucial role in value creation.

> **PEPPER IT WITH**
> Doping, Production-linked incentive scheme, Friend shoring, Mineral supply partnership, Lithium triangle.

SECURITY

Stapled Visa

News Excerpt
India withdrew its eight-athlete wushu contingent from the Summer World University Games beginning in Chengdu on July 28, after China issued stapled visas to three athletes from the team who belong to Arunachal Pradesh.

About stapled visa
A stapled visa is simply an unstamped piece of paper that is attached by a pin or staples to a page of the passport and can be torn off or detached at will. China has made it a practice to issue stapled visas to Indian nationals from Arunachal Pradesh and Jammu and Kashmir.

Pre-Connect
- Chinese authority signalled their intention by refusing to give a visa to an Indian government official who was serving in Arunachal Pradesh in late 2006.
- Subsequently, they started the practice of issuing 'stapled' visas – the visa was not affixed to the passport but was given on a separate piece of paper stapled to the passport – to all Indian citizens from Arunachal Pradesh (as well as Jammu and Kashmir).

Reasons behind issuance of stapled visa by China
- China challenges the legal status of the McMahon Line, the boundary between Tibet and British India that was agreed at the Convention Between Great Britain, China, and Tibet at the Shimla Convention of 1914.
- It is this disagreement that lies at the heart of Chinese claims over the position of the Line of Actual Control (LAC), and its repeated transgressions into Indian territory.
- China claims some 90,000 sq km of Arunachal Pradesh as its territory. It calls the area "Zangnan" in the Chinese language and makes repeated references to "South Tibet".
- It issues lists of Chinese names for places in Arunachal Pradesh — it has issued three such lists in 2017, 2021, and in April 2023 this year — and takes steps such as issuing stapled visas.

India's concerns
- Government of India has consistently refused to accept the issual of stapled visa by Chinese authority. India has clearly expressed its concern and stressed that there should be no discrimination or differential treatment based on domicile or ethnicity in the visa regime for Indian citizens holding valid India passports.
- India alleges China to dispute India's unequivocal and internationally accepted sovereignty over Arunachal Pradesh by issuing stapled visa.

Conclusion
Passports, visas, and other kinds of immigration controls reiterate the idea of a nation-state and its sovereignty which is inalienable and inviolable. A passport is the certificate of its holder's identity and citizenship. Both India and China need to resolve the issue in an expeditious manner and maintain the momentum of dialogue and negotiations through diplomatic channels.

Types of Indian Visa
- Employment visa
- Business visa
- Project visa
- Entry visa
- Tourist visa
- Research visa
- Transit visa
- Conference visa
- Medical visa

PEPPER IT WITH
Business visa, F visa, Employment visa Conference visa, Work permit, Tourism Research visa

Border Roads Organisation (BRO)

News Excerpt
The Border Roads Organisation under the Ministry of Defence has built over 60 per cent of roads bordering China in the last three year.

Pre-Connect
- BRO is a government agency under the control of the Ministry of Defence.
- This body is responsible for the construction, maintenance, and development of roads, bridges, and tunnels in border areas and other strategic regions of the country.
- It was founded in 1960, primarily to improve connectivity in remote and challenging terrains along India's borders.
- The Government of India set up the Border Roads Development Board (BRDB) with the Prime Minister as Chairman of the Board and Defence Minister as Deputy Chairman.

Road's Construction in Border areas

➢ Roads along Pakistan borders were also constructed in the last three years. For instance, the Union Territory of Jammu & Kashmir also saw construction of 443.94 km of roads while 311.14 km of border roads were built in Rajasthan.

➢ According to data provided in parliament Arunachal Pradesh saw the construction of maximum road length at 507.14 km followed by Ladakh at 453.59 km and Uttarakhand at 343.56km. A total of 164.95 km of roads were built in Sikkim and 40.23 km of border roads were built in Himachal Pradesh.

➢ Overall, 2445.54 km of roads were constructed by BRO in the last three years.

➢ The data also showed that BRO had spent Rs 846.46 crore of the sanctioned Rs 923 crore in 2022-23 for maintaining border roads—up from Rs 744.52 crore in the previous fiscal year.

Role of BRO in Border Security

✓ **Infrastructure Development**: BRO is responsible for constructing and maintaining roads, bridges, and tunnels in border regions. These infrastructure projects improve accessibility to border areas, enabling the swift movement of armed forces personnel, equipment, and supplies. Well-maintained and strategically placed roads contribute to better border patrolling and surveillance.

✓ **Strategic Connectivity**: By establishing roads and infrastructure in remote and challenging terrains near the borders, BRO ensures that border regions are well-connected. This connectivity is vital for maintaining troop readiness, quick response capabilities, and efficient supply chain management for defense forces.

✓ **Quick Response**: The infrastructure developed by BRO allows defense forces to respond swiftly to any security threats or emergencies along the borders. It facilitates rapid troop deployment and the movement of specialized equipment, enabling timely action.

✓ **Surveillance and Patrolling**: The improved road network created by BRO supports border patrolling and surveillance activities. Troops can effectively monitor and secure the border areas, deter intrusions, and respond to any unauthorized crossings.

✓ **Strategic Deployment**: The BRO's efforts enable the Indian military to position its personnel and resources strategically along the borders. This positioning helps deter potential adversaries and ensures a strong defense posture.

Challenges faced by BRO

▪ **Geographical and Climatic Challenges**: BRO often operates in high-altitude regions, dense forests, deserts, and mountainous terrains. Extreme weather conditions, including heavy snowfall, avalanches, landslides, and freezing temperatures, can disrupt construction and maintenance activities.

▪ **Logistical Challenges**: Transporting construction equipment, materials, and personnel to remote sites can be a logistical nightmare. Seasonal road closures and difficult terrain can hinder the movement of resources.

▪ **Security Concerns**: BRO operates in border regions that may have security risks due to potential cross-border tensions, insurgent activities, and other threats. Ensuring the safety of personnel and equipment is a constant challenge.

▪ **Technological Challenges**: Constructing roads, tunnels, and bridges in challenging terrains requires specialized engineering solutions. Adapting technology and techniques to these unique environments can be a technical challenge.

Way Forward

To ensure BRO's continued effectiveness and success, the following strategies can be considered-

○ **Technology Integration**: Embrace innovative construction techniques and technology to enhance efficiency and quality. This could include the use of advanced machinery, drones for surveying, and digital project management systems.

○ **Capacity Building**: Invest in training and skill development for BRO personnel to handle the unique challenges of working in difficult terrains. Provide them with the necessary tools and knowledge to adapt to changing circumstances.

> **PEPPER IT WITH**
> BRO2.0, Project HIMANK, Project Arunank, Project Beacon, Project Brahmank

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Defence Testing Infrastructure Scheme

News Excerpt

India's first Unmanned Aerial Systems (Drone) Common Testing Centre under Defence Testing Infrastructure Scheme (DTIS) will be established in Tamil Nadu.

Pre-Connect

• The Scheme has an outlay of 400 crore for creating state-of-the-art testing infrastructure over the duration of five years.

• It envisages to setup new test facilities in partnership with private industry.

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- The projects under the scheme will be provided with up to 75% government funding in the form of Grant-in-Aid.
- The remaining 25% of the cost will be borne by the Special Purpose Vehicles (SPV), whose constituents will be Indian private entities and State Governments.
- The SPV will be made of State Governments and Private entities and the scheme will be registered under Companies Act 2013.
- While a majority of test facilities are expected to come up in the two Defence Industrial Corridors (DICs).
- The test facilities are not going to be limited just in the two Defence Industrial Corridors (DIC) in Uttar Pradesh & Tamil Nadu.
- It will is a Greenfield Defence Testing Infrastructure which will help in boosting production in both the defence and aerospace sector which had been lacking such facility for the private players.

About

➢ This centre will be established on an area of 2.3 acres at the SIPCOT Industrial Park, Vallam Vadagal near Sriperumbudur.
➢ The testing centre to be set up at an estimated cost of ₹45 crore will enable the State to be a significant contributor to the self-reliance of the country in the aerospace and defence sectors.

Key Benefits

Setting up a drone testing lab in India can provide significant security-related benefits, like-

✓ **Counterterrorism and Surveillance**: A drone testing lab can help develop and test advanced surveillance drones that can be employed for counterterrorism operations. These drones can monitor sensitive areas, detect suspicious activities, and enhance situational awareness for security agencies.
✓ **Border and Coastal Monitoring:** Drones equipped with high-resolution cameras and sensors can be used to monitor borders and coastlines, helping prevent illegal crossings, smuggling, and other security threats.
✓ **Critical Infrastructure Protection**: Drones can be used to inspect critical infrastructure such as power plants, pipelines, and communication towers for vulnerabilities and potential security breaches.
✓ **Emergency Response and Disaster Management**: Drones can provide real-time aerial views during natural disasters, assisting in search and rescue operations and enabling better disaster response coordination.

Conclusion

The establishment of drone testing labs in India holds immense promise for advancing technology, security, and innovation. With the rapid evolution of drone technology and its multifaceted applications, such labs offer a strategic platform to explore, experiment, and refine the capabilities of unmanned aerial vehicles.

> **PEPPER IT WITH**
>
> SEZ, Defence Industrial Corridor, iDEX

By bringing together government agencies, research institutions, industry stakeholders, and regulatory bodies, India can leverage these testing facilities to strengthen its security apparatus, enhance disaster response, improve surveillance, and bolster critical infrastructure protection.

ART & CULTURE

Sree Narayana Guru Jayanti

News Excerpt
Recently, the Prime Minister has paid tributes to Sree Narayana Guru on his Jayanti.

About
- Shree Narayana Guru was born on August 20, 1856, in the village of Chempazhanthi near Thiruvananthapuram as the son of Madan Asan, a farmer, and Kutti Amma.
- He was born into a family of the Ezhava caste in an era when people from such communities, which were regarded as Avarna, faced much injustice in the caste-ridden
- society of Kerala.
- He was a catalyst and leader who reformed the oppressive caste system that prevailed in society at the time.
- The caste system was rampant in Kerala at that time.
- One of his famous sayings in Malayalam was „One caste, one religion, one god for all.
- He demonstrated a path to social emancipation without invoking the dualism of the
- oppressed and the oppressor.
- His philosophy always advocated social equality, education for all, and spiritual
- enlightenment.
- He loved solitude and always indulged himself in deep contemplation. He was intensely
- drawn to worship at the local temples and composed hymns and several devotional songs.
- He is revered for his Vedic knowledge, poetic proficiency, openness to the views of others, non-violent philosophy, and unrelenting resolve to set aright social wrongs.
- He was instrumental in setting the spiritual foundations for social reform in Kerala and was one of the most successful social reformers to revolt against caste system in India.
- Narayana Guru consecrated the first temple of Lord Shiva in 1888 where an idol was ordinated by a non-brahmin in Aruvippuram village of Kerala. His step sparked off the anti-caste revolution against the upper-caste Brahmin communities.
- Later, in 1903, he established the Sree Narayana Dharma Paripalana Yogam (SNDP) as the founder and president. The organisation continues to mark its strong presence to this day.
- He had set up more than 40 temples across the state as an act of protest to permit lower caste people to enter temples.
- The famous Vaikom Satyagraha' protest movement against caste discrimination and
- untouchability abolished untouchability and inequality. Hence, this day is quite important in Kerala and is observed as a public holiday.
- The Sivagiri pilgrimage was established in 1924 to promote the virtues of cleanliness,
- education, devotion, agriculture, handicrafts, and trade.
- His philosophy and teachings are a way of life for the people of Kerala.
- He passed away on September 20, 1928.

> **PEPPER IT WITH**
> Satyashodhak Samaj, National Social Conference, Justice movement, Self-respect movement, Poona Sarvajanik Sabha.

Martand Sun temple

About
- This Kashmiri Hindu temple is one of the most elegant structures ever built in India.
- Temple was built during 725 – 756 AD under the dynasty of Karkota by king Lalitaditya.
- The eighth-century temple was said to have been destroyed during the rule of Sikandar Shah Miri between 1389 and 1413.
- It is contentious that the foundation of this temple was laid during the period of 370 to 500 AD by Ranaditya, one of the legendary King.
- In Sanskrit, Martand is another name for the Sun God within Hinduism.

- Structure was constructed of limestone and the entire complex had been built on the top of a plateau near Anantnag in Kashmir.

The architecture of Martand Sun temple

➢ Temple is situated on a large landscaped area, spread over the area of 220 feet in length and around 142 feet wide.

➢ The architecture of the Martand Sun temple is comprised of the Gandharan, Gupta, Roman, Chinese, Syrian – Byzantine and Greek designs.

➢ This mesmerizing complex area expands over around 32,000 square feet and has its entrance towards the western side of the complex area.

➢ Entrance was adorned by elaborate and intricate carvings of the Hindu Deities.

➢ Main shrine had smaller antechamber which was decorated with the beautiful intricate carvings of Lord Vishnu, goddess Ganga and Yamuna and the ultimate Sun God, Surya.

➢ In order to magnetize the aura of the place, Martand Sun temple was surrounded by some 84 small shrines as well during that time.

➢ Ruins over the site mark weathered Sanskrit inscriptions and eroded sculpture and carvings depicting traditional dance postures and musical events.

➢ Because of its majestic architecture and diversified structural designs, it is a center of attraction in Kashmir region.

PEPPER IT WITH
Konark Sun Temple- Odisha, Dakshinaarka Temple- Bihar, Arasavalli Sun Temple- Andhra Pradesh, 12 Jyotirlinga

Quit India movement

About

- On August 9, 1942, the biggest mass movement of the Indian freedom struggle was launched.
- This was the decisive final phase of the struggle for independence.
- People were on their own — out on the street, driven by the Mahatma's call of "DO or DIE" that implied that we shall either free India or die trying; we shall not live to see the perpetuation of our slavery.
- It was a truly people-led movement which was eventually crushed violently by the British.
- One thing was crystal clear that nothing short of their final departure was acceptable to India's masses.
- The Congress was initially reluctant to launch a movement that could hamper Britain's efforts to defeat the fascist forces. But it eventually decided on mass civil disobedience.
- The Quit India movement was violently suppressed by the British — people were shot and lathi charged, villages were burnt, and backbreaking fines were imposed.
- Five months up to December 1942, an estimated 60,000 people had been thrown into jail.
- However, though the movement was quelled, it changed the character of the Indian freedom struggle, with the masses rising up to demand with a passion and intensity like never before: that the British masters would have to Quit India.

