

CivilsTap

Quality & Affordable Education



CURRENT AFFAIRS MONTHLY

SEPTEMBER 2023

By CivilsTap Himachal

FOR HPAS &
other competitive
Exam in
Himachal Pradesh

Mains

+91 7814622609

www.civilstaphimachal.com



Contents

POLITY AND CONSTITUTION	3		
In 'demolition raj', the High Courts as beacons			
Demolitions as state-sanctioned collective punishment	3		
No case to press	4		
The custody questions	5		
Rethink the dynamics of India's fiscal federalism	6		
The Election Commission — autonomy in the crosshairs	8		
INTERNATIONAL RELATIONS	9		
The trajectory of progress must change	9		
India's Myanmar quandary, its paradoxical policy	10		
The U20 Promise	11		
The U.K.-India relationship is alive with opportunity	12		
India's G-20 opportunity for an African Renaissance	12		
India and the Northern Sea Route	13		
Concrete alliance	14		
BRICS 2.0	15		
SOCIAL ISSUES, EDUCATION, HEALTH	17		
India needs evidence-based, ethics-driven medicine	17		
The curious case of rising lactose intolerance	18		
Why is Bihar's caste-based survey facing legal challenges?	19		
The story of how the deadliest virus to humans was revived	20		
How the deadliest virus in human history paved the way for new cures	21		
How can 'One Health' help India, and India help 'One Health'	22		
ECONOMY	24		
From state visit to a more robust trade relationship	24		
Licence raj dot com	25		
Is India's sugar surplus leading to a crisis?	26		
India's mining policy shift	27		
What is the Jan Vishwas Bill, 2023 proposed by Centre?	28		
Can SMRs help India achieve net zero	29		
		Shoring up resistance	30
		India needs a new economic policy	31
		A fragile uptick	33
		Global headwinds	34
		The issue is not about India's GDP, but its JDP	35
		What is RBI's new pilot for frictionless credit?	36
		Understanding curbs on rice exports	37
		SCIENCED AND TECHNOLOGY	39
		The hybrid EV imperative	39
		Akira ransomware: why has the government issued a warning against it?	40
		The dangers in the Digital Personal Data Protection Bill	41
		Endogamy linked to persistence of harmful genetic variants	42
		Neither the right to privacy nor the right to information	44
		How did the dinosaurs become birds? Maybe the nose knows	45
		India takes first step to remove animals from drug-testing	46
		Why is India's Defence Ministry ditching Microsoft Windows for Maya OS?	47
		Indian Russia moon mission	48
		On smartphone manufacturing in India	49
		How scientists found that LK-99 is probably not a superconductor	50
		News media versus OpenAI's ChatGPT	51
		Scientists finally finish sequencing 'weird' male Y chromosome	52
		What are the changes to the process for sale of SIM cards?	53
		ENVIRONMENT	55
		The Holocene climate anomalies	55
		The Cheetah's return	56
		How AI is used to increase the frequency of Acoustic Side Channel Attacks	57
		On protecting the biodiversity of the northeast	58
		Himalayan blunders that are ravaging the Himalayas	59

GENERAL STUDIES 2.

POLITY AND CONSTITUTION

IN 'DEMOLITION RAJ', THE HIGH COURTS AS BEACONS DEMOLITIONS AS STATE-SANCTIONED COLLECTIVE PUNISHMENT

CONTEXT

- ❖ The demolitions in Nuh are just the latest iteration of what has come to be called “bulldozer justice”. For more than a year, from Khargone in Madhya Pradesh to Khambhat in Gujarat, to Jahangirpuri in Delhi, to Nagaon in Assam, to many others, the demolition of homes as a form of frontier justice has become a standard feature of administration.

A FIG-LEAF OF LEGITIMACY THAT FALLS AWAY

- ❖ In carrying out the demolitions, the state and its officials speak with a forked tongue.
- ❖ The public and official justification is that the demolitions are carried out in order to remove “illegal structures” or “encroachments”.
- ❖ Municipal laws that authorise the removal of unauthorised structures are invoked as the legal cover for such action. This is the justification the state sticks to when it is challenged in court.
- ❖ However, even as it does so, politicians, and at times, even officials of the administration, go on record to say that the purpose of the demolitions is to “teach a lesson” to alleged rioters.
- ❖ First, it is important to note that the state’s public justification fails on its own terms. Over the years, the courts have recognised that what we euphemistically refer to as “unauthorised structures” are often the dwelling places of economically marginalised and vulnerable people, who have been failed by the state in its obligation to provide shelter to all its citizens.
- ❖ Consequently, other than enforcing basic procedural requirements — such as adequate notice — courts have also insisted that before demolitions are carried out, the administration must conduct a survey to check whether the residents are eligible for rehabilitation schemes, and if so, complete their rehabilitation before any demolitions are done.
- ❖ Rehabilitation, in turn, does not simply mean picking up people from one part of the town and dumping them in another, but ensuring that there is no substantial disruption to their (already) precarious lives.
- ❖ The basic purpose is to ensure that the state does not simply make its own citizens homeless, and with no recourse. Doing so is a marker of an uncivilised society.
- ❖ It is obvious that the instant demolitions that we see do not comply with these procedural or substantive requirements.
- ❖ The state’s attempts to provide a fig-leaf of legitimacy to its demolitions, therefore, fall away at the slightest scrutiny.

A FORM OF FRONTIER JUSTICE

- ❖ But at the end of the day, everyone knows that what is happening is not a dispute over municipal law, zoning regulations, and “unauthorised” structures.
- ❖ It is clear that what is happening is state-sanctioned collective punishment, which is predominantly targeted against specific communities.
- ❖ Instead of engaging the machinery of law enforcement and justice — which is what states bound by the rule of law do — the state prefers to mete out a form of frontier justice, enforcing order through violence, and itself becoming the law-breaker.
- ❖ Bulldozer justice might satisfy the anger of people who have been caught up in riots, and who are accustomed to seeing the criminal justice system grind on for years without result.
- ❖ Indeed, whether it is extra-judicial killings or home demolitions, this is indeed the justification that is trotted out: that the courts are too slow, too prone to giving bail, and too indulgent in handing out acquittals.

- ❖ Bulldozer justice is a form of collective punishment, where punishment is not only meted out before guilt is proven, but along with the supposedly guilty individual, their innocent family members are also punished.
- ❖ Furthermore, punishment without guilt — punishment at the discretion of the state — violates the rule of law.
- ❖ The rule of law is all that stands between a marauding state and the basic safety of individuals.
- ❖ Abandoning the rule of law for frontier justice is the first step towards an authoritarian society where one's safety, physical possessions, and even life and liberty, will be at the whims and fancies of state officials.

WAY FORWARD

- ❖ In this context, it falls to the courts to enforce the rule of law and the Constitution.
- ❖ Unfortunately, for more than a year, the courts have been silent; even the Supreme Court of India has, when faced with this situation, purported to accept the state's justification of going after "unauthorised structures."
- ❖ One hopes that it is the beginning of the judiciary reinforcing basic constitutional principles and values against state impunity.

NO CASE TO PRESS

Context

- ❖ Recently, 5 Members of Parliament were suspended from the houses during the monsoon session.

Rules regarding the suspension of MP

- ❖ Both Houses of Parliament possess the power to discipline recalcitrant members so that they can function undisturbed.
- ❖ This power is given to ensure the smooth functioning of the Houses and to punish those who create disorder.
- ❖ Rule 374 of the Lok Sabha empowers the chair to name the member who "disregards the authority of the Chair or abuses the rules of the House by persistently and wilfully obstructing the business thereof" — whereupon the government brings a motion instantly to seek the approval of the House to suspend that member.
- ❖ When the House adopts the motion, the member stands suspended.
- ❖ Rule 256 of the Rajya Sabha is identical
- ❖ On suspension, the member is required to immediately leave the House or he will be forcefully removed
- ❖ As the member is temporarily disqualified, he is not allowed to attend the meetings of the House or any meeting of the committees of which he may be a member, during his suspension.
- ❖ Similarly, he won't be allowed to give any notice of questions, motions or resolutions. In effect, he is compelled to remain a non-member during this period.