PEPPER IT WITH
INA agitation, Royal Indian Navy (RIN) Mutiny, Wavell plan, Cabinet mission, underground radio-Usha Mehta.

CONTEMPORARY ETHICS CASE STUDIES

1. In a government-run sports academy aimed to nurture talented young female athletes. Because of this, women's sports had gained popularity in this region. However, behind the scenes, a culture of sexual exploitation had quietly emerged. Senior players and officials within the academy took advantage of their positions of power and influence to exploit vulnerable girls who aspired to make a mark in the sporting world. The exploitation ranged from verbal harassment and abuse to more severe forms of sexual misconduct. As rumours and whispers started circulating within the local community, a group of courageous girls gathered the strength to share their harrowing experiences with their parents. Shocked and outraged, the parents decided to take action and bring the perpetrators to justice.

   Anand Ahuja, who is the administrator of the sports academy authority, came to know about such activity. Instead of taking strict action against the culprits, Mr Ahuja started threatening the female athletes about losing their place in the academy and tarnishing their image as well. Mr Ahuja has a high reach at the top of government tables; therefore, he is using his power to quell the protest. However, as media organisations have picked up the story, the government has no option but to order an enquiry into the matter.

   You have been appointed as the investigating officer since you have represented sports at the national level. You have good relations with Mr. Ahuja, who has helped you greatly during your preparation in the past. When Mr Ahuja came to know about you, he called you and asked you to submit the report without investigation.
   (a) Examine the ethical dilemma involved in the case.
   (b) Under the given conditions, what options are available to you as an investigating officer?
   (c) Do a critical analysis of the options, and choose the best option by citing reasons for it.

2. In a highly diverse and vibrant state of our country, where divisive caste-based politics marred the local political discourse. Caste had become a dominant factor in elections, influencing voting patterns and shaping political landscapes. In an effort to understand and address this deep-rooted issue, the Election Commission decided to conduct a comprehensive survey to ascertain caste dynamics and their impact on electoral processes.

   As an election official, you have been entrusted with overseeing the survey; your ethical responsibility becomes paramount. You recognize the sensitive nature of the issue and understand the potential implications it may have on individuals and communities. Your role is not just to administer the survey but to ensure its fairness, confidentiality, and adherence to ethical principles.

   The survey is designed to gather information on individuals' caste identities, aiming to provide valuable insights into the prevailing caste-based politics and its effects on the social and political fabric. The local chief minister (CM), who happens to be your distant relative, contacts you and asks you for the early results so that he can make a strategy for the upcoming elections. You made him aware that you are not in a position to give those data until the survey is complete. Suddenly you see some people are keeping an eye on you, you have started receiving threatening calls, and even your seniors have verbally asked you to oblige the request that the CM has made.
   (a) Examine the ethical dilemma involved here?
   (b) What are the options available to you? Analyse each option carefully and discuss the best option in detail.
   (c) Do you think Caste based census should be conducted all across the country? Give justification for your argument.

3. A massive anti-encroachment drive was launched to reclaim public lands that had been unlawfully occupied for years in Noida City. The campaign aimed to restore order and ensure equal access to communal spaces. However, amidst the chaos and destruction, Mayor Rohit Singh found himself at the centre of a storm of accusations and discontent.

   As the bulldozers rolled in, levelling numerous illegally constructed houses, a wave of anger and frustration engulfed the affected communities. People who had built their lives in these homes for generations now faced homelessness. Rumours spread like wildfire, alleging that the land was sold to them illegally and that corruption ran rampant within the city administration.

   Mayor Rohit, with a heavy heart, knew that his duty was to uphold the law and protect the greater interests of the city's residents. However, he couldn't ignore the cries of anguish from the displaced families nor the accusations hurled his way. The weight of their discontent weighed heavily on his conscience.

   Mayor Rohit, through his contacts, conducted a quick inquiry and found out that the local MLA brother was involved in this scam. Before he could take any action local MLA called him and asked him to keep mum; otherwise, his party would withdraw the support, and he would lose his ability to remain seated in the mayor's chair.

   SCAN THIS QR FOR MODEL CONTENT

In this situation:

(a) **What are the ethical and moral dilemmas present in this case?**

(b) **What is the best course of action in this situation? Write in detail.**

(c) **What must be done to fight illegal encroachment of public property? Suggest some suitable solutions in this regard.**

PHILOSOPHY OF THE MONTH

Life as a Game of Chess

- Drawing parallels between life and the intricate game of chess has been a thought-provoking exercise for philosophers throughout history. The comparison stems from the strategic nature of both endeavors, where every move has consequences that shape the course of events.

- In chess, players strategize to control the board, just as individuals aim to shape their lives through decisions. Each piece in chess has a unique role, akin to the roles we assume in various stages of life – student, professional, parent, etc.

- Both life and chess are characterized by complexity. Just as chess involves multiple potential moves, life offers a plethora of choices. Decision-making in both contexts demands critical thinking, assessing risks, and predicting potential outcomes.

- Successful chess players and individuals in life both rely on foresight and planning. Anticipating opponents' moves or future challenges corresponds to foreseeing potential obstacles in life and preparing for them.

- Despite meticulous planning, unexpected moves occur in both life and chess. Adapting to these surprises necessitates flexibility and creative problem-solving, highlighting the need for resilience.

- Just as winning a chess game is a culmination of careful moves, achieving life goals often requires persistent effort. Both victory and defeat in these realms hold significance, offering lessons and shaping personal growth.

- Chess has rules, and life has moral principles. Navigating both realms necessitates ethical decision-making, reflecting on the consequences of actions not only for oneself but for others as well.

- The analogy prompts existential contemplation. Is life a calculated sequence of moves, or does it encompass spontaneity and emotion beyond strategy?

- The notion of life as a game of chess invites philosophical inquiries into the nature of existence, the role of agency, and the interplay between strategy and intuition. Exploring these parallels provides insights into the human condition while acknowledging the nuanced layers that compose our journeys.

Experience the blissfulness of being

- Mistakenly, the world often assumes that bliss results from activity, but this perception is flawed. In reality, the relationship between activity and bliss is quite the opposite. People tend to categorize activities as either pleasant or unpleasant.

- Once an activity is deemed pleasant, there's a longing to pursue it. Conversely, when an activity is labeled unpleasant, efforts are directed towards avoidance. This marks the genesis of human compulsive behavior.

- The division of activities into 'pleasant' and 'unpleasant' leads to attachment to pleasurable experiences and aversion to uncomfortable ones. Philosophically, this phenomenon invites reflection on the nature of desire and its relationship to happiness.

- The pursuit of happiness is a cornerstone of human endeavor, but the concept of experiencing bliss in the absence of activity prompts us to question the very nature of this pursuit.

- The idea of finding bliss in being encourages exploration of mindfulness and the power of living in the present moment. Philosophically, this concept aligns with Eastern philosophical traditions that emphasize the transformative potential of present-moment awareness.

- The pursuit of external pleasures might distract from genuine self-discovery and fulfillment. Philosophically, this prompts us to contemplate the nature of authenticity and how it intersects with the pursuit of bliss.

- A philosophical lens is needed to analyze whether the pursuit of bliss through being challenges the conventional materialistic worldview. Does this idea signify a shift towards a more spiritual or existential paradigm?

PT CONCATENATION

All India Tiger Estimate Report (AITE)

Context

All-India Tiger Estimate **(AITE) report** released by the **Environment Ministry** on **Global Tiger Day.**

About

- India currently harbors almost **75%** of the **world** **s tiger population**, with **53 reserves** spread across **75,796 square km**, effectively covering **2.3%** of India's total **land area**.
- The tiger population is estimated to be 3925 and the average number is **3682 tigers**, reflecting an **annual growth rate** of **6.1%** per annum.
- The largest tiger **population** of **785** is in **Madhya Pradesh**, followed by **Karnataka (563)** & **Uttarakhand (560)**, and **Maharashtra (444)**.
- The **tiger abundance** within the Tiger Reserve is highest in **Corbett (260)**, Bandipur (150), Nagarhole (141), Bandhavgarh (135), Dudhwa (135).
- **Central India**, **Shivalik Hills** and **Gangetic Plains** witnessed a notable **increase** in tiger population, particularly in the states of Madhya Pradesh, Uttarakhand, and Maharashtra.
- However, certain regions, such as the **Western Ghats**, experienced localized **declines.**

Key Concerns

- **16 Tiger reserves** referred to as **"bottom reserves"** contain **only 25 tigers**, which is less than 1% of national tiger population. None of them has more than 5 tigers, 7 of them have only one tiger each and **5 of them have no tigers at all**. While Management Effective Evaluation **(MEE),** audit of Environment Ministry showed the 9 of these 16 bottom reserves in good and very good category.
- **45%** of India's tiger population is concentrated in another **16 reserves**.
- **Uneven tiger distribution** can be attributed to lack of protection, habitat fragmentation, poor management, and lack of prey base.
- There has been **loss of tiger habitat** since 2018 in Mizoram, Nagaland, Jharkhand, Goa, Chhattisgarh, and Arunachal Pradesh.

Suggestions

- Fortifying protected area management, intensifying anti-poaching measures, employing scientific thinking and technology-driven data collection, and addressing human-wildlife conflict are vital steps to protect the country's tiger populations.

LINK IT WITH: Biodiversity loss, m-STRIPES, Elephant census, Wildlife protection act, Project Tiger, Tiger range countries, Global Tiger Forum.
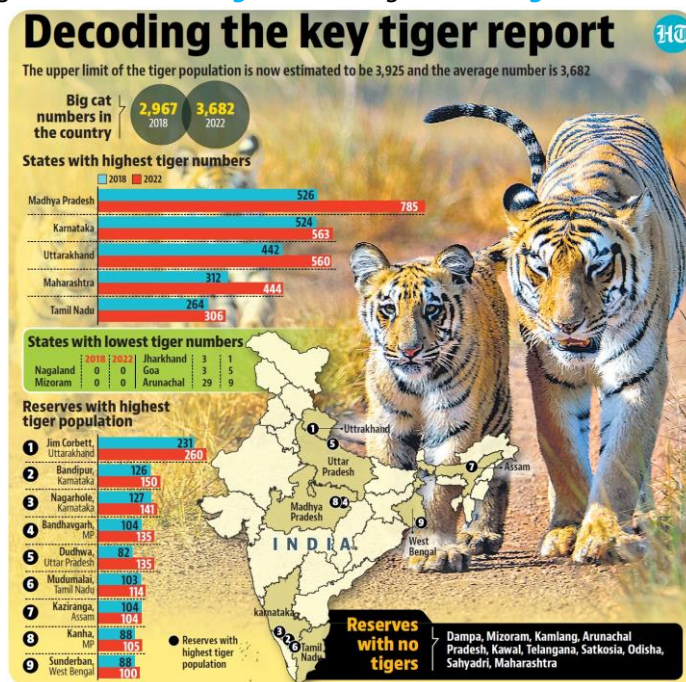
New GI Tags

Context

Seven products from across India were given the Geographical Indication **(GI) tag** by the Geographical Indications Registry in Chennai.

About

- **Jalesar Dhatu Shilp**: It is a metal craft of Jalesar **(U.P).** It includes **ghungrus** (anklets), **ghantis** (bells) and other decorative **metal craft and brassware**. The **Thatheras community**, which resides in a mohalla (locality) named Hathuras, makes these products.
- **Goa Mankurad Mango:** The **Portuguese** named the fruit as Malcorada, Cardozo mankurad, Corado, and Goa mankur which means **'poor coloured'**, and with time, it became mankurad aamo (mango) in Konkani.
- **Goan Bebinca:** Also known as the **'queen of Goan desserts'**, is a traditional Indo-Portuguese **pudding.**

- **Udaipur Koftgari Metal Craft: Weapons** are exquisitely ornamented by a complicated process of etching designs, heating, and then cooling, intertwined with **embedding gold** and **silver wire**, pressing, and flattening it to a smooth surface with **moonstone**, and finally polishing it.
- **Bikaner Kashidakari Craft:** Traditionally created on **cotton, silk or velvet** with a variety of fine stitches and **mirror-work**, mainly for objects associated with **marriage.** The weaving of fabrics by hand used to be done by the **Meghwal community** in Bikaner and nearby districts.
- **Jodhpur Bandhej Craft**: It is the Rajasthani art of **tying and dyeing**. The fabrics used for Bandhej are **muslin, silk and voile**. Cotton thread is used for tying the fabric.
- **Bikaner Usta Kala Craft:** Also known as **gold nakashi** or **gold manauti** work due to the prominence of its long-lasting golden colour. Untreated raw **camel hide** is processed and moulded by the **Dapgar community** of leather craftspeople for the requirements of the Usta.

GI tag

- A geographical indication (GI) is a sign used on products that have a **specific geographical origin** and possess qualities or a reputation that are due to that origin.
- Geographical Indication of Goods (Registration and Protection) **Act 1999**, governs the GI ecosystem. It is issued by Geographical Indications **Registry** under the Department for Promotion of Industry and Internal Trade **(DPIIT),** Ministry of Commerce and Industry.

LINK IT WITH: WIPO, TRIPS, Paris convention, Lisbon agreement, Madrid agreement, Palani Panchmirtham, Dindigul locks, Kaji Nemu, Kadangi saree.

Single-pill strategy for cardiovascular diseases- WHO

Context

The WHO included **three** fixed dose combinations of cardiovascular medicines **(polypills)** on its revised Model Lists of Essential Medicines (**EML) 2023**.

About

- A polypill usually combines two or more **blood pressure lowering drugs** plus a **statin** and **aspirin**.
- One of the polypills that has been included in the EML is **Polycap** (manufactured by Cadila in India). It is a **four-drug combination** (simvastatin + ramipril + atenolol + hydrochlorothiazide), along with acetylsalicylic acid or aspirin.
- Fixed Dose Combination **(FDC):** FDC or Combination products, refer to products containing one or more active ingredients in a single dosage form.

Significance

- It is a **simple** treatment that can be administered with very **little monitoring** to most people, with backup from physicians.
- The polypill is not a new drug but a drug delivery mechanism, which improves medication adherence (because it is a single pill) and saves money by preventing hospitalisations.
- It could reduce the risk of future heart attacks and strokes by about 40% to 50%.

LINK IT WITH: National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS), Trans-fats, Cholesterol, Coronary Artery Disease (CAD).

Malta Farming

Context

Emerging trend of Malta farming in West Bengal.

About

- Malta is the **citrus fruit** almost similar in appearance to **sweet lime**, differentiated by a **ring at one end**. It is also known as **siki-mausambi** in West Bengal.
- It is grown in the hills of **Uttarakhand** and is used to make processed juice, jam, jelly squash, candies, etc.
- West Bengal farmers are inspired by the **success stories of Bangladesh farmers**. Farmers of Sundarbans, South and North 24 pargana, Malda, Murshidabad, Purulia, Bankura and Alipurduar have started malta farming.
- **Dhaka Tribune report:** According to the report, the fruit is a **high-value crop** with several **therapeutic benefits**. **Bangladesh** has already started to **assist farmers** in malta farming to increase their income.
- The fruit Malta is thought to strengthen the **immune system**.

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- It is useful in treating conditions linked to **vitamin C deficiency**, including pneumonia, high blood pressure, stomach, intestinal issues, anaemia, joint pain, bleeding gums, and tooth loss.
- The seeds make high-protein **cow feed** and **fertilizer**.
- The peel is used to make **facemasks** to treat acne and other **skin conditions**.
- The **cost** of malta saplings is **low** as compared to mangoes varieties. It also starts producing **fruits within two years** of plantation and yields **significant quantities after five years**.

LINK IT WITH: PM Kisan Sampada Yojana, Doubling farmer's income, Horticulture, India-Bangladesh bilateral relations, Zero Budget Natural farming (ZBNF).

Migraine Disease

Context
Researches on exploring new migraine treatments.

About
- A migraine is a **headache** that can cause severe throbbing pain or a pulsing sensation, usually on one side of the head. It's often accompanied by nausea, vomiting, and extreme sensitivity to light and sound.
- Migraine attacks can **last for hours to days**, and the pain can be so bad that it interferes with daily activities.
- Around **15%** of world population suffers from migraine.

Origins
- Migraine attacks are thought to originate in the meninges, layers of membrane that protect the brain.
- When sensitized, neurons send signals to the brain which trigger headache, photophobia, etc.
- These neurons are also close to blood vessels, which is why headaches can feel like they pulse along with your heartbeat.
- It primarily affects the brain, but also involves the whole body such as the immune, digestive, and cardiovascular system. That is why taking pain killers doesn't work in migraine.

Triggers and Symptoms
- Bright lights, loud sounds, strong smells, lack of sleep, dehydration, caffeine, alcohol, hormone fluctuations and stress.
- Mood changes, food cravings, visual phenomena (seeing various shapes, bright spots, or flashes of light), pins and needles sensations in an arm or leg, weakness, or numbness in the face or one side of the body.

Treatments
- CGRP monoclonal antibodies and triptans provide relief but they don't work for everyone.
- Research is going on in Neuromodulation devices (e-TNS), oxytocin nasal sprays and dietary supplementation such as grape seed extracts, chicken broth, etc.

LINK IT WITH: Neurological disorders, Circadian rhythm, Research and Development, Loss of productivity.
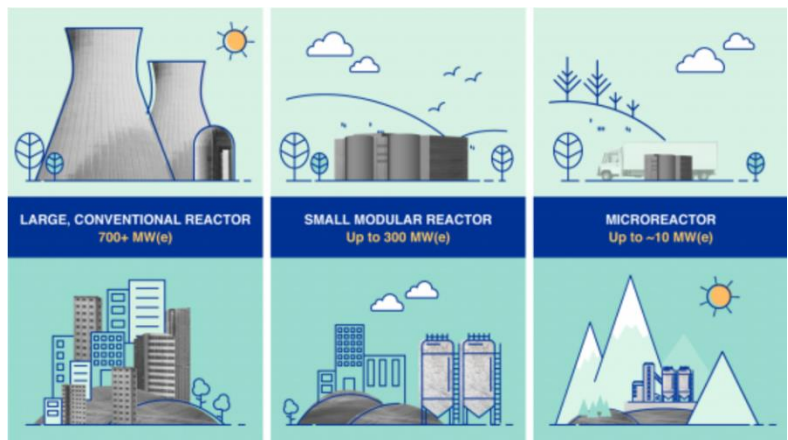
AYUSH Visa

Context
Govt. introduces a **new category** of AYUSH Visa for **foreign nationals**.

About
- PM had announced a creation of a special AYUSH Visa at Global Ayush Investment and Innovation Summit **(GAIIS)** in **Gandhinagar**, Gujarat in **2022.**
- A new chapter i.e., **chapter 11A** – AYUSH Visa has been incorporated after Chapter 11 - Medical visa of the **Visa Manual 2019**.
- According to the **Global Wellness Economy: Looking beyond COVID report** by the Global Wellness Institute (GWI), the Global Wellness economy will grow at 9.9% annually. AYUSH based healthcare & Wellness economy is estimated to grow to **$70 billion by 2025**.

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Heal in India initiative

- It is intended at promoting India as a Medical tourism destination of the world.
- Ministry of Ayush and the Ministry of Health & Family Welfare are working together to develop a one stop Heal in India portal
- MoU with India Tourism Development Corporation (ITDC), Ministry of Tourism, GoI was signed to work together for the promotion of Medical Value Travel in Ayurveda and other traditional systems of medicine.

Significance

- It will boost Medical Value Travel in India.
- It will strengthen the vision for making Indian traditional medicine a global phenomenon.

LINK IT WITH: WHO Global Centre for Traditional Medicine (GCTM) at Jamnagar, Soft Power of India, Passport ranking of India, Foreign earnings.

Small Modular Reactors (SMR's)

Context

India is considering steps for development of SMR's.

About

- Small modular reactors (SMRs) are **advanced nuclear reactors** that have a power capacity of **up to 300 MW(e) per unit**, which is about one-third of the generating capacity of traditional nuclear power reactors.
- Provisions of **Atomic Energy Act, 1962** are being examined to allow participation of **private sector** and **start-ups** to promote SMRs technology in the country.

Advantages of SMR's:

- SMRs can be sited on locations not suitable for larger nuclear power plants.
- Prefabricated units of SMRs can be manufactured and then shipped and installed on site, making them more affordable to build than large power reactors.
- They can be deployed incrementally to match increasing energy demand.
- It eliminates or significantly lower the potential for unsafe releases of radioactivity to the environment and the public in case of an accident.
- SMRs have reduced fuel requirements. Power plants based on SMRs may require less frequent refuelling, every 3 to 7 years, in comparison to between 1 and 2 years for conventional plants. Some SMRs are designed to operate for up to 30 years without refuelling.
- SMR is a promising technology in industrial de-carbonization especially where there is a requirement of reliable and continuous supply of power.
- It can help fulfil India, its commitment to Clean Energy transition, SDG 7 and Net zero by 2070.

LINK IT WITH: India's 3 stage nuclear program, Monazite sands, Uranium, Civil Nuclear Liability, SDG Goals, Panchamrit Goals.

Money Bills vs Financial Bills

Context

Apprehensions of introducing Digital Personal Data Protection (DPDP) Bill as Money bill.

About

- Difference between Money bill and Finance bill.

Money Bill	Finance Bill
o **Article 110** deals with money bill.	o **Article 117** deals with finance bill.
o Prior recommendation of President is required.	o Prior recommendation of President is **not** required.
o Can be introduced **only** in Lok Sabha.	o **Finance bill I** can be introduced in Lok Sabha, while **Finance bill II** can be introduced in **either** houses.
o Can be introduced only by a **Minister**.	
o Lok Sabha speaker declares bill as money bill.	o Can be introduced by a Minister or a **Private member**.
o Rajya Sabha can **only** make **recommendations**, which can be accepted or rejected by Lok Sabha.	o It doesn't requires speaker certification.
	o Rajya Sabha can amend or reject it.
o Rajya Sabha can keep the bill pending for maximum period of **14 days**. After 14 days it is considered as passed by Rajya Sabha.	o Rajya Sabha can keep the bill pending for **6 months**.
	o Provision of Joint sitting is **available**.
o There is **no** provision of **Joint sitting**.	o President can give assent, withhold assent, or even **can return** the bill.
o President can either **give assent** or **withhold assent** but s/he cannot return the bill.	

Prerequisites for any Finance Bill to become a Money Bill
- It must **only** be introduced in the **Lok Sabha** and not the Rajya Sabha.
- Bill can **only** be introduced on the **President's recommendation**.

LINK IT WITH: Annual Financial statement, Union Budget, GST act.

Amrit Bharat Stations

Context
PM Modi lays foundation stone for redevelopment of 508 Amrit Bharat Stations, spread across 27 states and union territories.

About
- The '**Amrit Bharat Station Scheme'** is under the **Ministry of Railways** in which almost 1300 prime railway stations in the country will be redeveloped.
- It is based on Master Planning for long term and implementation as per needs of the station. It aims at enhancing the facilities beyond the Minimum Essential Amenities such as construction of Roof Plazas and City Centres at the station.
- It caters for the introduction of new amenities as well as upgradation and replacement of existing amenities. Amenities at the stations like entry and exit, circulating areas, waiting halls, toilets, lift/escalators, cleanliness, free Wi-Fi, kiosks for local products through schemes like 'One Station One Product', better passenger information systems, Executive Lounges, nominated spaces for business meetings, landscaping etc.
- The scheme also envisages improvement of building, integrating the station with both sides of the city, multimodal integration, amenities for Divyangjans sustainable and environment friendly solutions. The design of the station buildings will be inspired by local culture, heritage, and architecture.

LINK IT WITH: Indian Railways Station Development Corporation**,** Centre for Railway Information Systems, RailTel, Rail Vikas Nigam

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BharatNet Project

Context
Recently, Union Cabinet approved Rs 1.39 lakh crore for modernising the BharatNet Project, which involves changing its execution strategy and providing fiber connections to the last mile through Village Level Entrepreneurs.

About
- **Bharat Net Project-** The world's largest rural broadband project, to provide broadband connectivity to all the 2.5 lakhs gram panchayats across India. It is funded through universal service obligation fund. It's under Ministry of Communications.
- **Launched in 2011-** The project was executed by a Special Purpose Vehicle-Bharat Broadband Network Limited -now merged with BSNL. Since 2017 under PhaseII it tried multiple implementing models like State-led Model, Private Sector Model and CPSU Model.
- **Under the revamped model**, will involve village level entrepreneurs or Udyamis to take the fiber connections to the homes on a 50:50 revenue-sharing basis.
- The cost for taking the infrastructure to the home will be borne by the government; the rural entrepreneur will only need to be involved in maintenance and operations of home connections, including addressing consumer complaints.
- **Under the BharatNet project**, the home broadband package will start from Rs 399 a month, giving 30 Mbps unlimited data, bundled with OTT offering, etc.
- There will be an automated network operation centre for handling complaints.

LINK IT WITH: Digital India, Universal Service Obligation Fund, National Knowledge Network

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Bhu-Vision

Context
Bhu-Vision, an IoT based automated soil testing & advisory platform was officially launched at AICRP (ICAR-IIRR), Hyderabad.

About
- Bhu-Vision is also known as KRISHI-RASTAA Soil Testing System. It was jointly developed by ICAR-IIRR (Indian Institute of Rice Research) and Krishi Tantra (Agri-tech startup).
- It seamlessly conducts 12 key soil parameter tests in just 30 minutes, providing quick, accurate results directly to farmers on their mobile device.

- It's a portable and automated system. It provides all macro and micronutrients, pH, organic carbon, EC, and microbial count reports within minutes. It requires no expertise to operate. The system generates reports and is a cloud-based interpretation.

LINK IT WITH: Soil Health Card Scheme, NPK Ration, One Nation One Fertiliser

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Inflammatory Bowel Disease (IBD)

Context

A recent study published in the Lancet journal discovered that Inflammatory Bowel Disease (IBD) is now as prevalent in rural India as it is in urban areas.

About

Inflammatory Bowel Disease (IBD), IBD is a term that describes disorders involving long-standing (chronic) inflammation of tissues in your digestive tract.

Types of IBD include

- Ulcerative colitis and Crohn's disease. It's a chronic condition that have no known cure. It is usually characterized by diarrhoea, rectal bleeding, abdominal pain, fatigue, loss of appetite and weight loss. For some it is a mild disease for others it can lead to life threatening complications.
- The lancet study was conducted in rural Telangana. It points to urbanisation of rural areas as a leading cause of this shift.
- The changing environments and dietary habits, the availability of processed food has increased. With globalisation, IBD made its entry into the developing world
- It's suggested that the government increases awareness of lifestyle diseases in rural areas and emphasise the importance of diet and exercise for the rural population. Constant monitoring is recommended, along with regulations on ultra-processed food, like those in European countries.

LINK IT WITH: non-communicable disease, national health policy 2017, AAYUSH,

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Literary festival 'Unmesha

Context

President inaugurated the three-day international literary festival 'Unmesha 2023' in Bhopal. Its Asia's largest literature festival in terms of the number of languages represented.

About:

- The Sahitya Akademi, Union Ministry of Culture, and Madhya Pradesh culture department jointly organised this festival. This was second edition of 'Unmesha'-1st event was held in Shimla in 2022.
- More than 575 writers and distinguished personalities representing over 100 languages and 14 countries participated.
- Sahitya Akademi is an autonomous organization working under the Ministry of Culture, Government of India, to promote literature in the 24 languages it has recognized, including Indian English, and in the tribal and oral traditions of the country.

LINK IT WITH: Indian national Comparative Literature Association, Centre for Cultural Resources and Training, Jnanpith Award

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No confidence Motion

Context

Recently, a no confidence motion was moved by the Opposition against the government, it was defeated in voting stage.