Concern over recent suspension of MP

- ❖ As, we discussed, suspension of a member can be done only in accordance with the rules (374 and 256). Further, residuary powers under Rule 266 of the Rajya Sabha can be invoked only when the House has to deal with matters that are not explicitly provided for in the rules.
- ❖ Suspension is expressly provided for in rule 256, and therefore residuary powers of the Chairman cannot be invoked.
- ❖ The suspensions for an indefinite period and therefore do not conform to the rules.
- ❖ As The Supreme Court held in *Ashish Shelar vs Maharashtra Legislative Assembly (2022)* that any suspension beyond the period prescribed in the rules is unconstitutional
- ❖ The court said, "If the resolution passed by the House was to provide for suspension beyond the period prescribed under the said rule, it would be substantially illegal, irrational and unconstitutional".
- ❖ Therefore, Willful and persistent obstruction of the business alone qualifies for the naming and suspension of a member. Moreover, suspension cannot be for an indefinite period

Right to punish a member is vested in the House only, and not in the Chair

- ❖ As per the rule, the right to punish a member is vested in the House only, and not in the Chair. So, if the motion is not passed by the House, the member is not suspended.

- ❖ Under the above rules, the maximum period of suspension is until the end of that session. The rules also provide for the termination of suspension at any time.

Suspension should be used as last resort by the house

- ❖ Suspension is resorted to as a last step. It should be done when there is blatant and shocking defiance of the Chair persistently by the member.
- ❖ Similarly, willful and persistent obstruction of the business alone qualifies for the naming and suspension of a member.
- ❖ This means that a very aggravated form of defiance and obstruction can, in itself, leave the Chair with no option other than suspension of the member
- ❖ Secondly, suspension is a temporary punishment that can be revoked even the next day.
- ❖ There are numerous instances in both Houses when suspension has been revoked within a day or two, even though the members were initially suspended for the remainder of the session
- ❖ The basic principle is that the House needs the uninterrupted services of all its members and so suspension is to be a last resort.

Conclusion

- ❖ The legislative houses are in turmoil due to a variety of political reasons. The political class has the task of finding ways to end the turmoil and bring harmony to our legislatures.
- ❖ Exercising the disciplinary powers of the House cannot be the only effective way to run the supreme legislative body of the country. The true genius lies in finding and applying the right methods to carry out business of the house.

THE CUSTODY QUESTIONS

Recent Context:

- ❖ Recently, central government introduced three Bills in the Lok Sabha to reform criminal law:
- ❖ The Bharatiya Nyaya Sanhita, 2023 to replace the Indian Penal Code, 1860,
- ❖ the Bharatiya Nagarik Suraksha Sanhita, 2023 to replace the Code of Criminal Procedure, 1973 and
- ❖ the Bharatiya Sakshya Bill, 2023 to replace the Indian Evidence Act, 1872.
- ❖ The three Bills have since been referred to the relevant Parliamentary Standing Committee for review and recommendations.

Changes made in recently introduced bills

- ❖ The enactment of the new Sanhita is a crucial step to dispel the colonial shadow.
- ❖ Bharatiya Nyaya Sanhita (BNS) 2023, the proposed replacement for the Indian Penal Code (IPC), does not contain IPC Section 377 (or an equivalent section), which was read down by the Supreme Court in 2018
- ❖ Repealing Sedition law: The repeal of the sedition law points to a welcome shift in the balance struck between individual liberty and national security, but also frames that shift's incompleteness
- ❖ But the proposed Sanhita contains a provision that penalises "endangering sovereignty, unity and integrity of India".
- ❖ Without calling it sedition, it expands its definition, including aiding through financial means and "**subversive activities**", and encouraging "feelings of separatist activities.
- ❖ Inculcation of past judgments of courts (Anurag Soni v State of Chhattisgarh (2019). for eg. Introduction of the deceitful promise to marry as a criminal offence deceitful means" will include the false promise of employment or promotion, inducement or marrying after suppressing one's identity.
- ❖ **Introduction of reformative form of justice**
- ❖ The insertion of community service as an alternate form of punishment could prevent more undertrials languishing in jails
- ❖ New bills also include recognition of murder by a mob on ethnic, caste and communal lines.
- ❖ **Inculcation of technological advancement:**
- ❖ A new case, commencing from the FIR (first information report) leading to a case diary on its way to a chargesheet and culminating in a judgment is now to be maintained online — via digitised recordkeeping.
- ❖ Provisions of the bill allow witnesses, accused, experts and victims to appear through electronic means.

- ❖ It also allows electronic evidence to have the same legal value as documents and seeks to expand the scope of secondary evidence to include copies made from the original by mechanical processes as proof of evidence.
- ❖ A new case, commencing from the FIR (first information report) leading to a case diary on its way to a chargesheet and culminating in
- ❖ The Protection Code now makes it mandatory for a forensic expert to visit the crime scene and collect forensic evidence for information relating to an offence that is punishable by imprisonment for at least seven years
- ❖ The Protection Code now provides that the decision to grant or reject sanction to prosecute a public servant must be reached by the government within 120 days of receiving the request. If the government fails to do so, sanction shall be deemed to be accorded.
- ❖ No sanction shall be required in cases involving public servants when accused of sexual offences or trafficking of human beings.
- ❖ More reform comes in the form of a provision that mandates that no person can be arrested without prior permission of an officer of the minimum rank of Deputy Superintendent of Police for offences punishable with less than three years imprisonment, if the accused is above the age of 60 years.

Areas of concern in recently introduced bill

- ❖ Protection Code enables trial in absentia if the judge is satisfied that the “personal attendance of the accused before the Court is not necessary in the interests of justice” or if the accused “persistently disturbs the proceedings in court”.
- ❖ It provides for the scope for abuse of a provision such as this given the wide latitude afforded to the judge in deciding when the presence of an accused is not necessary.
- ❖ **Hamper the civil liberties of accused**
- ❖ Permits the magistrate to authorise detention in police custody for a period beyond the current 15-day limit, extending up to 90 days.
- ❖ Such detention extending to 90 days is for offences punishable with death, life imprisonment and imprisonment for a term of not less than 10 years.
- ❖ The Protection Code enables detention in police custody beyond the current 15-day mandate and up to 60 days for “any other offence”

Conclusion

- ❖ While there are many reforms that should be welcomed in the Protection Code, 2023, all of that will be rendered meaningless if an accused can be detained for long periods of time in police custody.
- ❖ Three months of uninterrupted police custody will render any accused extremely vulnerable to coercion and intimidation. Therefore, reform should be carried out while considering the basic rights of accused.

RETHINK THE DYNAMICS OF INDIA’S FISCAL FEDERALISM

Context

- ❖ A ‘holding together federation’ with a built-in unitary bias, the Indian Constitution was the contextual product of centrifugal forces and fissiparous tendencies in the run-up to Independence.

About

- ❖ It has journeyed over 73 years with remarkable resilience. Even so, the emerging dynamics of India’s fiscal federalism needs some rethinking.
- ❖ The paradigm shift from a planned economy to a market-mediated economic system, the transformation of a two-tier federation into a multi-tier fiscal system following the 73rd and 74th Constitutional Amendments, the abolition of the Planning Commission and its replacement with NITI Aayog, the passing of the Fiscal Responsibility and Budget Management (FRBM) Act, with all the States forced to fall in line, the Goods and Services (GST) Act with the GST Council holding the controlling lever, the extensive use of cess and surcharges which affect the size of the divisible pool and so on have altered the fiscal landscape with varying consequences on India’s federalism.

Issues.