About

- A 'No-Confidence' motion is usually moved when a government is seen to have lost majority in the Lok Sabha. It is also moved to bring important issues to light or to highlight failures of the government. No reasons need to be given for moving this motion. Article 75(3) of our Constitution mentions that Council of Ministers are collectively responsible to the Lok Sabha (lower house) hence a no confidence motion can only be moved in the Lok Sabha.
- **Procedure:** As per Rule 198 of the Rules of Procedure and Conduct of Lok Sabha, any Lok Sabha MP with support of 50 other members can bring this motion. If motion is passed by majority, the government is bound to vacate the office (resign). A simple majority is needed to pass this motion.
- **Since independence:** 27 out of 28 no-confidence have been voted upon and rejected. This means that no government has ever had to resign following a vote of no-confidence.

LINK IT WITH: Censure motion, motion of thanks, adjournment motion, cut motions

Defence Advanced Research Projects Agency (DARPA)

Context

NASA in collaboration with the United States Defence Advanced Research Projects Agency (DARPA) is seeking a nuclear thermal propulsion system that could potentially cut down the travel time to Mars by half. The program is named DRACO, short for the Demonstration Rocket for Agile Cislunar Operations.

About

- It takes 7 to 9 months for journey to mars. It could be reduced with more efficient rocket engines. Current rocket engines rely on the combustion of a fuel like hydrogen or methane with oxygen, are not efficient as there is not enough room in the spacecraft to carry that much propellant. Nuclear reactions are much more efficient and provide more speed, agility, and manoeuvrability. It has many national security applications too.
- Earlier projects for nuclear propulsion for spacecrafts: Project Orion - financed by NASA, the Air Force, and the Advanced Research Projects Agency. Project Rover and Project **NERVA** by **NASA** with other agencies for nuclear-thermal engines. But none were launched to space.
- NERVA used weapons-grade uranium for its reactors, while recent-DRACO will use a less-enriched form of uranium. The reactor would not be turned on until it reached space, part of the precautions to minimize the possibility of a radioactive accident on Earth.

LINK IT WITH: Kessler syndrome, Gaganyaan-ISRO, GSLV MK3, Chandrayaan-3

Study in India (SII) Portal

Context

Recently, Study in India (SII) Portal was launched. It's a one-stop platform with comprehensive information about the Indian Higher Education Institutions (HEIs) with provision to apply in institute/course of their choice.

About

- **Study in India programme**: Ministry of Education (MOE) launched this in 2018 to attract foreign students to Indian higher educational institutions (HEIs).
- **Objectives**: To improve the soft power of India. To double India's market share of global education exports from less than 1 percent to 2 percent. Improvement in overall quality of higher education and increase the global ranking. To reduce the export – Import imbalance in the number of international students.
- Tuition fee waivers to meritorious foreign students: 100% waiver only for the top 25% students, 50% waiver only for the next 25% students 25% waiver only for the next 25% students. Expenditure on the fee waiver will have to be borne by the Institute concerned, based on cross-subsidisation or through its existing funding. No additional cash flow from Government for this.
- The Study in India programme involves partnership with educational institutes to enrol international students based on one of the following criteria:
  o National Institutional Ranking Framework (NIRF)ranking (<=100)
  o National Assessment and Accreditation Council (NAAC) accreditation score (>=3.01)
  o Institutes of National Importance (INI)

LINK IT WITH: Brain drain-brain gain, Institute of eminence, education policy 2020

Tropical trees

Context

Tropical trees use social distancing to maintain biodiversity. Tropical forests often harbour hundreds of species of trees in a square mile, but scientists often struggle to understand this. In a study published in *science*, researchers at The University of Texas provides insights into this.

About

- They discovered that adult trees in a Panamanian forest are three times as distant from other adults of the same species. the distance that the trees are from one another is much greater than the distance that seeds typically travel.
- They found an explanation that each tree species is much more negatively affected by its own kind than by other species, probably because species suffer from species-specific enemies: pathogens such as fungi or herbivores such as insects. These enemies "make room" for other species to establish around every tree, leading to a more diverse forest and keeping any one species from dominating.

LINK IT WITH: species richness, species diversity, biodiversity hotspots, UNESCO-MAB

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Utkarsh

Context

President inaugurated the national festival of India's folk and tribal expressions (performing arts) "Utkarsh". Culture Department of Madhya Pradesh along with Sangeet Natak Akademi organised this event.

About

- Folk and tribal dances of 12 states of the country were presented on the day. Mayur Raas of Uttar Pradesh, Aji Lamu (Monpa tribe) of Arunachal Pradesh, Phag of Haryana, Kalbeliya of Rajasthan, Natua dance of West Bengal, Kargattam of Tamil Nadu, Puja Kunitha of Karnataka, and Sirmauri Nati from Himachal Pradesh dance were the major attraction.
- **Sangeet Natak Akademi**, the apex body in the field of performing arts in the country, was set up in 1953 for the preservation and promotion of the vast intangible heritage of India's diverse culture expressed in forms of music, dance, and drama. It is an autonomous body of the Ministry of Culture, Government of India.

LINK IT WITH: Pradhan Mantri Van Dhan Yojana (PMVDY), Aadi Mahotsav, TRIFED

Atlantic meridional overturning circulation (AMOC)

Context

New findings published in Nature Communications suggest the Atlantic meridional overturning circulation, or Amoc, could collapse within the next few decades — maybe even within the next few years — driving European weather to even greater extremes.

About AMOC

- The AMOC is a system of ocean currents that circulates water within the Atlantic Ocean, bringing warm water north and cold water south.
- This circulation brings warmth to various parts of the globe and carries nutrients necessary to sustain ocean life.
- The entire circulation cycle of the AMOC, and the global conveyor belt, is quite slow. It takes an estimated 1,000 years for a parcel (any given cubic meter) of water to complete its journey along the belt. Even though the whole process is slow on its own, there is some evidence that the AMOC is slowing down further.

What if AMOC continues to slow

- **Far-reaching climate impacts:** For example, if the planet continues to warm, freshwater from melting ice at the poles would shift the rain belt in South Africa, causing droughts for millions of people.
- **Rise in sea level:** It would also cause sea level rise across the U.S. East Coast.
- **It might cause circulation collapse** – This would mean even greater climate chaos across Europe.

Benefits of AMOC

- AMOC helps keep Europe warm and stable.
- It helps to disperse heat and energy throughout the earth (heat budget).
- By absorbing and storing carbon from the atmosphere, it serves as a carbon sink.

LINK IT WITH: Ocean Current, Heat Budget, MJO, Tides, Waves

Climate Change: Ocean Color Change

Context

Climate change is altering the colour of the oceans-A new study says published earlier in July in the journal Nature.

About the issue

- The colour of the Earth's oceans has significantly altered over the past two decades, **most likely due to human-induced climate change,** according to a new study.
- Over 56 per cent of the oceans, more than the total land area on the planet, has experienced the shift in colour

Ocean Color Change

- Generally the color of the Ocean is Blue,but due to several reasons like climate change the color of the ocean is changing from blue to green or sometimes even brown and other colors as well.

Reasons of ocean changing color

- **Due to the existence of phytoplankton on the upper surface of the water:** Phytoplanktons are microscopic marine algae that contain the green-colored pigment chlorophyll. The higher concentration of phytoplanktons present in the ocean causes color change.
- **Due to human-induced Climate Change.**

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Places where the phenomenon of Ocean color change is occurring

- The study says one of the **most affected areas is the Tropical Ocean regions, near the equator,** where the water is turning from blue to green.
- Other areas are also affected by this Phenomenon.
- The colour changes are complex and different in different locations.
- The findings suggest that a shift in colour is happening in those regions where the oceans are getting more stratified.

Ocean stratification is the natural separation of an ocean's water into horizontal layers by density, with warmer, lighter, less salty, and nutrient-poor water layering on top of heavier, colder, saltier, nutrient-rich water. Usually, ocean ecosystems, currents, wind, and tides mix these layers, creating smoothed temperature and salinity transitions between them.

LINK IT WITH: Climate change, Ocean stratification, Ocean acidification

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Conjunctivitis Infection

Context
Recently, In July Bengaluru hospitals see spurt in conjunctivitis cases.

About Conjunctivitis Infection
- Conjunctivitis, also known as 'pink eye', is an inflammation of a thin transparent membrane covering the eyeball called conjunctiva.
- Pink eye is most often caused **by a viral infection**. It also can be caused **by a bacterial infection**, an allergic reaction or — in babies — an incompletely opened tear duct.

Symptoms: The most common pink eye symptoms include-
- Redness in one or both eyes, Itchiness in one or both eyes, A gritty feeling in one or both eyes, A discharge in one or both eyes that forms a crust during the night that may prevent your eye or eyes from opening in the morning, Tearing, Sensitivity to light, called photophobia.

Issues and Concerns
- **Corneal scarring:** Corneal scarring is rare and often preventable. But if diseases, infection and injuries are left untreated, there can be permanent tissue damage. That's why it is so important to catch and treat eye problems as quickly as possible.
- **Secondary Infection:** A secondary infection is one that occurs when a different infection, known as a primary infection, has made a person more susceptible to disease. It is called a secondary infection because it occurs either after or because of another infection.

LINK IT WITH: Myalgia Syndrome, Felty Syndrome, Klinefelter Syndrome, Aarskog Syndrome

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Fast Radio Bursts (FRBs)

Context
The Astronomers recently found a new clue regarding the FRBs.

About FRBs
- FRBs are **bright flashes of light** that appear for a few milliseconds and then vanish.
- They are the superdense neutron stars left over after a supernova, or magnetars (neutron stars with ultra-strong magnetic fields).
- Mysterious emissions of radio light from the far reaches of the universe are the next big thing in modern radio astronomy.
- Fleeting flurries of radio waves, called fast radio bursts (FRBs) reach earth from faraway galaxies, **emitting as much energy in a millisecond as the sun does over weeks.**

Astronomer's findings
- They discovered that the FRB's Faraday rotation measure – an indicator of its magnetic field strength – was highly variable and that it reversed direction twice.
- This magnetic reversal, they believe, has to do with the FRB source orbiting a binary star system where the companion star is probably a massive star or a black hole.

LINK IT WITH: Space, Milky-way galaxy, Radio-waves, Oort clouds

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Siberian Permafrost

Context
Recently, Scientists brought microscopic worms back to life after they were frozen in the Siberian permafrost for 46,000 years.

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About the Issue

- Scientists discovered and reanimated two kinds of frozen microscopic nematodes or roundworms in Siberia five years ago.
- A new study on them published recently, reveals their secrets, including the fact that they are 46,000 years old and **one of them is an entirely new species that has never been discovered.**
- **Cryptobiotic state** is a state which can survive the complete absence of water and oxygen and withstand other extreme conditions including heat and cold in a state between life and death.

Techniques used by the Researchers

- Genome sequencing, Assembling and phylogenetic analysis of the worms, Relationship to modern species and discovered that it belongs to a previously unknown species—-Panagrolaimus kolymaensis.
- They also tested hardiness of the ancient worms by mildly drying them in the laboratory.
- When they did that, the worms produced a sugar called trehalose, which might help them survive harsh desiccation (drying) and freezing.

Practical reason to study the impressive capabilities of the diminutive worms:

- We need to know how species adapted to the extreme through evolution to maybe help species alive today and humans as well.
- Research like this can show how animals can adapt to habitat change caused by climate change at a molecular level and survive despite changing weather patterns.

LINK IT WITH: Climate change, Microbial organisms, Radiocarbon-dating.

RoboMapper

Context

Robots develop new semiconductor materials in tests that are 10 times faster & greener.

About Robomapper

- RobMapper, is a robot proficient in efficient and eco-friendly identification of novel semiconductor materials.
- It can rapidly identify **new perovskite materials** with improved stability and solar cell efficiency.

> - Perovskite is a calcium titanium oxide mineral composed of calcium titanate.
> - Its name is also applied to the class of compounds which have the same type of crystal structure as $CaTiO_3$, known as the perovskite structure.

- Rob Mapper automates the procedure by miniaturizing and placing multiple samples on each chip using modern printing techniques.
- This allows simultaneous data collection for various materials, saving time and energy.
- The approach greatly enhances the efficiency, cost-effectiveness, and sustainability in material search, reducing the carbon footprint.
- It's nearly 10 times faster than earlier automated methods.

LINK IT WITH: Robotics, Science and Technology, Ecological foot print, Environment-friendly

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Self-Reliant India Fund

Context

- As a part of Aatmanirbhar Bharat package, Rs 50,000 crore Equity infusion for MSMEs through Fund of Funds was announced.

About Self Reliant India (SRI) Fund

- SRI fund operates through a mother-fund and daughter-fund structure for equity or quasi-equity investments. NSIC Venture Capital Fund Limited (NVCFL) which operates as Mother Fund in SRI Fund implementation, was registered as a Category-II Alternative Investment Fund (AIF) with SEBI, on 1st September, 2021.

Aim: To provide support for MSMEs across the country through equity infusion.

Since inception in 2021, total equity infusion under the SRI Fund for MSME reached to Rs. 4,885 crore, including the Government of India contribution of Rs. 529.40 crore.

LINK IT WITH: Udyam Portal, Pradhan Mantri MUDRA Yojana, National Manufacturing Competitiveness Programme

VOYAGER 2 Mission

Context

Recently, NASA detected a signal from its Voyager 2 spacecraft on August 1, after losing communication for over a week.

About Voyager 2 Mission

- Voyager 2 launched on Aug. 20, 1977, about two weeks before the Sept. 5 launch of Voyager 1.
- NASA's Voyager 2 is the second spacecraft to enter interstellar space. On Dec. 10, 2018, the spacecraft joined its twin— Voyager 1—as the only human-made objects to enter the space between the stars.
- Voyager 1 and 2 were designed to take advantage of a rare planetary alignment to study the outer solar system up close.
- Voyager 2 targeted Jupiter, Saturn, Uranus and Neptune.

Reason for sending the Voyager spacecraft into space

- In 1972, NASA canceled its plans of exploring the five outer planets (Mars, Jupiter, Saturn, Uranus and Neptune) with four highly complex spacecraft — the proposal, estimated to cost $ 1 billion, was scrapped due to budgetary constraints. In place of this voyager mission was sent.

Features Of Voyager spacecraft Mission

- Voyager 1 and Voyager 2 are identical spacecraft. Each of them is equipped with instruments to carry out 10 different experiments.
- The instruments include **television cameras** — to take images of planets and other celestial bodies — **infrared and ultraviolet sensors, magnetometers, plasma detectors, and cosmic-ray and charged-particle sensors.**
- Both spacecraft feature a **large antenna,** 3.7 metres in diameter, which is used to receive commands from Earth and radio their findings back to the planet.
- Unlike other Spacecrafts which are powered by solar energy. Voyagers are **Nuclear-powered Spacecrafts**.
- Each Voyager spacecraft is adorned with a golden phonograph record — a 12-inch disc, intended to be a sort of time capsule from Earth to any extraterrestrial life that might intercept the probes in the distant future.

LINK IT WITH: Outer Space, Cassini, Project Gemini, Apollo program

Adjournment Motion

Context

Two Congress MPs moved adjournment motions in the Lok Sabha, citing the need for urgent discussions on the ethnic violence in Manipur.

About

- Adjournment Motion (rule 56-Lok Sabha): This procedure is available to draw the attention of the government on a definite matter of urgent public.
- It requires a support of at least 50 members. If the motion is accepted by the speaker, the House adjourns, scheduled business is set aside to discuss the issue.
- The Speaker shall prescribe a time limit for discussion with a minimum of 2.5 hour.

Conditions for this motion

- It should cover only one matter which is definite, urgent, and recent one. It should not raise matter of privilege or matter under consideration of the judiciary.
- A member can file only one adjournment motion per session. If adopted it always put to vote. It originated in the rules under the Government of India Act of 1919.

LINK IT WITH: Kangaroo Closure/ Guillotine, Policy Cut, Economy Cut and Token Cut

National Mission for Edible Oils

Context

Mega plantation drive organised by states and oil palm processing companies under National Mission for Edible Oils- Oil Palm (NMEO-OP) a centrally sponsored scheme under ministry of agriculture and farmers welfare.

About

(NMEO-OP)- aim to enhance the edible oilseeds production and oils availability by harnessing Oil Palm area expansion, increasing crude palm oil production and to reduce import burden on edible oils. It has a special focus on the North east region and the Andaman and Nicobar Islands

Targets

- It aims to increase the oil palm production area to 10 lakh ha., and boost the Crude Palm Oil production to 11.20 lakh tonnes by 2025-26.
- Strategy for implementation include increasing production of seedlings by establishment of seed garden, nurseries of oil palm. It also includes Improving productivity and increasing drip irrigation coverage under oil palm, diversification of area from low yielding cereals crops to oil palm, inter-cropping during gestation period of 4 years. Price assurance to the oil palm farmers for the FFB (fresh fruit bunches)- known as the Viability Price (VP).
- Andhra Pradesh, Telangana, and Kerala are major Oil palm growing States and account 98% of total production.

LINK IT WITH: E20 Fuel, Biorefinery, Ethanol blending

New species of flower

Context

BSIP scientists discover new species of flower from Sikkim

About

- Scientists from the Botanical Survey of India (BSI) Prayagraj centre have discovered a new hemi-parasitic (partially parasitic) plant species, Pedicularis Revealiana in the untouched forest of Katao in the state of Sikkim.
- Along with making its own food, it can gather nutrients from the roots of trees and plants located nearby.
- It is named in honour of the eminent botanist James Lauritz Reveal of the University of Maryland. Sikkim is renowned for its remarkable biodiversity. This state alone accounts for 45 percent of the total plant diversity in the Indian Himalayan region.

LINK IT WITH: Endemic Species, Biodiversity Hotspot, AICHI Biodiversity

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Parliamentary privilege

Context

Leader of the Opposition in the Rajya Sabha said that turning off mic in house, is a breach of Parliamentary privilege.

About

- Parliamentary privilege refers to rights and immunities enjoyed by Parliament as an institution and MPs in their individual capacity. It helps them discharge their functions effectively.
- Article 105 of constitution grants privileges to MPs. However, privileges are not codified. Privileges based on five sources:
- Constitutional provisions, various laws made by Parliament, Rules of both the Houses, Parliamentary conventions, Judicial interpretations.

Privileges

- Freedom of Speech in Parliament: No liability before any Court for anything said or any vote given in the Parliament or any committee of parliament.
- The members enjoy freedom from arrest in any civil case 40 days prior to and after the session. Need of permission of presiding officer of the house for arrest of member from premise of house.

LINK IT WITH: Collective Privileges, Individual Privileges

PM SHRI

Context

Cabinet approved a new centrally sponsored scheme - PM SHRI Schools (PM Schools for Rising India) for redevelopment of more than 14500 schools across the country as PM SHRI Schools.

About

- It implemented by strengthening select existing schools being managed by Central Government/ State/ UT Government/ local bodies to reflect the key features of the new National Education Policy, 2020.
- It will act as exemplar schools and offer mentorship to other schools in their vicinity. It will be developed as green schools, incorporating environment friendly aspects like solar panels and LED lights, nutrition gardens, plastic free, water conservation, etc.
- The schools will be upgraded with labs, libraries, and art rooms. Pedagogy adopted will be more experiential, holistic, integrated, play/toy-based (foundational years) inquiry-driven, discovery-oriented with focus on learning outcomes.
- Linkage with Sector Skill Councils and local industry for enhancing employability. It aims to provide high-quality education in an equitable, inclusive, and joyful school environment.
- Selection of schools through Challenge Mode- Schools would be required to self-apply on the online portal.
- **Funding:** 60:40- by centre and state. Centre's funding up to 90% for hilly states, north east, Jammu and Kashmir.

LINK IT WITH- Samagra Shiksha Abhiyaan, National education policy, 2020.

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INDORE: 7314977441 | **BENGALURU:** 7619166663 | **HYDERABAD:** 79960 66663 | **IMPHAL:** 9650245599 | **SRINAGAR:** 98712 35599| **MUMBAI:** 9871265599|

Ranthambore National Park

About

- Ranthambhore national park is located at the junction of the Aravali and Vindhya hill ranges. It's named after a huge fort. Forests located beside it are Sawai Man Singh Sanctuary & Keladevi Sanctuary.
- Ramgarh Vishdhari wildlife Sanctuary in Rajasthan is declared India's 52nd tiger reserve taking the total count in state to 4. Others being: Ranthambore Tiger Reserve, Mukundra Hills Tiger Reserve and Sariska Tiger Reserve.
- Ramgarh vishdhari is buffer area for Ranthambore national park and connects it with mukundra tiger reserve.
- It will solve the overpopulation problem of Ranthambore as tigers will be able to migrate to Mukundara and Ramgarh Vishadhri more easily now.

Notifying Tiger reserves

- The State Government shall, on the recommendation of the national Tiger Conservation Authority (NTCA), notify an area as a tiger reserve. NTCA is a statutory body under wildlife protection act, 1972 as amended in 2006, for strengthening the tiger conservation. It is under ministry of environment.

Other recent tiger reserves

- UP's Ranipur tiger reserve becomes 53rd tiger reserve. In Chhattisgarh, the combined areas of Guru Ghasidas National Park and Tamor Pingla Wildlife Sanctuary is approved a tiger reserve, taking the total to 54. This will be the fourth tiger reserve in Chhattisgarh, after the Achanakmar, Udanti-Sitanadi and Indravati reserves.

LINK IT WITH: project tiger, tiger census, cheetah reintroduction, MSTRIPES.

Zero FIR

Context

Many victims of Manipur violence used the provision of Zero FIR to register their complaints with police.

About

ZERO FIR:

- Unlike an FIR, which is restricted by jurisdiction, a zero FIR can be filed in any police station, regardless jurisdiction of that police station.
- The police station then transfer the complaint to a police station that has the jurisdiction to investigate the alleged offence.
- The police station with the appropriate jurisdiction file a regular FIR with serial numbers.
- It was introduced on recommendation of Justice Verma Committee (Nirbhaya case -2012).
- The term first information report (FIR) is not defined in any law.
- The information recorded under Section 154 of CrPC is known as First Information Report (FIR).
- It must be related to cognizable offence. Cognisable offences are offences for which the police do not require warrant when carrying out an arrest.
- Anyone who has any information about the commission of a cognizable offence can lodge a FIR. It is not necessary that he or she should be the victim or an eye-witness.
- **Benefits:** it helps victim to register the complaint quickly, victim don't have to run from pillar to post to register FIR. It ensures timely action and speedy redressal.

LINK IT WITH: Cross FIR, General FIR, Multiple FIR

Bed aquiline: drug for Tuberculosis

Context

The Indian Patent Office rejected the application of **J&J's secondary patent** on bed aquiline.

About

- Bed aquiline is used to treat drug resistant tuberculosis **(DR-TB).**
- Tuberculosis is an **infectious** disease. It affects the lungs and other parts of the body known as **Pulmonary TB** and **extra Pulmonary TB** respectively. DR-TB is resistant to at least **isoniazid** and **rifampin**, the two most potent TB drugs. It is a major contributor to antimicrobial resistance **(AMR).**
- AMR occurs when **bacteria**, **viruses**, **fungi,** and parasites change over time and **no longer respond** to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death.
- Each year, nearly half a million people develop drug-resistant TB. Nearly 2.8 million patients, the most in the world, live in India.
- J&J has filed secondary patents over bed aquiline till **2027**, which were **granted in 66** low-and middle-income countries. A deal between J&J and the Global Drug Facility **(GDF)**, a non-profit distribution agency housed in the WHO is signed which will lower the price of drug procured through GDF in respective countries.

Implications

- Once the patent is expired, drug is available in **generic supply** with **reduced prices**.
- **National TB programmes** are waiting for the generic supply of bed aquiline. Indian manufacturers will now be able to supply **affordable**, quality assured generic versions of bed aquiline in India.
- It will be available in India at a **price three to six times lower** than the current globally negotiated price under GDF. However, India will not be able to export the medicine to 34 of the 43 countries with a high burden of TB.

LINK IT WITH: Linezolid (DR-TB drug, prices decreased by 90%, Pfizer's patent expired in 2015), Nikshay Poshan Yojana, PM TB Mukt Bharat Abhiyan, Isoniazid, Rifampin, Communicable diseases, Generic medicines.

Exploration projects for critical minerals by GSI

Context

122 critical minerals exploration projects were taken up by the Geological Survey of India **(GSI)** in FY24.

About

- India is **import-dependent** for critical minerals needed to power **green technologies**, **aviation**, **defence manufacturing**.
- First-ever **critical minerals list**, identifying **30 key critical minerals** crucial to the nation's economic growth and technological development was released by government. The list includes **17** rare earth elements **(REEs)** and **6** platinum-group elements **(PGE).**
- **Examples** - Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium, and Cadmium.

Measures taken

- Khanij Bidesh India Ltd **(KABIL)**, of three public-sector undertakings — National Aluminium Company, Hindustan Copper, and Mineral Exploration Company was established. Its objective is to **identify and acquire overseas mineral assets** of critical and strategic nature. Projects are being undertaken in Argentina, Australia, etc.
- **Domestic:** Increased public and private investments and adoption of advanced technologies in exploration, mining, and processing facilities.

Exploration projects

- As per the Geographical Survey of India's **(GSI) field season 2023-24 report**.
- **Lithium exploration projects**: Korba (Chhattisgarh); South Garo Hills and East Garo Hills (Meghalaya); and Jammu, Ramban, Resai, Rajoury and Udhampur (Jammu and Kashmir). **India's only Lithium** has been found in **Resai (J&K)** to the tune of **5.9 million tonnes**, recently.
- Over **50 explorations** are on for rare earth elements **(REE)**. This, incidentally, is one of GSI's biggest exploration activities in the segment in recent times.
- **Vanadium exploration projects**: Madhya Pradesh, Himachal Pradesh, Arunachal Pradesh and Kerala.
- **Niobium exploration projects**: West Bengal (Purulia) and Rajasthan (Jhunjhunu and Sikar).

LINK IT WITH: GSI, Imports from China, Rare Earth Elements (REE), Platinum Group Elements (PGE), IEA, Semiconductors, Sustainable development.
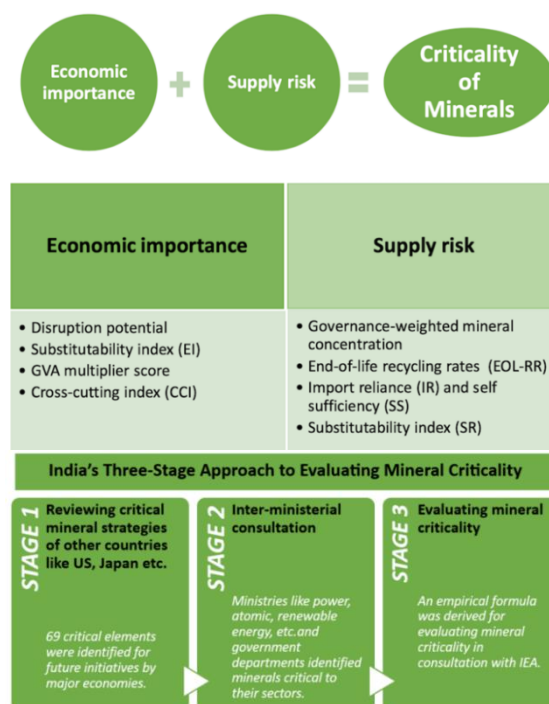
Mhadei sanctuary as a Tiger reserve

Context

Bombay HC directed Goa government to notify Mhadei wildlife sanctuary as Tiger reserve.

About

- Earlier National Tiger Conservation Authority **(NTCA)** has **suggested** to notify the Mhadei sanctuary and certain contiguous areas as Tiger reserve.
- The **State Board for Wildlife** had **rejected** the proposal to set up a tiger reserve contending that "the declaration of a tiger reserve at the current stage would be premature" and "not feasible".

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- A **PIL** was filed by Goa Foundation, an environment monitoring group, which had sought directions to notify Mhadei sanctuary and other areas as a tiger reserve.
- The Bench also directed the state to set up **anti-poaching camps** at strategic locations in wildlife sanctuaries and national parks within six months. The state government should determine and settle the **rights and claims** of **Scheduled Tribes** and **other forest dwellers**.