- ❖ India's intergovernmental transfer system should be decidedly more equity-oriented. Although the natural proclivity of any market-mediated growth process is to work in favour of the propertied class, the actual experience in India has been astounding.
- ❖ indeed, equity should be the overarching concern of the 16th Finance Commission and that HDI could be considered as a strong candidate in the horizontal distribution of tax devolution.
- ❖ There is a case for revisiting Article 246 and the Seventh Schedule for a denovo division of powers, functions and responsibilities for a variety of reasons.
- ❖ India is no longer the one-party governance of post-Independence times. It has become a truly multi-party system. The nature of polity, society, technology, demographic structure and the development paradigm itself have significantly changed.
- ❖ Under the changing dispensation, several pieces of central legislation such as the Mahatma Gandhi National Rural Employment Guarantee Act 2005, the Right of Children to Free and Compulsory Education Act 2009, the National Food Security Act 2013 and many others impose an extra burden on the States.
- ❖ At the time of constitution-making, we never asked the pertinent question of who should do what and who should tax what. We borrowed copiously from the Government of India Act 1935 and failed to apply the subsidiarity principle, viz., that whatever could be done best at a particular level should be done at that level and not at a higher level, in the division of functions and finance.
- ❖ Although the 73rd and 74th Constitutional Amendments provided an opportunity to re-examine the issue, nothing was done.

A respectable place for the third tier

- ❖ The persistent failure to place the third tier properly on the fiscal federal map of India is a serious issue.
- ❖ The absence of a uniform financial reporting system comprising all levels of government is a major deficit which the coming Union Finance Commission may be required to address.
- ❖ Although the Constitution refers to the third tier as 'institutions of self-government', policymakers, experts and even the UFCs generally refer to them as 'local bodies' and have not given the respect and the handholding they deserve.
- ❖ It is well-recognised that the prime objective of our federation with deep heterogeneity is to provide basic services of standard quality to every citizen irrespective of her choice of residence and they have a critical role to play.

Review off-Budget borrowing

- ❖ There is a great need to review the off-Budget borrowing practices of both the Union and the States.
- ❖ Off-Budget borrowings mean all borrowings not provided for in the Budget but whose repayment liabilities fall on the Budget.
- ❖ They are generally unscrutinised and unreported. That all income and expenditure transactions should fall under some Budget head or other is a universal principle.
- ❖ State public sector undertakings and special purpose vehicles raise resources from the markets, but their servicing burden often falls on the State government.
- ❖ In cases where the government is the ultimate guarantor, the burden of repaying the debt also falls on the State.
- ❖ Although the States are disciplined through Article 293(3) by the Union and through the FRBM Act, the Union often escapes such controls.
- ❖ The liberal utilisation of the National Small Saving Fund (NSSF) for extra-budgetary financing of central public sector undertakings and central ministries by way of loans is not reflected in the Union fiscal deficits.
- ❖ This is because only the Consolidated Fund of India balance is considered for calculating fiscal deficit, and items in public accounts such as the NSSF are kept out. While the borrowing space of States is restricted, the Union escapes such discipline.
- ❖ There is also a huge area of special banking arrangements using public sector banks to facilitate cash and credit flow outside the budgetary appropriations to help various agencies involved in quasi-fiscal operations with the government.
- ❖ Transparency guarantees and public accountability demand that the Union, States and local governments come clean and bring all extra-budgetary transactions to the public domain.

Conclusion

- ❖ In sum, the dynamics of the emerging fiscal federalism of India entails significant rethinking especially in the context of the 16th Finance Commission.

THE ELECTION COMMISSION — AUTONOMY IN THE CROSSHAIRS

Context

- ❖ Of late, the Election Commission of India (ECI) has been a focal point of differences between the government and the judiciary. This time, the clash of opinions is over its appointment.

Recent judgment

- ❖ The Supreme Court of India, in a judgment, directed that the Chief Election Commissioner (CEC) and the Election Commissioners (EC) will be appointed by the President of India based on the advice of a committee made up of the Prime Minister, the Leader of the Opposition in the Lok Sabha or the leader of the single largest Opposition party and the Chief Justice of India (CJI).
- ❖ This judgment of the Constitution Bench was a major step towards broad basing the ECI and enhancing its constitutional status.
- ❖ Article 324 of the Constitution contains a provision for such a law to be enacted by Parliament.

The significance

- ❖ The significance of this judgment also lies in the fact that this was a unanimous judgment of a five-judge Bench.
- ❖ So far, the top officers of the ECI have been appointed by the President of India on the advice of the central government.
- ❖ The Bill seeks to replace the Chief Justice of India from the high-powered selection committee, meaning the committee will be made up of the Prime Minister (Chairperson), Leader of the Opposition in the Lok Sabha (Member) and a Union Cabinet Minister to be nominated by the Prime Minister (Member).
- ❖ Experience and research show that incumbent governments, especially those with authoritarian streaks, do not usually do away with democratic institutions but, instead, relentlessly work towards making them pliant.
- ❖ The institutional structures remain but are drained of their substance. And, in this case, one is dealing with a matter of electoral winnability and a consolidation of state power.

An issue that has seen much debate

- ❖ The procedure of appointments of the CEC and the ECs has seen much debate in policy and political circles ever since the Constituent Assembly debates and much has been written about it.
- ❖ A suggestion during the Constituent Assembly Debates was that the appointment of the CEC should be subject to confirmation by two-thirds majority in a joint session of both Houses of Parliament (Constituent Assembly debates, June 15, 1949). However, Parliament was entrusted with the charge of making appropriate laws on the matter.
- ❖ The V.M. Tarkunde Committee appointed by Jayaprakash Narayan in 1975, the Dinesh Goswami Committee on electoral reforms set up by the then Prime Minister, V.P. Singh, in the 1990s, and the second Administrative Reforms Commission in its fourth report in 2009 among others made recommendations that the appointments of members of the ECI should be more broad based (through a collegium) than leaving this solely to the government on whose advice the President made these appointments.

Held in high regard

- ❖ The ECI has been held to be a reliable, responsible and trustworthy institution by the people of India.
- ❖ Handling elections that involve about 900 million voters (2019 election data) through a machinery of 11 million personnel in a setting of economic hardship and inequalities is a remarkable feat.
- ❖ However, going soft on the ruling party or its ideology, as the perception is, whether this has to do with election schedules, electoral speeches, alleged hateful propaganda, electoral rolls or other kinds of malpractices, is eroding not only its own autonomy but also people's trust.

Conclusion

- ❖ Nevertheless, the point remains that the present regime still sees the ECI as an institution with autonomy. And this autonomy does not gel with its goals. It would instead like a firmer grip on the ECI through statutory means.

INTERNATIONAL RELATIONS

THE TRAJECTORY OF PROGRESS MUST CHANGE

INTRODUCTION

- ❖ The G-20 has provided Prime Minister Narendra Modi an opportune stage before the next general election in 2024. Promotions of the G-20, with PM's picture a part of them, are everywhere. Of greater significance to the world is that the G-20 is being led by India, the world's most populous country.

GOVERNANCE IS FACING TROUBLE

- ❖ Global governance is in bad shape. The trajectory of progress must change.
- ❖ The world is being divided by wars amongst nations, and strife within them — wars with military weapons and with financial and trade weapons.
- ❖ Desperate millions are being pushed back to their deaths while trying to cross borders and oceans in search of better lives and safety, while three multi-billionaires are competing to create commercial space ventures to take a handful of wealthy people for a brief joyride in borderless space.
- ❖ Humanity cannot carry on the way it is. The trajectory of progress must be changed to make economic growth more equitable and sustainable.
- ❖ Economists try to prove with numbers that poverty is reducing, and incomes are increasing for everyone. They should look around and listen to real people struggling in precarious livelihoods.
- ❖ The planet is heating up inexorably. It cannot take the pressure of the present consumptive model of economic growth any longer. More economic growth will not solve the world's problems. It must be sustainable and equitable too.

THE IMPORTANCE OF G20 CHAIR FOR INDIA

- ❖ India, as chair of the G-20, has offered a vision of Vasudhaiva Kutumbakam (One Earth, One Family, One Future) to bring all citizens of the world together and make the world better for everyone.
- ❖ To continue to solve systemic problems with the same approach that caused them is madness, Einstein declared. A new paradigm is required for global governance.
- ❖ In 2015, all countries adopted the 17 UN Sustainable Development Goals (SDG) to be achieved by 2030.
- ❖ The SDGs describe 17 complex combinations of environmental, social, and economic problems. All 17 problems do not appear in every country, and when they do, they do not appear in the same form.
- ❖ No country has only one of the SDG problems; every country has at least six or seven.
- ❖ Calculations show that even seven problems (out of a possible 17) can combine in 98 million different ways.
- ❖ Clearly, one global solution for the environment, society, or economy, cannot apply everywhere. People on the ground know where their shoes pinch. Standard solutions cannot fit all.

A MAP OF GROUND REALITIES

- ❖ The McKinsey Global Institute has produced a detailed map of realities on the ground, in its report which concludes that growth of GDP at a country level explains only 20% of the progress on the ground. The remaining 80% is local and specific.
- ❖ The present theory-in-use of top-down problem-solving is conceptually flawed.
- ❖ Complex systemic problems that appear in many places require local systems solutions that are found using cooperation and implemented by communities that combine solutions to economic, environment, and social problems.
- ❖ India has proposed an approach of LiFE (lifestyles for sustainable development) to the G-20.
- ❖ Principle 7 of LiFE also requires the world's leaders to "recognize and amplify the role of local communities, local and regional governments and traditional knowledge in supporting sustainable lifestyles".

WAY FORWARD

- ❖ Democracy is government of, for, and by people.

- ❖ A government elected by the people that provides benefits top-down to people is not a complete democracy.
- ❖ Pressure to change and new solutions must come from the peripheries of power systems, with movements on the ground in India and around the world.

INDIA'S MYANMAR QUANDARY, ITS PARADOXICAL POLICY

CONTEXT

- ❖ India's official rhetoric on commitment to democracy in Myanmar is in contrast with its policy framed through the lens of its security concerns in north-east India and relations with China.

INDIA AND MYANMAR

- ❖ As the land of Lord Buddha, India is a country of pilgrimage for the people of Myanmar.
- ❖ British era: Both India and Myanmar were part of British India during colonial rule until 1935.
- ❖ After independence, India and Myanmar established diplomatic relations and maintained close ties. India and Myanmar signed a Treaty of Friendship in 1951.
- ❖ In 2014, Myanmar became part of India's "Neighborhood First" policy and its "Act East" policy.

ISSUES AND CHALLENGES IN INDIA-MYANMAR RELATIONS

- ❖ Coup by Military Junta: A recent coup by the military junta in Myanmar made it difficult for India to balance its strategic and economic interests with its commitment to democratic values and human rights.
- ❖ Weak trade relations: With a total bilateral trade of \$2 billion, India's economic engagement with Myanmar lags behind China. India's withdrawal from Regional Comprehensive Economic Partnership can further increase this trade gap.
- ❖ Rohingya issue: The migration of Rohingyas in India is causing issues of internal security and exploitation of national resources of India.
- ❖ Northeast insurgency: Myanmar-China border is the hotbed of local armed separatist groups operating in Myanmar soil and Indian groups, ranging from ULFA in Assam to the NSCN (IM) in Nagaland.
- ❖ Internal security: It is a major concern for India. The Indo-Myanmar border is porous and lightly policed, which is exploited by terrorist outfits and insurgent groups from the North Eastern part of India eg. supply of trained cadres, and arms trafficking.
- ❖ Free movement regime: The Free Movement Regime is being exploited by militants and cross-border criminals for the illegal transportation of weapons, contraband goods, and counterfeit Indian currency.
- ❖ Trust deficit: It has widened in India-Myanmar because of delays in the implementation of various projects.
- ❖ China has asserted itself through its soft power as well as through its trade and economic relations with Myanmar by taking up large infrastructure projects. Also, Myanmar is part of the Belt and Road Initiative initiated by China.

INDIAN POLICY TOWARDS MYANMAR

- ❖ At the onset of the COVID-19 pandemic and the coup, India took a proactive approach by providing food and vaccine assistance.
- ❖ However, the plight of the Myanmar people seems to have faded from memory, with accusations of instigating violence in Manipur replacing it.
- ❖ Communities along the border have already defied the Home Ministry by providing shelter to the refugees.
- ❖ Concerns over trafficking and drug smuggling in Myanmar led to India suspending the Free Movement Regime in September 2022.
- ❖ India's External Affairs Minister S. Jaishankar raised the issue of infrastructure projects and stability in border areas with his Myanmar counterpart on the sidelines of the Mekong Ganga Cooperation (MGC) meeting.
- ❖ India has also supported the Association of Southeast Asian Nations' 'Five-Point Consensus'.
- ❖ However India's official rhetoric on commitment to democracy in Myanmar is in contrast with its policy framed through the lens of its security concerns in north-east India and relations with China.

WAY FORWARD

- ❖ India's policy options in Myanmar are challenging, but not limited.

- ❖ The relaxation of Ms. Suu Kyi's prison sentence may provide an opportunity for India to engage with her and pro-democracy actors.
- ❖ Additionally, the government and media must avoid blanket securitisation and profiling of incoming refugees, many of whom have ties of kinship in India.
- ❖ This approach is essential to prevent further violence and foster an environment of care and compassion.

THE U20 PROMISE

Recent Context:

- ❖ On July 7 and 8, Ahmedabad hosted the Urban 20 (U20) summit. In the history of G20 meetings, the Summit was the sixth of its kind.

About U20

- ❖ Urban 20 or U20 is a city diplomacy initiative, comprising of cities from G20 countries.
- ❖ It strives to establish a lasting practice of engagement among cities to develop a collective message that emphasizes the role of cities in taking forward the sustainable development agenda
- ❖ U20, established in 2018 to generate discussions among G20 members on urban issues, was first chaired and hosted by the city of Buenos Aires.
- ❖ For this year, the leadership was handed over to Ahmedabad as the 2023 Chair from the city of Jakarta, the Chair for 2022

Ahmedabad city is a model for urban development with concern

- ❖ First, Ahmedabad is a very good example of how cities in the Global South can achieve infrastructural development goals.
- ❖ The city has been comparatively successful in its implementation of innovative and liberal urban planning policies and as a result, has been able to organise its expansion better than most Indian cities.
- ❖ Ahmedabad has also shown what good quality public spaces can do for a city's residents and its businesses.
- ❖ The city has executed some very challenging large-scale public projects in the last three decades and has become an example for many others to follow.
- ❖ Second, Ahmedabad also shows exclusionary and catastrophic socio-legal urban governance.
- ❖ The city is one of the most communally segregated urban areas in the country.
- ❖ Scholarship has shown that parts of the city that are homogeneously occupied by minorities and underprivileged caste communities — areas such as Dani Limda, Juhapura, etc. are neglected by the government.

Recommendation made for upcoming G20 meet:

- ❖ It gives a promising six-point message
- ❖ Encouraging environmentally responsible behaviours
- ❖ ensuring water security
- ❖ accelerating climate finance
- ❖ championing local culture and economy
- ❖ re-inventing frameworks for urban governance and planning, and
- ❖ catalysing digital urban futures.
- ❖ While being heavy on the agenda of climate change and climate justice, the Communique also argues for equality and justice in urban development.

Certain areas of concern which are not addressed by U 20

- ❖ Over the last two decades, India has shown enthusiasm towards planned urban development, which is much needed and commendable.
- ❖ However, Mayors Summit's conversations failed to address the Gujarat's unique Disturbed Areas Act and the politics of urban exclusion and forced segregation along religio-ethnic lines.
- ❖ As communal narratives and segregation have made urban development increasingly exclusionary. This has distributed the costs and benefits of development unequally with communal identity acting as the marker of this distribution.

Conclusion

- ❖ The upcoming G20 meet is a good opportunity to reflect upon and judge India's own urban governance and politics against the vision of the U20 Communique.
- ❖ Therefore, the upcoming G20 meeting should focus on issue of urban exclusion so that inclusive urban growth can be achieved and vision of G20 motto "One Earth, One Family, One Future" can be realised in letter and spirit.