LINK IT WITH: Mollem national park, Bhagwan Mahavir wildlife sanctuary, NTCA, Forests Rights Act 2006, Wildlife protection Act 1972, PVTG's, Internal displacement, Indian gaur, Barking deer, Black-faced langur, and Bonnet macaque.

Changpa Tribal Annual Festival

Context

MHA has **lifted restrictions** on foreign tourists from attending Changpa festival of Hanle (Ladakh).

About

- The festival promotes the **art**, **craft**, **food,** and **culture** of the local **Changpa tribe**, and is aimed at offering a platform to the nomadic population to **sell their wares** to tourists. It is organised annually by the **Ladakh Art Culture and Languages Academy**.
- Till now, foreign tourists were allowed only till Nyoma, situated about 57 kms from Hanle. Even Indian tourists are required to take **inner line permits** (ILP) to visit these areas.
- Inner Line Permit (ILP) is an **official travel document** issued by the Government of India to **allow inward travel** of an **Indian citizen** into a protected area for a limited period.
- Hanle is located close to the Line of Actual Control **(LAC)** with **China.**
- Permitting foreign tourists to visit frontier areas like Changthang region had been a long-standing **demand** of the Ladakh Autonomous Hill District Council **(LAHDC)**. Tourism could expand to become a steady **source of income** for the local population.
- Other **major tribes** of the region are- Changpa, Balti, Beda, Bot (boto), Brokpa, Drokpa, Dard, Shin, Garra, Mon.

LINK IT WITH: Changthangi Goat (pashmina rearing), Cashmere wool, Himalayan Chandra telescope, India Astronomical Observatory, Dark sky Reserve, Changthang cold desert wildlife sanctuary, Vibrant Villages program, Bengal Eastern Frontier Regulations 1873, Foreigners (Protected Areas) Order 1958.

National Geoscience Awards

Context

President of India presented the National Geoscience Awards-2022.

About

- It aims to honour **individuals and teams** for extraordinary achievements and outstanding contributions in various fields of geosciences. It is instituted by the **Ministry of Mines.**
- There are **three categories** of awards under National Geoscience Awards: National Geoscience Award for Lifetime Achievement, National Geoscience Award and National Young Geoscientist Award.
- Geoscience, includes the **study of natural disasters** like landslides, earthquakes, floods, and tsunamis.

LINK IT WITH: Primary Sector-Mining, Rare Earth Elements (REE), Platinum Group of Elements (PGE), Semiconducting Elements, Environment protection, Extreme weather events, Climate change.

Middle East Respiratory Syndrome (MERS)

Context

United Arab Emirates reports new MERS coronavirus case

About

- Middle East respiratory syndrome (MERS) is a **viral respiratory disease** caused by Middle East respiratory syndrome coronavirus **(MERS-CoV).** MERS-CoV is a **zoonotic virus**, meaning it is transmitted between animals and people and linked to human infections in **dromedary camels**.
- It was first identified in **Saudi Arabia in 2012**. Since its detection, **27 countries** reported MERS cases from North American, European, African, and Asian continents.
- Typical MERS **symptoms** include fever, cough and shortness of breath, pneumonia, and gastrointestinal symptoms, including diarrhoea, have been reported. Approximately **35%** of MERS cases reported to WHO have **died.**
- Coronaviruses are a large **family of viruses** that can cause diseases ranging from the common cold to severe acute respiratory syndrome (SARS) and Coronavirus disease-2019 (COVID-19).

LINK IT WITH: SARS-CoV, Tomato flu, Nipah Virus, Lumpy Skin Disease (LSD), One Health approach.

Fluorine

Context

Scientists from the Oxford University have come up with a new way to obtain Fluorine atoms.

About

- Fluorine, is a **highly reactive** element comes from a calcium salt called **calcium fluoride (fluorspar)**.
- Fluorspar is mined and treated with **sulphuric acid** at a high temperature to **release** hydrogen fluoride **(HF).**
- HF is then made to react with other compounds to create **fluorochemicals.**
- A major downside of this process is that HF is an **extremely poisonous** and **corrosive liquid** that irritates the eyes and respiratory tract. It requires special transportation and storage requirements.
- Moreover, **HF spills** cause fatal accidents and detrimental **environmental effects**.

New method:

- To avoid HF and to make the extraction process require less energy, the researchers took inspiration from **calcium phosphate biomineralization**, process by which human body makes bones and teeth.
- **Fluorspar** is grounded in a ball-mill with **potassium phosphate**. While fluorine is very reactive, calcium atoms prefer phosphorus even more, so the milling created calcium phosphate and another compound with fluorine atoms. They called the latter **Fluoromix.**
- When Fluoromix was reacted with organic compounds, it could create around **50 fluorochemicals** with up to **98% yield**.

Uses of Fluorine:

- It is used to make fluorochemicals, which in turn are used to produce **plastics, agrochemicals**, **lithium-ion batteries**, and **drugs.**

LINK IT WITH: Fluorosis affected Rajasthan and Andhra Pradesh, Groundwater contamination, Chloro-fluoro-carbon (CFC's), Greenhouse gases (GHG's), Ozone layer.
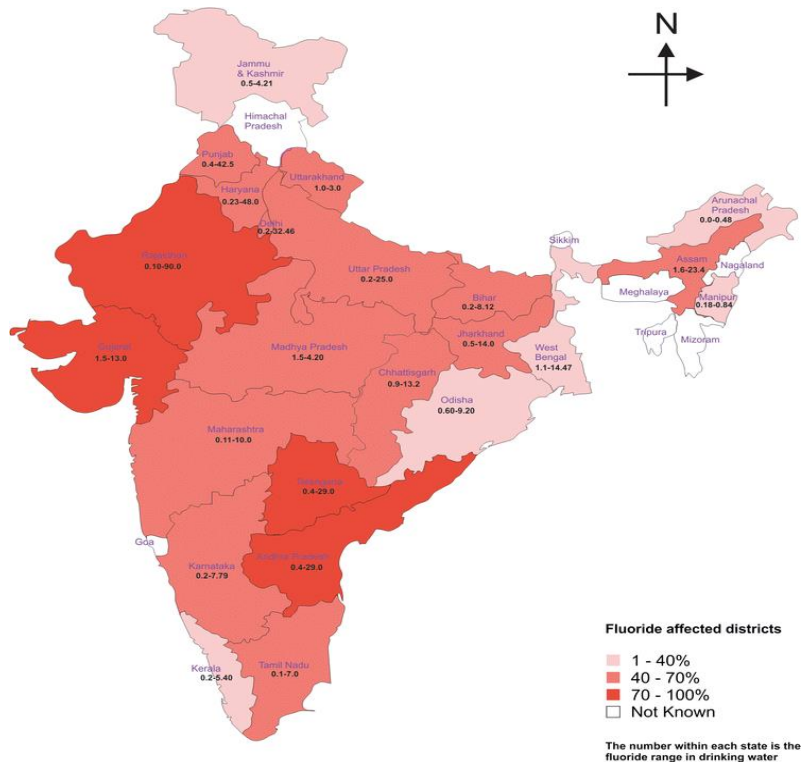
White's Seahorse

Context

Seahorses released into Sydney Harbour to boost population numbers.

About

- The White's Seahorse, commonly known as **New Holland seahorse**, **Sydney seahorse**, is a species of marine fish of the **family Syngnathidae**.
- It is thought to be **endemic** to the **Southwest Pacific**, from Sydney, New South Wales, and southern Queensland (Australia) to the Solomon Islands.
- It lives in **shallow**, **inshore habitats**, both natural and anthropogenic. This species is **ovoviviparous,** with **males brooding eggs** in a **brood pouch** before giving birth to live young.
- It became **Endangered (IUCN)** in 2020 due to pollution and habitat loss. While it belongs to **Appendix II of CITES**.
- Sydney Institute of Marine Science captured **three pregnant males** and helped raise their babies in **captivity** to improve their chances of survival. The 380 juveniles were released with tags that will enable researchers to monitor their growth and reproductive success in the wild.

LINK IT WITH: Great barrier reef, Captive breeding, In-Situ Conservation

MAP CONNECT

PLACES IN NEWS-INDIA

Danna Village

o The Indian Army inaugurated the "Bhagat Bridge" in Danna Village in Jammu and Kashmir.

o The bridge not only connects the remote village but also symbolizes the Army's commitment to the welfare of the people of Jammu and Kashmir.

Yankti Kuti valley

o Multiple events of glacial advances have been witnessed from the Yankti Kuti valley situated in the extreme eastern part of Uttarakhand.

o It is the last valley before the border with Tibet.

o It runs along the Northwest to Southeast axis and is formed by the river Kuti Yankti.

o This valley is mainly dominated by Byansis.

Strategic oil Storage Facilities

o The country's three existing strategic oil storage facilities — at Mangaluru and Padur in Karnataka, and Visakhapatnam in Andhra Pradesh.

o They are made up of excavated rock caverns.

o Countries build strategic crude oil reserves to mitigate major supply disruptions in the global supply chain.

Chilika Lake

o It is a brackish water lagoon located on the eastern coast of India, touching the states of Odisha and Andhra Pradesh.

o It is the largest coastal lagoon in India and the second-largest in the world.

o The lake is known for its rich biodiversity, serving as a haven for migratory birds during winter.
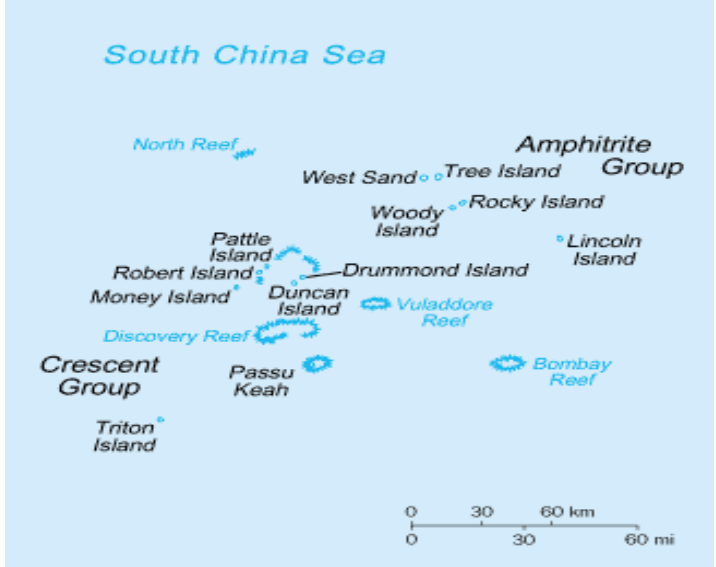
Idukki Dam

o The Idukki Dam is a double curvature arch dam constructed across the Periyar River in a narrow gorge between two granite hills locally known as Kuravan and Kurathi.

o It is one of the highest arch dams in Asia.

o The dam type is a concrete, double curvature parabolic, thin arc dam.

Zomi Tribe

o They are indigenous subgroup of the Zo people (Mizo-Kuki-Chin), has voiced its demand for the reestablishment of law and order within the Manipur.

o Manipur's population is divided into three primary ethnic communities: the Meiteis, residing in the valleys, and the Nagas and Kuki-Chins, who inhabit the hills.

Adichanallur Museum

o It will exhibit 3,000-year-old artefacts.

o An excavation by the Archaeological Survey of India, in Thoothukudi district, has unearthed a number of burial urns, metal and bronze products and even a gold diadem.
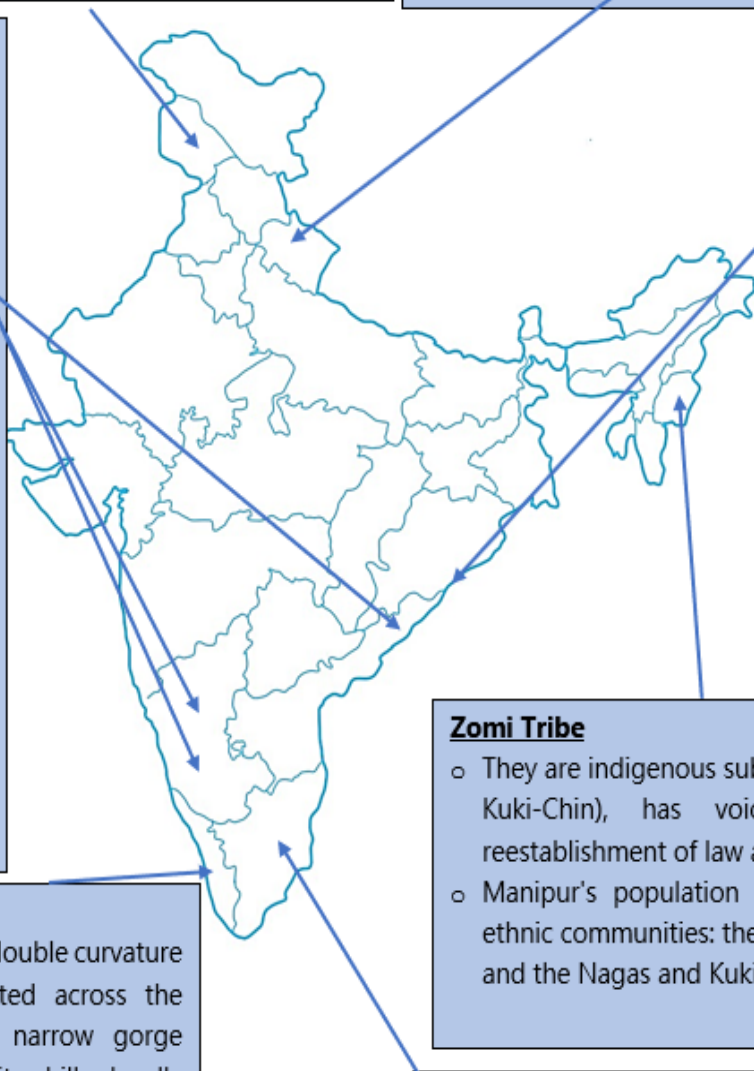
PLACES IN NEWS- WORLD

About	Map
Trition Island: o China appears to be building an airstrip at a disputed island in the South China Sea which is also claimed by Taiwan and Vietnam. o Triton is one of the major islands in the Paracel group, which is roughly equidistant from the coast of Vietnam and China's island province of Hainan. o China has had a small harbour and buildings on the island for years, along with a helipad and radar arrays.	
Sulina Channel: o The Sulina Channel is a navigable waterway located in Romania, specifically in the Danube Delta region. o It serves as a vital route connecting the Danube River to the Black Sea. The channel is essential for maritime transportation, allowing ships to access the inland Danube River from the Black Sea and vice versa. o It plays a significant role in trade, shipping, and regional connectivity.	
Murmansk Port: o Murmansk Port is a major seaport situated in the city of Murmansk, Russia. It is located in the far northwest of the country, near the border with Norway and Finland. o The port serves as a key gateway to the Northern Sea Route (NSR), a maritime route that connects Europe and Asia along the northern coast of Russia. o This route has gained attention as ice melts in the Arctic, making it potentially viable for shorter shipping routes between Europe and Asia.	