THE U.K.-INDIA RELATIONSHIP IS ALIVE WITH OPPORTUNITY

Introduction

- ❖ It is fantastic to see India, the world's largest democracy, take the global stage as host of the G-20, a vital forum for fostering international cooperation. The United Kingdom has long held the belief in trade as a force for growth and prosperity. It is why we advocate for free and fair trade at the World Trade Organization and why we are taking advantage of our newly recovered powers to forge trade deals with booming economies such as India.

India and UK

- ❖ As India's middle class grows to a quarter of a billion middle class consumers by 2050, any improvements on our current trading relationship could be a huge boost for U.K. businesses.
- ❖ It is no secret that the U.K. and India share a thriving trading relationship, which was worth £36 billion in 2022.
- ❖ New figures from the U.K.'s Department for Business and Trade reveal that India retained its position as the U.K.'s second largest source of investment projects in the last financial year.
- ❖ And, importantly, our trade and investment relationship goes both ways. In fact, as India's sixth largest investor, between April 2000 and March 2023, the U.K. has invested \$34 billion in India in foreign direct investment.
- ❖ U.K. companies are also creating jobs and growth opportunities. There are 618 U.K. companies in India employing about 466,640 people directly as of 2021.

The ambitious FTA, a strong partnership

- ❖ Both parties are underway to discuss progress on an ambitious Free Trade Agreement, which could boost India's bilateral trading relationship even further.
- ❖ The U.K. and India's strong partnership extends far beyond trade and investment into culture, sport, education and tourism too.
- ❖ To borrow a phrase from Prime Minister Narendra Modi, there is very much a 'living bridge' between our nations — you only have to look at our shared love of Bollywood to see this in action.
- ❖ As one of Bollywood's largest audiences outside of India, the U.K. has featured in some of Bollywood's iconic films.
- ❖ A vibrant Indian diaspora of over 1.6 million people makes a significant contribution across all walks of life in the U.K., from education through to the workforce, with Indian students making up one of the U.K.'s largest groups of international students.

Marketing campaign

- ❖ U.K. is launching 'Alive with Opportunity', a £1.5 million marketing campaign designed to showcase the tremendous bond between our countries and build on the continuous exchange of people, ideas and culture.
- ❖ As part of the U.K.'s ambitions to double trade with India by 2030, the campaign aims to stimulate interest and demand for U.K. goods and services, increase the U.K.'s ability to grow their business through trade with India, and attract new Indian inward investment.

Conclusion

- ❖ Over the course of the next year one can expect to see a celebration of the business, trade, cultural, and sporting links between the U.K. and India across billboards shining a light on this relationship which is very much alive with opportunity.

INDIA'S G-20 OPPORTUNITY FOR AN AFRICAN RENAISSANCE

Context

- ❖ By presenting itself as a more participative and less exploitative alternative, India can make its ties with Africa a win-win ecosystem for the 21st century.

About

- ❖ Like an absentee landlord, Africa is flagging its demands nowadays on multilateral fora such as BRICS (Brazil, Russia, India, China and South Africa), the G-20 and the United Nations General Assembly.
- ❖ For a continent with 54 countries, over a quarter of the “Global South”, it is populated at BRICS and the G-20 by South Africa, an atypical representative of the Black continent.

Challenges and disruptors

- ❖ Africa, in general, and the Sahel region in particular, are passing through several existential challenges such as misgovernance, unplanned development, the dominance of ruling tribes and corruption.
- ❖ Recently, new disruptors such as the Islamic terror, inter-tribal scrimmage, changing climate, runaway food inflation, urbanisation and youth unemployment have further strained the traditional socio-political fabric.
- ❖ As the past military interventions by France, the United States and Russia’s Wagner Group to curb the militancy have shown, they frequently become part of the problem.
- ❖ These interventions have costs: keeping dictatorships in power to protect their economic interests, such as uranium in Niger, gold in the Central African Republic and oil in Libya.
- ❖ Africa’s problems are further compounded by an erosion in its international support base. China has been Africa’s largest trading partner and investor, but a slowing economy and trade have reduced its appetite for Africa’s commodities.
- ❖ Its Belt and Roads Initiative has raised the debts of some African countries to unsustainable levels, in turn causing them to cede control of some of their assets to China.
- ❖ France, the United Kingdom and other colonial powers as well as the United States have continued to exploit mineral wealth in Africa, but their economic downturn has limited their outreach.

India’s robust ties

- ❖ India’s ties with Africa are deep, diverse and harmonious that range from Mahatma Gandhi’s satyagraha against the apartheid to the UN peacekeeping role.
- ❖ Although we now import less oil from Africa and sell fewer agricultural products, India-Africa trade reached \$98 billion in 2022-23.
- ❖ India’s investment and other socio-economic engagements with Africa remain robust, especially in such sectors as education, health care, telecom, IT, appropriate technology and agriculture.
- ❖ India was the fifth largest investor in Africa and has extended over \$12.37 billion in concessional loans.
- ❖ India has completed 197 projects and has provided 42,000 scholarships since 2015.
- ❖ Approximately three million people of Indian origin live in Africa, many for centuries. They are Africa’s largest non-native ethnicity.
- ❖ India is well placed to leverage its comprehensive profile with Africa to help the continent either bilaterally or through these multilateral forums.
- ❖ Its hosting of the G-20 Summit will present it with a historic opportunity to up the ante. It could consult like-minded G-20 partners and multilateral institutions for a comprehensive semi-permanent platform to resolve the stalemated security and socio-economic situations in several parts of Africa.

Way forward

- ❖ India should deliver political stability and economic development by combining peacekeeping with socio-political institution building.
- ❖ We can offer force multipliers such as targeted investments and transfer of relevant and appropriate Indian innovations, such as the JAM trinity (Jan Dhan-Aadhaar-Mobile), DBT (Direct Benefit Transfer), UPI (Unified Payments Interface), and Aspirational Districts Programme.
- ❖ By offering a more participative and less exploitative alternative, New Delhi can make the India-Africa ecosystem an exemplary win-win paradigm for the 21st century.

INDIA AND THE NORTHERN SEA ROUTE

Introduction

- ❖ Murmansk, popularly called the capital of the Arctic region and the beginning point of the Northern Sea Route (NSR), is witnessing the rising trend of Indian involvement in cargo traffic.

Significance of the Arctic region to India

- ❖ The vulnerability of the Arctic region, which is above the Arctic Circle and includes the Arctic Ocean with the North Pole at its centre, to unprecedented changes in the climate may have an impact on India in terms of economic security, water security and sustainability.
- ❖ The region also constitutes the largest unexplored prospective area for hydrocarbons remaining on the Earth as it is estimated that the region may hold over 40 per cent of the current global reserves of oil and gas.
- ❖ There may also be significant reserves of coal, zinc and silver.
- ❖ However, the government's Arctic Policy of 2022 mentions that the country's approach to economic development of the region is guided by UN Sustainable Development Goals.

History of India's engagement with the Arctic

- ❖ India's engagement with the Arctic can be traced to the signing of the Svalbard Treaty in 1920 in Paris and India is undertaking several scientific studies and research in the Arctic region.
- ❖ This encompasses atmospheric, biological, marine, hydrological and glaciological studies.
- ❖ Apart from setting up a research station, Himadri, at Svalbard, in 2008, the country launched its inaugural multi-sensor moored observatory and northernmost atmospheric laboratory in 2014 and 2016 respectively.
- ❖ Till last year, thirteen expeditions to the Arctic were successfully conducted.
- ❖ In May 2013, India became an observer-State of the Arctic Council along with five others including China.

Northern Sea Route

- ❖ The Northern Sea Route (NSR), the shortest shipping route for freight transportation between Europe and countries of the Asia-Pacific region, straddles four seas of the Arctic Ocean.
- ❖ Running to 5,600 km, the route begins at the boundary between the Barents and the Kara seas (Kara Strait) and ends in the Bering Strait (Provideniya Bay).
- ❖ A paper published states that in theory, distance savings along the NSR can be as high as 50% compared to the currently used shipping lanes via Suez or Panama.
- ❖ The 2021 blockage of the Suez Canal, which forms part of the widely-used maritime route involving Europe and Asia, has led to greater attention on the NSR.

Driving factors for India to participate in the NSR development

- ❖ Primarily, the growth in cargo traffic along the NSR is on the constant rise and during 2018-2022, the growth rate was around 73%.
- ❖ With India increasingly importing crude oil and coal from Russia in recent years, the record supplies of energy resources for the Indian economy are possible due to such a reliable and safe transport artery as the NSR.
- ❖ Secondly, the NSR assumes importance, given India's geographical position and the major share of its trade associated with sea transportation.
- ❖ Thirdly, the Chennai-Vladivostok Maritime Corridor (CVMC) project, an outcome of signing of the memorandum of intent between the two countries in September 2019, is being examined as one linking with another organise international container transit through the NSR.
- ❖ A study commissioned by Chennai Port Trust reveals that coking coal [used by steel companies], crude oil, Liquefied Natural Gas (LNG) and fertilizers are some of the cargo that can be imported from Russia to India through CVMC.
- ❖ Fourthly, experts are discussing the possibility of China and Russia gaining collective influence over the NSR.

Way forward

- ❖ In March, a Russian delegation had promised to provide the availability of key components for the year-round operation of the route as it seeks the participation of Indian companies in projects related to the NSR.

CONCRETE ALLIANCE

Context

- ❖ BRICS found new purpose with expansion; but contradictions too.

BRICS Summit

- ❖ If there was any doubt about the relevance of the BRICS grouping (Brazil-Russia-India-China-South Africa), which held its 15th Summit in Johannesburg this week, the massive global interest in its outcomes should have put those to rest.
- ❖ Ever since the grouping, set up as a coalition of emerging economies, said last year that it was open to new members, as many as 40 countries from the global south have evinced interest in joining, with at least 22 formal applications.
- ❖ The decision to more than double its membership overnight, from 5 to 11, by inducting four major middle eastern players, Egypt, Iran, Saudi Arabia and the United Arab Emirates, as well as Ethiopia and Argentina, from Africa and South America, respectively, is significant.

Significance of the grouping

- ❖ The enthusiasm is obvious. BRICS has weathered several storms and is today seen, if not as any alternative, as a counter-narrative creator to the western-led G-7 club on diverse issues: from climate change commitments and UN reform to its rejection of unilateral western sanctions against Iran, Russia and Venezuela.
- ❖ By also creating the New Development Bank, which has funded nearly 100 projects so far, instituting a Contingent Reserve Arrangement, and other institutional mechanisms, the BRICS countries have also shown their ability to work on practical initiatives.
- ❖ While the grouping may not yet rival the wealth of the G-7, it does now rival its share of the global GDP (approximately 30% each), and represents a more equitable representation across 40% of the world's population to the G-7 countries that make up just 10%.
- ❖ Once the new members join, six of 10 of the biggest global oil suppliers will be BRICS countries, giving BRICS new heft in the field of energy.

The shortcomings

- ❖ While the battle of proving its *raison d'être* may have been substantially won, the BRICS countries still fall short in showing a coherence of purpose, and are still mired by inner contradictions.
- ❖ The rivalry between India and China has no doubt slowed the grouping down and the induction of arch rivals Iran and Saudi Arabia-UAE, despite their recent *détente*, could well create similar issues for the group in the future.
- ❖ In addition, any overtly political, anti-western stance by BRICS will make India, and other countries in the grouping who walk a tightrope between the global powers, including Egypt, the UAE, Saudi Arabia and Brazil, uncomfortable.
- ❖ Russia's invasion of Ukraine too has caused uneasiness, and BRICS members did not vote as a bloc on any of the UN votes; nor did any of the other members support Russia's actions.

Way forward

- ❖ Above all, any attempts by China to overpower the group with its strategic or economic vision will require a firm pushback if the foundational idea of BRICS, to assert the strategic autonomy of its members, is to be followed.
- ❖ Eventually it is the promise of shared prosperity and a more democratic model of global governance that attracts so many in the global south to the grouping, and will provide the mortar for an expanded line-up of BRICS countries.

BRICS 2.0

Context

- ❖ Recently, 15th BRICS summit was hosted by South Africa in Johannesburg.
- ❖ The summit end with major decision of invite six countries — Argentina, Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE — to join BRICS as full members and keep its doors open for further expansion.

BRICS 2.0 will have global repercussions

- ❖ At Johannesburg, BRICS increased its membership to represent a larger share of world population, global GDP and international trade by invite six countries
- ❖ The accommodation was important, given that at least 23 countries of the Global South had conveyed interest in seeking BRICS membership. This was a recognition of the grouping's values
- ❖ Therefore, it will also have global repercussions on the

- ❖ role of the US-led Western alliance centred around G7
- ❖ emerging economies and developing countries, and
- ❖ the engagements between the two worlds.

The significance of adding new countries

- ❖ The new BRICS-XI will have more political influence and the extent of its increased influence will depend on building inner unity
- ❖ BRICS 2.0 will also have six of the top 10 oil-producing countries of Saudi Arabia, Russia, China, UAE, Brazil, and Iran — a definite global power shift and one not defined by the West
- ❖ Along with, the joint statement made during the summit stated that that the grouping will encourage local currencies in trade and financial transactions “between BRICS as well as their trading partners” and for “fast, inexpensive, transparent, safe and inclusive payment systems.
- ❖ Therefore, it will also widen the areas of trade and commerce, bilateral and multilateral relation among the countries.

Strengthening the voice for UNSC

- ❖ At Johannesburg, the leaders decided to direct the foreign ministers to “further develop the BRICS partner country model”. In line for admission are Indonesia, Vietnam, Bangladesh, Mauritius, Nigeria, Kenya, and a Latin American country.
- ❖ Johannesburg Declaration.: The immediate rebalancing focus is UNSC membership for the original BRICS members India, Brazil, and South Africa articulated in Paragraph 7 of the Johannesburg Declaration.
- ❖ This requires the support of the permanent members, China and Russia, or it will further expose their doublespeak on this issue.

From India’s perspective

- ❖ Both UNSC membership and local currency trade are welcome to India. Two other possibilities discussed are favourable too.
- ❖ First, it was reiterated that G20 is the premier multilateral forum for “international economic and financial cooperation”. China and Russia conveyed their support for the successful hosting of successive G20 presidencies by India, Brazil, and South Africa.
- ❖ This generates hope that these two states may become a little more conciliatory, and a consensus-based Delhi Declaration is delivered at the G20 summit in September.
- ❖ Second, the meeting between President Xi Jinping and Prime Minister Narendra Modi on the summit’s side lines, may offer fresh impetus for expediting a workable resolution of the border issues in the western sector of Ladakh.

Conclusion

- ❖ BRICS faces a changed world in which its two members Russia and China are heavily involved in confrontation with the US-led West.
- ❖ The other BRICS members do have differences with the existing global order, but they prefer reform through dialogue. As the six new members join BRICS, these inner dynamics will evolve further.
- ❖ However, India will have a seminal but challenging role, given its growing cooperation with the West on the one hand and its active articulation and pursuit of the interests of the Global South on the other.

SOCIAL ISSUES, EDUCATION, HEALTH

INDIA NEEDS EVIDENCE-BASED, ETHICS-DRIVEN MEDICINE

CONTEXT

- ❖ The recent push to integrate 'AYUSH' medicinal systems into mainstream health care to achieve universal health coverage and 'decolonise medicine' is a pluralistic approach that would require every participating system to meet basic safety and efficacy standards.