Lake Urmia:

o It is located in Iran, is the third largest salt-water lake on earth. Due to poor water management and construction of 48+ dams, more than 70% of the lake surface areas has already dried up.

o As a result, the retrieval of the lake shore has left a salt deposit behind and exposed to wind. Studies have predicted that salt storms from the dried lake will have serious impacts on the lives of 76 million people living around the lake.

Kilauea Volcano:

o It is an active shield volcano in the Hawaiian Islands.

o It is the most active of the five volcanoes that together form the island of Hawaii.

DATA OF THE MONTH

Slow Wheels of Justice

- Given a growing interest in understanding the nature of cases and their lifecycle in High Courts across India, DAKSH has analyzed the High Court judicial data.
- The chars below show data regarding the Writs-


How many High Court cases are "Writs"?
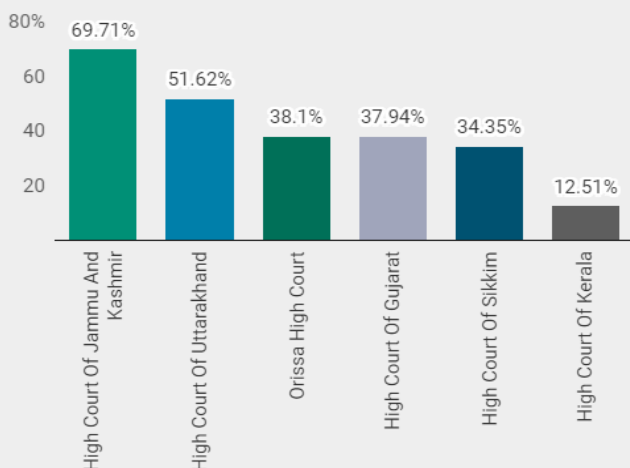
Aggregating Writ case types across High Courts

Harmonising case types can be challenging as some High Courts have catch-all categories while others separate associated tasks (condonation of delays, transfers, etc) into distinct case types.

Legend: Civil | Criminal | Habeas Corpus | Miscellaneous | Public Interest Litigation | Writ Appeal
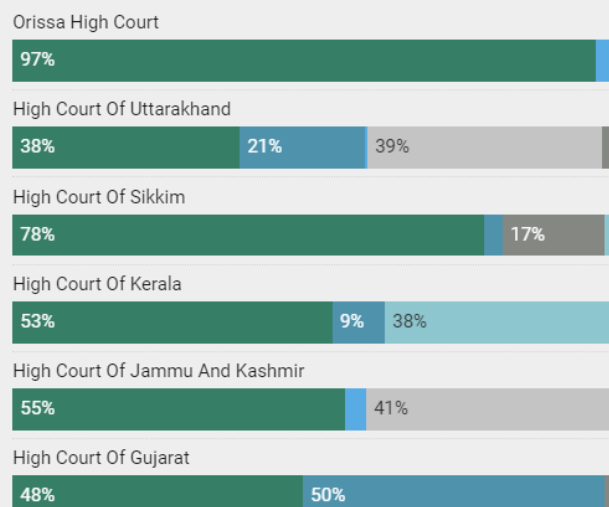
- The number of bail appeals filed in India's High Courts surged post 2020. Bail appeals went up from around 3.2 lakh to 3.5 lakh each year before 2020, to 4 lakh to 4.3 lakh thereafter.
- The chart shows the number of fresh appeals and pending appeals in High Courts over time.

- Consequently, the number of pending bail appeals in High Courts also surged from around 50,000 to 65,000 to between 1.25 lakh to 1.3 lakh.

- The DAKSH 'High Court dashboard' explains that in 77% of regular bail cases, it was not possible to ascertain the Act under which the person seeking bail was imprisoned. It was not mentioned in the e-courts data of various High Courts.
- An analysis of 23% of cases in which the Act was mentioned shows that the Epidemic Diseases Act, 1897, was ranked fourth, hinting at the possibility of cases surging under this Act as the reason for more bail appeals.
- The chart shows (Bar Chart) the bail applications filed in High Courts as a share of their total caseload between July 2021 and June 2022 (in %).
- The database also reveals that the median number of days taken from the filing date to the decision date for regular bail applications was.
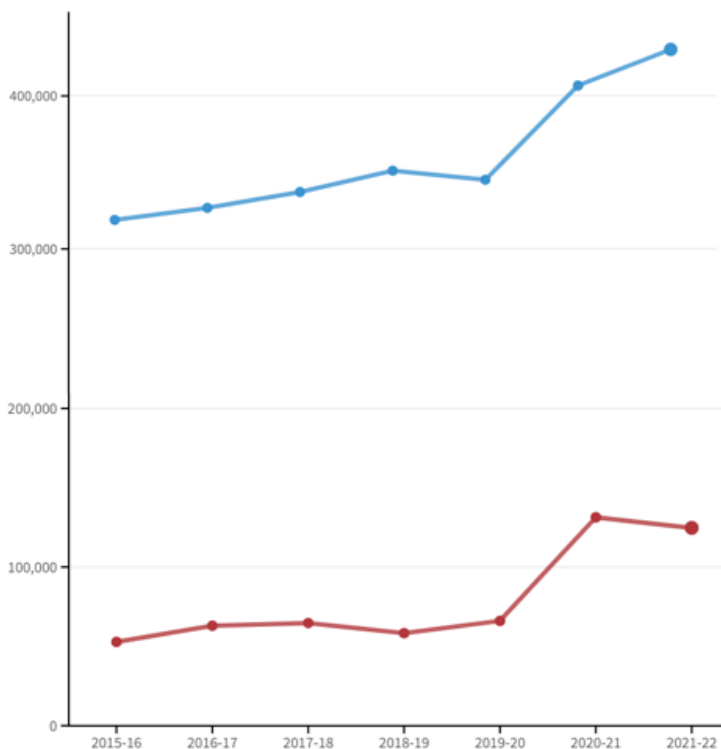
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- The median days for disposal of regular bail cases in the Jammu & Kashmir High Court was 156, for the Orissa High Court 61 days, and for the Bombay High Court, 56 days.

- Given the very high number of days it takes to dispose of bail cases (which are generally considered to not require much judicial time or deliberation), the lack of data to understand the reason for delay is worrying. "Delays in resolution have the same effect as denying bail as the accused remains in prison for the duration of their trial," the DAKSH database argues.

- The data regarding the outcome of bail appeals in High Courts were also missing in many cases. In close to 80% of the disposed bail cases in all High Courts, the outcome of the bail appeal — whether it was granted or rejected — was either unclear, or the outcome was missing. For instance, in the Bombay High Court, the bail outcome of over 95% of appeals was not known.
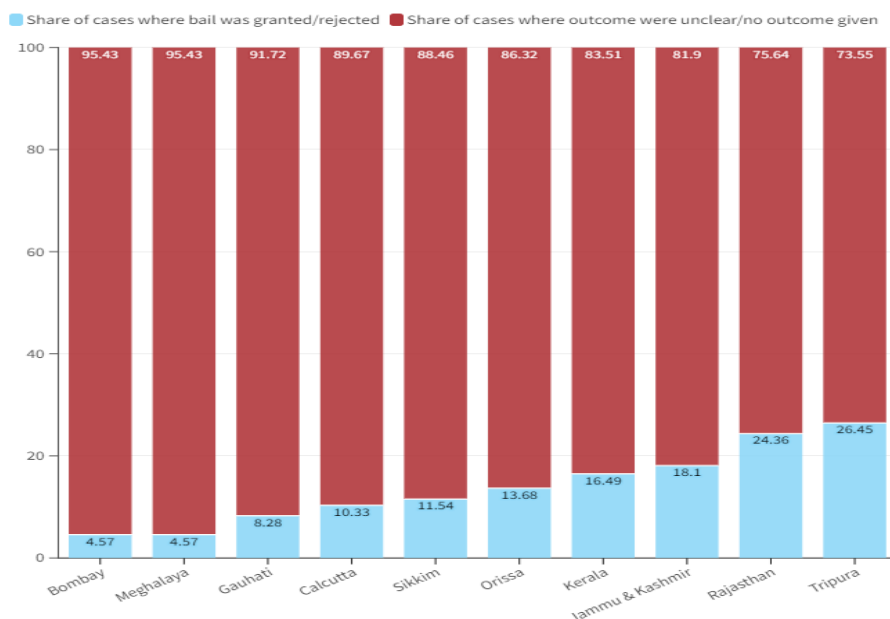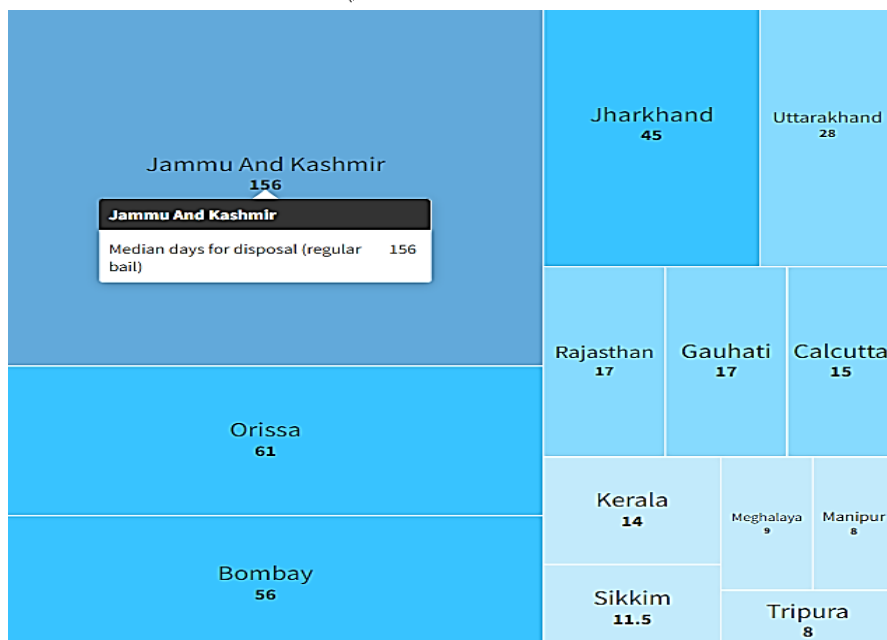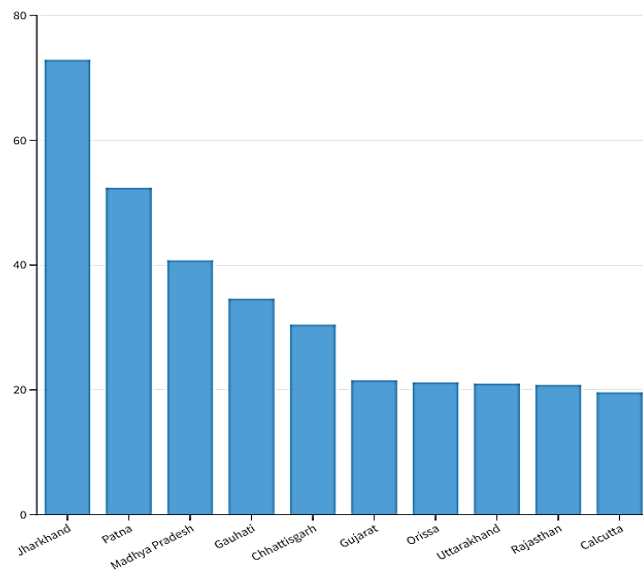
THEMATIC ESSAYS

1. **Education is the key that unlocks the golden door to freedom**
2. **Wars of Nations are fought to change maps. But wars of poverty are fought to map changes.**
3. **Good Governance is not just about effective policies; it is about fostering trust, Inclusivity, and participation in decision making.**

**SCAN THIS QR
TO GET ANSWER**

CONCEPT CLEARING ASSIGNMENT

1. Discuss the evolution of the Basic structure doctrine in India. Also, mention its impact on the constitutional doctrine of separation of power.

2. Lowering the age to contest the election may lead to significant socio-political implications for Indian democracy. Critically examine?

3. Discuss the ethical and socio-cultural implications of the criminalisation of marital rape in India. Do you believe Indian society is ready for such reforms?

4. What are various types of Motion mentioned in the constitution? Discuss the importance of a no-confidence motion and compare it with a censure motion.

5. "Denial of discussion in regional language in higher Judiciary may pose various challenges regarding delivery of justice in India" Critically discuss the positive impact of allowing regional languages in higher judiciary.

6. "Smart cities are an inevitable need of future urban planning in India". Comment. What are the operational challenges faced in the implementation of the smart cities mission in India?

7. What do you understand by animal rights and welfare? Explain. Discuss what constitutes animal rights and also mention various challenges in this regard.

8. "Smart phone in school can be used as a double-edged sword" Critically analyze this statement in light of the recent recommendation of UNESCO on a universal ban on the use of smartphones in school.

9. India's heavy dependence on China for life-saving drug and other pharma ingredients may pose a serious threat to the Indian pharma sector. Explain? Also mention steps taken by the government to address this issue.

10. What is Production Linked Incentive (PLI) Schemes? Mention issues faced by the domestic manufacturing sector in India? Discuss how the PLI scheme can be a game changer for the Indian Manufacturing Industries?