EFFICACY AND SAFETY OF HOMOEOPATHY

- ❖ Evidence on homoeopathy's efficacy is weak.
- ❖ The first carefully conducted and well-reported double-blind randomised controlled trial (RCT), the Nuremberg Salt Test (1835), noted that "the symptoms or changes which the homeopaths claimed to observe as an effect of their medicines were the fruit of imagination, self-deception and preconceived opinion — if not fraud."
- ❖ Multiple systematic reviews and meta-analyses have found that, across ailments, population groups (adults versus children), study types (placebo-controlled versus other trial types), and treatment regimes (individualised versus non-individualised), homoeopathic treatments lack clinically significant effects.
- ❖ Recently, researchers demonstrated that more than half of the 193 homoeopathic trials in the last two decades were not registered.
- ❖ Unregistered trials showed some evidence of efficacy but registered trials did not. There was reporting bias and other problematic practices, throwing the validity and reliability of evidence thus generated into doubt.
- ❖ Further, the World Health Organization (WHO) has warned against homoeopathic treatments for HIV, tuberculosis, and malaria, as well as flu and diarrhoea in infants, saying it has "no place" in their treatment.
- ❖ Evidence is accumulating that homoeopathy does not work for cancers and may not help to reduce the adverse effects of cancer treatments, contrary to lay belief.
- ❖ Instead, treatments have been linked to both non-fatal and fatal adverse events as well as their aggravation.
- ❖ Seeking homoeopathic care also delays the application of evidence-based clinical care. In several cases, it has caused injuries and sometimes death.

ON STANDARDS

- ❖ Homoeopathy's supporters argue that the standards commonly used in evidence-based medicine are not suitable for judging the "holistic effects" of homoeopathy. This claim can be debunked.
- ❖ First, the standards are not conveniently chosen by practitioners of allopathic medicine for themselves.
- ❖ Second, Homoeopathy advocates have failed to invent valid alternative evidence synthesis frameworks suited for testing its efficacy and safety, which are also acceptable to the critics.
- ❖ Third, the claim about homoeopathy being holistic is typically paired with evidence-based medicine being "reductionist".
- ❖ Fourth, evidence-based medicine does not and should not stop at establishing empirical evidence. The quest is also to discover and explain the mechanisms underlying the evidence. In the last century, there has been no concrete evidence for proposed mechanisms of action for homoeopathy.
- ❖ No mechanistic (molecular, physiological, biochemical, or otherwise) evidence to explain how concepts such as "like cures like", "extreme dilution", and "dematerialised spiritual force" result in better health.
- ❖ In the same period, several allopathic/modern medicine practices have updated themselves based on growing scientific evidence.

THE RIGHT APPROACH

- ❖ Adopting a pluralistic approach in medicine can decolonise medicine. In India, homoeopathy is at odds with this.
- ❖ Homoeopathy was introduced in 1839 in India by Austrian physician J.M. Honigberger.
- ❖ Of course, not all colonial-era practices need to be surrendered. Those with health and developmental benefits such as evidence-based elements of allopathic medicine and gender role and caste reforms should be retained.

CONCLUSION

- ❖ The argument to reject homoeopathy is not just based on its coloniality, but chiefly on the lack of evidence for efficacy, some evidence for lack of safety, no substantive progress on mechanisms of action in the last century, and homoeopathic practitioners' escapist arguments. India's path to universal health care must be grounded in evidence-based and ethics-driven medicine.

THE CURIOUS CASE OF RISING LACTOSE INTOLERANCE

INTRODUCTION

- ❖ Lactose intolerance is caused by a lessened ability or inability to digest lactose, a sugar found in dairy products. Humans vary in the amount of lactose they can tolerate before symptoms develop. Symptoms may include abdominal pain, bloating, diarrhea, flatulence, and nausea. These symptoms typically start thirty minutes to two hours after eating or drinking something containing lactose, with the severity typically depending on the amount consumed. Lactose intolerance does not cause damage to the gastrointestinal tract.

A DISORDER OR NOT!

- ❖ Doctors do not consider lactose intolerance to be a disorder. They describe it as the digestive system's reaction to milk sugar (lactose) which it cannot digest.
- ❖ The body needs an enzyme called lactase which is produced by the cells lining the small intestine, to digest lactose.
- ❖ If one is deficient in lactase, the undigested lactose passes on to the colon, where it produces extra gas and water, resulting in bloating, cramps and diarrhoea.
- ❖ Lactose intolerance thus produces symptoms which can be uncomfortable, but it is never dangerous.

EXTREMELY COMMON

- ❖ Lactose intolerance is so common that except for the 1-2% people who might experience serious bloating and cramps and nausea immediately after consuming dairy, almost every adult has lactose intolerance in various degrees.
- ❖ As one ages, there is a normal decline in the amount of lactase that the small intestine produces.
- ❖ Lactose intolerance is a specific digestive issue associated with the consumption of dairy products and ceases to be a problem when the person totally avoids or restricts milk products in the diet.
- ❖ But its symptoms can easily overlap with another common and chronic gastric disorders such as IBS, the pathogenesis of which is quite different.

VARIES BY ETHNICITY

- ❖ According to literature, estimates for lactose intolerance vary by ethnicity.
- ❖ The prevalence rate is 75-95% in African American and Asian ethnicities while it is estimated to be 18-26% amongst Europeans.
- ❖ Though there are specific tests like the hydrogen breath test to determine lactose intolerance, these tests do not have much use in clinical practice.
- ❖ This is a condition that is generally self-diagnosed and self-managed. The usual tests for detecting lactose intolerance are not available here or are expensive but clinical diagnosis seems to suffice.
- ❖ It is possible to develop secondary lactose intolerance all of a sudden following surgery or chemotherapy or if one has an infection, ulcerative colitis or Crohn's disease which affects the small intestine. But this usually goes away once the small intestine regains health

INTOLERANCE DISTINCT FROM ALLERGY

- ❖ The lactose intolerance is quite common among Asians — over 50% of the Indians are deficient in lactase — it is very easy to misdiagnose this condition, especially amongst the elderly.
- ❖ In the elderly, some malignancies like colon cancer can present themselves in the initial stages with atypical symptoms similar to that of the symptoms of lactose intolerance.

- ❖ The reaction is often immediate and severe in the case of milk allergy, while lactose intolerance will never lead to any serious disease or long-term complications.

CONCLUSION

- ❖ For persons with lactose intolerance who love to consume milk, there are options such as plant-based milk (soy/almond milk) or lactose-free milk. There are plenty of other food sources — yoghurt, tofu, nuts, spinach, broccoli, orange, lentils and legumes — that a lactose-intolerant person can depend on for calcium supplementation.

WHY IS BIHAR'S CASTE-BASED SURVEY FACING LEGAL CHALLENGES?

Context

- The Supreme Court is set to hear on August 18, petitions challenging the Patna High Court (HC)'s verdict upholding the Bihar government's ongoing caste survey.

Caste-based survey

- The year, the State government launched a two-phase caste survey in Bihar, stating that detailed information on socio-economic conditions would help create better government policies for disadvantaged groups.
- The survey is estimated to collect the socio-economic data for a population of 12.70 crore in the 38 districts of Bihar.
- The first phase of the survey, which involved a house listing exercise, was carried out and in the middle of the second phase, the survey was halted due to a stay order from the HC.
- However, a recent HC verdict dismissed all petitions opposing the move, and the government on August 2 resumed work on the second phase of the survey. In the second phase, data related to castes, sub-castes, and religions of all people is to be collected.
- The final survey report can be expected in September, less than a year before the 2024 election.