11. Discuss the current scenario of the corporate bond market in India. Discuss the need for the Corporate Debt Market Development Fund (CDMDF), what would be its impact on the Indian corporate bond market?

12. What do you understand about multilateral development banks (MDB). Discuss the role played by the MBDs in development of multilateral global economic and order?

13. What are the core issues of the Old pension scheme vs New pension scheme? Discuss the socio-economic implication of returning to the Old Pension Schemes?

14. Analyse the geopolitical factors that have contributed to the Russian-Ukraine conflict? Discuss the role of recent Jeddah Peace Talk to find the permanent solution in this regard.

15. Define Artificial Intelligence (AI)? Discuss the challenges posed by it and the need for its regulation keeping in mind the recent meeting held by UNSC in this regard.

1. Consider the following statements regarding GM crops:

1. MoEF&CC under the provisions of Biological Diversity Act 2002, oversees GMO's and related products.
2. GEAC is responsible for appraisal of proposals relating to release of genetically engineered (GE) organisms and products into the environment including experimental field trials.
3. In India, only Cotton is presently commercially cultivated as a genetically modified (GM) crop.

How many of the above statements are correct?

(a) Only one   (b) Only two
(c) All three   (d) None

2. Consider the following statements:

Statement-I:

The Heat Index is a parameter that considers both temperature and humidity to calculate the apparent temperature.

Statement-II:

Heat Index helps in understanding the impact of humidity on high temperatures and how it contributes to human discomfort during hot weather.

Which one of the following is correct in respect of 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.

3. Consider the following statements:

1. Global Biofuels Alliance is an intergovernmental alliance created under the leadership of India.
2. Any hydrocarbon fuel that is produced from an organic matter in a short period of time is considered a biofuel.
3. Brazil has been using 100% ethanol for running its most of its vehicles.

How many of the above statements is/are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

4. With reference to Microplastics, consider the following statements:

1. Primary microplastics are tiny particles designed for commercial use, such as cosmetics, as well as microfibers shed from clothing and other textiles.
2. Secondary microplastics are particles that result from the breakdown of larger plastic items, such as water bottles.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

5. Consider the following statements:

Statement-I

Floodplain zoning legislation limits the construction activities and development in flood zones.

Statement-II

Floodplain zoning is within the state government's ambit as it is deals with the land along the riverbanks.

Which one of the following is correct in respect of 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.

6. Steel slag, a by-product generated during the steelmaking process has its application for which of the following?

1. Construction of roads
2. Cement clinker
3. Soil fertility
4. Railroad ballast
5. Erosion control

Select the correct answer using the code given below.

(a) 1, 2, 3 and 5 only   (b) 1, 2 and 4 only
(c) 3, 4 and 5 only   (d) 1, 2, 3, 4 and 5

7. Which of the following contributes to the regulatory framework governing GM crops in India?

1. Environment Protection Act (1986)
2. Biological Diversity Act (2002)

3. Plant Quarantine Order (2003)
4. Food Safety and Standards Act (2006)
5. Drugs and Cosmetics Rule (1988)

Select the correct answer using the code given below.

(a) 2, 3 and 5 only   (b) 1, 4 and 5 only
(c) 1, 2 and 4 only   (d) 1, 2, 3, 4 and 5

8. Consider the following statements:

1. Manila Declaration talks to develop policies to reduce and control wastewater and marine litter.
2. Global Partnership on Marine Litter (GPML) was initiated during the Rio+20 summit.
3. Plastic debris less than five millimetres in size is called "microplastics."

How many of the above statements are correct?

(a) Only one   (b) Only two
(c) All three   (d) None

9. 'Technoskepticism' best refers to which one of the following?

(a) It is a perspective on futurism, casting doubt on the notion that technology will have unprecedented radical implications.
(b) Being skeptical and abstaining from the use of technology for a specific period.
(c) It means differentiating between digitally important tasks and digital distractions.
(d) Fear of using technological devices.

10. Consider the following statements regarding CareEdge Report:

1. India imports 43% of total pharma products from China.
2. The use of bulk drugs from China has increased to 81% in FY23.
3. India's dependency on Key Starting Material from China is less than 50%.

How many of the above statements are correct?

(a) Only one   (b) Only two
(c) All three   (d) None

11. Consider the following statements:

Statement I:

Corporate Debt Market Development Fund designed to cater to the requirements of the corporate bond market, has backstop facility.

Statement II:

Backstop facility provides safety net against market dislocation and other crises.

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

12. With reference to Index funds, consider the following statements:

1. A type of passively managed mutual funds.
2. They aim to replicate the performance of specific market index.
3. Available for a range of asset class – stocks, bonds and even commodities.
4. They are traded at the end of the trading day.

How many of the above statements are correct?

(a) Only one   (b) Only two
(c) Only three   (d) All four

13. Consider the following statements:

1. Mandatory Hallmarking of Gold Jewelry has come into force from 2021.
2. Only Hallmark Unique Identification Number (HUID) Hallmarked jewelry is to be sold by the BIS registered jewelers from 01 April 2023.

Which of the statements given above is/are correct?

(a) 1 only   (b) 2 only
(c) Both 1 and 2   (d) Neither 1 nor 2

14. Consider the following pairs:

GI tags	Details
1. Jalesar Dhatu Shilp	: Weapons are intertwined with gold and silver wire.
2. Bikaner Usta Kala Craft	: Untreated raw camel hide is processed and moulded.
3. Udaipur Koftgari Metal Craft	: Includes anklets, bells and other decorative brassware.

How many of the above pairs are correctly matched?

(a) Only one   (b) Only two
(c) Only three   (d) None

15. Consider the following statements regarding All India Tiger Estimate Report:

1. As per the report, the largest tiger population is in Madhya Pradesh, followed by Karnataka, Maharashtra, and Uttarakhand.

2. Central India, Shivalik Hills and Gangetic Plains witnessed a notable increase in tiger population.

3. 16 Tiger reserves referred to as "bottom reserves" contain only 25 tigers, which is 1% of national tiger population.

How many of the above statements are not correct?

(a) Only one
(b) Only two
(c) Only three
(d) None

16. **With reference to Polypills, consider the following statements:**

1. The WHO included three polypills on its revised Model Lists of Essential Medicines (EML) 2023.

2. Fixed Dose Combination refer to products containing one or more active ingredients in a single dosage form.

3. The polypill is a relatively new drug.

4. It could reduce the risk of future heart attacks and strokes by about 40% to 50%.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

17. **With reference to Heal in India initiative, consider the following statements:**

1. A new category of AYUSH Visa for foreign nationals has been introduced.

2. Ministry of AYUSH and the Ministry of Health & Family Welfare are working together to develop a one stop Heal in India portal.

Which of the statements given above is/are not correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

18. **Consider the following statements with reference to Marital rape in India.**

1. In India, marital rape exists de facto but not de jure.

2. Rape laws in India are violative of Article 14 and 21 of Indian Constitution.

3. In India rape of judicially separated wife is criminal offence.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

19. **With reference to Regional language in Judiciary consider the following statements:**

Statement-I: Gram Nyayalaya's generally use Hindi, English or the regional language of the state.

Statement-II: Lok Adalat's use the official language of the state other than English.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

20. **Which of the following are Regional Multilateral Development bank?**

1. International Monetary fund
2. Asian Development Bank
3. The African Development Bank
4. World Bank Group

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 and 4 only
(d) All of the above

21. **Consider the following Statement with reference to Cell-Free DNA-**

1. They are short fragments of DNA released into the bloodstream through a natural process of cell death.

2. During pregnancy, the mother's blood contains cell-free DNA both from her own tissue and from the fetus.

3. They can be found in plasma and other body fluids.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All Three
(d) None

22. **Consider the following regarding MALTA fruit.**

1. It is a Low-value crop with several Therapeutic benefits.

2. It can be used to make jelly squash, candies, etc.

3. It is useful in treating conditions linked to vitamin C deficiency.

4. There can indirectly be used as a fertilizer.

How many of the above statements are NOT correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

23. **It is Located at the junction of the Aravali and Vindhya hill ranges and named after a huge fort. It is enclosed by the Chambal River and Banas River from the two sides.**

The above statement describes which of the following parks' geographical location?

(a) Darrah National Park
(b) Sariska Tiger Reserve
(c) Keoladeo National Park
(d) Ranthambhore national park

24. Consider the following statements regarding The Sulina Channel:

1. It is a navigable waterway located in Romania, specifically in the Danube Delta region.
2. It serves as a vital route connecting the Danube River to the Black Sea.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

25. In which city does India's strategic petroleum reserve located?

1. Vishakhapatnam
2. Mangalore
3. Padur

Select the correct answer using the code given below:

(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

26. Consider the following statements: (2022)

1. "The Climate Group" is an international non-profit organization that drives climate action by building large networks and running them.
2. The International Energy Agency in partnership with the Climate Group launched a global initiative "EP100".
3. EP100 brings together leading companies committed to driving innovation in energy efficiency and increasing competitiveness while delivering on emission reduction goals.
4. Some Indian companies are members of EP100.
5. The International Energy Agency is the Secretariat to the "Under2 Coalition".

Which of the statements given above are correct?

(a) 1, 2, 4 and 5
(b) 1, 3 and 4 only
(c) 2, 3 and 5 only
(d) 1, 2, 3, 4 and 5

27. Consider the following statements: (2019)

1. Asiatic lion is naturally found in India only.
2. Double-humped camel is naturally found in India only.
3. One-horned rhinoceros is naturally found in India only.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

28. Water can dissolve more substances than any other liquid because (2021)

(a) it is dipolar in nature
(b) it is a good conductor of heat
(c) it has high value of specific heat
(d) it is an oxide of hydrogen

29. In India, the term "Public Key Infrastructure" is used in the context of- (UPSC 2020)

(a) Digital security infrastructure
(b) Food security infrastructure
(c) Health care and education infrastructure
(d) Telecommunication and transportation infrastructure

30. Bollgard I and Bollgard II technologies are mentioned in the context of- (UPSC 2021)

(a) clonal propagation of crop plants
(b) developing genetically modified crop plants
(c) production of plant growth substances
(d) production of biofertilizers

Answer Key					
1.	(b)	11.	(a)	21.	(c)
2.	(a)	12.	(d)	22.	(a)
3.	(b)	13.	(c)	23.	(d)
4.	(c)	14.	(a)	24.	(c)
5.	(b)	15.	(b)	25.	(d)
6.	(d)	16.	(c)	26.	(b)
7.	(d)	17.	(d)	27.	(a)
8.	(c)	18.	(c)	28.	(a)
9.	(a)	19.	(d)	29.	(a)
10.	(a)	20.	(b)	30.	(b)

DELHI
VIJAY NAGAR

2521, 1st FLOOR HUDSON LANE,
NEAR GTB NAGAR METRO STATION,
VIJAY NAGAR CHOWK,
DELHI - 110009

📱 97173 80832 | 📱 88605 88805

DELHI
RAJENDER NAGAR

56/4 GROUND FLOOR & 32,
BADA BAZAAR ROAD,
OLD RAJENDER NAGAR,
DELHI - 110060

📱 98112 93743 | ☎ 011- 4517 0303

BENGALURU
KORAMANGALA

A1, 2nd FLOOR, MAMOOR PLAZA,
ABOVE AIRTEL OFFICE,
2nd CROSS ROAD,
5th BLOCK KORAMANGALA,
BENGALURU - 560095

📱 76191 66663 | ☎ 080- 4854 4393

HYDERABAD
HIMAYATNAGAR

2nd FLOOR, HOUSE NO:- 3-6-111/7&6,
ABOVE PUMA SHOWROOM,
LIBERTY MAIN ROAD, HIMAYATNAGAR,
HYDERABAD - 500029

📱 79960 66663 | ☎ 040- 4859 0715

BHOPAL
M.P. NAGAR

PLOT NO. 48, 1st & 2nd FLOOR,
BEHIND SARGAM TALKIES,
ZONE-II M.P. NAGAR, BHOPAL,
MADHYA PRADESH - 462011

📱 75099 75361 | 📱 91798 95361

INDORE
BHAWAR KUAN SQUARE

111-117, 1st FLOOR, VEDA BUILDING,
BHAWAR KUAN SQUARE, INDORE,
MADHYA PRADESH - 452001

📱 9893 772941 | ☎ 0731-4977 441

PATNA
EXHIBITION ROAD

ABOVE TOYOTA SHOWROOM,
CEAT COMPOUND, EXHIBITION ROAD,
NEAR GANDHI MAIDAN, PATNA - 800001

📱 74639 50774 | ☎ 0612- 2500 961

KOLKATA
SALT LAKE

COLLEGE MORE, PTI BUILDING,
2nd FLOOR, SECTOR - V, SALT LAKE,
KOLKATA WEST BENGAL 700091

📱 90077 09895

JAIPUR
TONK ROAD

403-404, 4th FLOOR, APEX TOWER,
LAL KOTHI, TONK ROAD,
JAIPUR - 302015

📱 82908 00441 | ☎ 0141- 4052 441

IMPHAL WEST
KEISAMTHONG HODAM LEIRAK
OFF CAMPUS CENTRE

2nd FLOOR, KEISAMTHONG HODAM LEIRAK,
THOUDABHABOK MACHIN, IMPHAL WEST,
MANIPUR - 795001

📱 965024 5599

MUMBAI
OSHIWARA
OFF CAMPUS CENTRE

OFFICE NO. 42, 2nd FLOOR,
OM HEERA PANNA CO-OPERATIVE SOCIETY,
OPPOSITE CITY INTERNATIONAL SCHOOL,
OSHIWARA, JOGESHWARI (WEST),
MUMBAI - 400102

📱 987126 5599 | 📱 882600 2521

SRINAGAR
BAGHAT
OFF CAMPUS CENTRE

4th FLOOR, CHINAR HEIGHTS,
NEAR CHINAR COLONY, BAGHAT,
SRINAGAR, J&K - 190005

📱 987123 5599

we are a hardworking team, those who are willing to work hard should join us...
Please Note: We do not know any short cut to success.

We Have Most Of The Faculties Same Across All Our Centres