Need for a caste-based census

- The Census conducted at the beginning of every decade does not record any caste data other than for those listed as Scheduled Castes (SCs).
- In the absence of such a census, there is no proper estimate for the population of OBCs, various groups within the OBCs, and others.
- Despite this ambiguity, the Union government has categorically ruled out conducting a socio-economic caste census, saying it is unfeasible, 'administratively difficult and cumbersome.'
- Responding to a writ petition filed by the State of Maharashtra, the Centre in its affidavit said that excluding any castes other than the SCs and Scheduled Tribes was a 'conscious policy decision' adopted since the 1951 Census, and that there was a policy of 'official discouragement of caste'.
- The Union government in 2011 had undertaken a survey of castes through the Socio-Economic and Caste Census of 2011. However, the collected raw data of nearly 130 crore Indians was never made public due to flaws in the data.
- On August 13, 1990, the V.P. Singh government announced the decision to implement the Mandal Commission report, which recommended a 27% reservation for Other Backward Classes (OBC).
- In 1992, with the Supreme Court ruling in Indra Sawhney & Others versus Union of India (1992) that caste was an acceptable indicator of backwardness, the recommendations of the Mandal Commission were finally implemented. The Mandal Commission estimated the OBC population at 52%.
- However, it is debatable whether the estimate holds true today. Opposition parties, have continued to demand a caste census saying that such an exercise is necessary to streamline welfare policies.

The challenge

- The petitions in the Supreme Court contend that the survey is unconstitutional since only the Centre is exclusively authorised to conduct a census under the Constitution.

- They also point out that the State Government does not have any independent power to appoint District Magistrates and local authorities for collating data, without a notification under Section 3 of the Census Act, 1948 by the Centre.
- The HC verdict has also been assailed on the ground that it violates the Puttaswamy judgment as it permits the collection of personal data by the State under an executive order.

Conclusion

- India runs the world's largest affirmative welfare programme based on caste identity.
- Reservation in educational institutes and government jobs are provided on the basis of caste identities. The absence of fresh caste census data means that the caste estimates of 1931 are being projected for formulating welfare policies in 2021.

THE STORY OF HOW THE DEADLIEST VIRUS TO HUMANS WAS REVIVED

Introduction

- ❖ Scientists routinely engineer new viruses in the laboratory. They make changes to the genetic material (DNA or RNA) of existing viruses to create new variants that may or may not exist naturally. Doing so allows scientists to compare the properties of the edited variants to their natural counterparts and infer the role of the changes that they made.

Virus from scratch

- ❖ For example, if they observe that some patients have a higher viral load in their blood for a given disease, and a particular mutation is observed in the DNA of viruses isolated from those patients, they can introduce that mutation into the DNA of viruses that don't naturally harbour it, to see if it improves the viral output in the laboratory.
- ❖ But while scientists can easily introduce changes to the genetic material of a virus, they can't create a virus from scratch. They have to rely on nature to do this.
- ❖ So, scientists take samples from patients, make more copies of the genetic material using a technique called a polymerase chain reaction, and use it to understand the sequence of bases that make up its genetic material. Once they have the sequence, they can tweak it.

Meet H and N

- ❖ Researchers designate influenza strains using the types of two genes that the virus contains, named haemagglutinin and neuraminidase, designated 'H' and 'N'.
- ❖ There are 18 subtypes of haemagglutinin, labelled H1-H18, and 11 types of neuraminidase, N1-N11, in nature. An influenza virus contains one of each and is classified accordingly.
- ❖ For example, the 1918 epidemic was caused by the H1N1 variant; the 1957 Asian flu was caused by H2N2; and the 1968 Hong Kong flu was caused by H3N2.
- ❖ There exist further sub-variations of these primary classifications, where different mutations exist in the 'H' and 'N' genes and which can further modify a virus's properties.
- ❖ The 1918 flu and the 2009 swine flu were both caused by H1N1 – but they varied in disease severity due to the presence of changes on the H1 and N1 genes.

Full genetic sequence

- ❖ Scientists get to study the deadly 1918 H1N1 influenza virus. The samples allowed Taubenberger and Reid to determine the virus's full genetic sequence.
- ❖ The sequence allowed other scientists to unearth insights into the virus's beginnings.
- ❖ It appeared to have an ancestor that was avian in origin. But there were also tell-tale signs that the virus had adapted, by evolving, to infect mammals.
- ❖ In other words, the ancestral virus that infected birds had switched to infecting humans or swine.
- ❖ It had also been circulating for a few years, getting better at its job, before it vanished. Sometime later, it reemerged as one of the deadliest pathogens ever to afflict humankind.

Conclusion

- ❖ But for all these remarkable insights, the virus's genetic sequence revealed nothing dramatic about the virus itself. It failed to explain how it could infect people so quickly or why it killed millions. There were minor

variations in the genetic material but this is to be expected for RNA viruses. There remained but one way to answer that question: to recreate the virus itself.

HOW THE DEADLIEST VIRUS IN HUMAN HISTORY PAVED THE WAY FOR NEW CURES

Introduction

- ❖ Influenza viruses are almost always circulating among humans. The nature of the virus means that every year, the virus's genetic material undergoes some minor changes, rendering it a little different from the virus of the previous year. So scientists have to guess which changes are likely to survive the next year, and design or update their vaccines accordingly.

Nature of the virus

- ❖ An influenza virus can also infect birds, pigs, horses, and other domestic animals.
- ❖ It can assort the types of the two genes it contains – haemagglutinin (H) and neuraminidase (N) – in these animals to generate a new virus altogether, some of which may infect humans.
- ❖ All these complications ensure that designing an effective vaccine for influenza remains challenging.
- ❖ The virus mainly infected the lungs, and laid waste to them.
- ❖ While all eight pieces of the virus's genetic material caused severe disease, two in particular stood out: the haemagglutinin and the RNA polymerase genes.

Haemagglutinin and RNA polymerase

- ❖ Haemagglutinin is the protein on the outer surface of the virus that docks with proteins on the cells of another organism.
- ❖ This way, the virus has a portal through to begin its invasion. The haemagglutinin segment of the 1918 strain contained modifications such that the virus could easily gain access to cells.
- ❖ The viral RNA polymerase, on the other hand, makes copies of the viral genetic material.
- ❖ In the H1N1 strain, the polymerase was extremely efficient at this process, allowing the virus to make numerous copies of itself in a very short span of time.
- ❖ This then took a heavy toll on the infected cell, since the virus hijacked the cellular machinery to replicate itself.

Unrivalled

- ❖ The full virus demonstrated a pathogenicity unrivalled by any other influenza virus scientists have ever studied – recombinant or natural.
- ❖ It was highly virulent: there were 39,000-times more virions (virus particles) in the lungs of the mice infected with the 1918 virus than those infected by the more benign laboratory strain.
- ❖ The former lungs were filled with fluid within days, causing extensive lung damage and resulting in death.
- ❖ The haemagglutinin and the RNA polymerase genes were important reasons for the extreme nature of the 1918 virus, by themselves they did not wreak just as much havoc as when they did in combination with the other gene segments.
- ❖ All viruses have to ensure they will be transmitted to more hosts. A virus that kills its host too soon will fail at this objective because a virus is only alive as long as it is inside a host.
- ❖ So a change in a virus that makes it more pathogenic will either kill the host faster or it will become an easier target for the host's immune system. Both outcomes are detrimental to the virus's long-term survival.
- ❖ So such genetic changes must be associated with alterations elsewhere in the genome that mitigate those effects on the creature's long-term survival prospects.
- ❖ It could be a mutation that enhances its transmission rate, one that slows the viral life cycle, or something else that allows the virus to escape the immune system long enough for it to be transmitted.

Conclusion

- ❖ The 1918 influenza pandemic is a reminder to us all, especially in the wake of the COVID-19 pandemic, that ever so rarely, nature will arrive at that perfect, deadly combination after mixing thousands of genes and end up creating something as destructive as the 1918 H1N1 influenza virus. Ironically, nature's ability to do so is at the very heart of evolution, and of all life on earth.

HOW CAN 'ONE HEALTH' HELP INDIA, AND INDIA HELP 'ONE HEALTH'

INTRODUCTION

- ❖ The concept of 'One Health' is currently gaining popularity worldwide; India has of late been taking significant strides to deploy concepts and strategies rooted in this idea to bolster the way it responds to health crises.

One Health concept

- ❖ One Health is a holistic approach to problems that recognises the interconnections between the health of humans, animals, plants, and their shared environment.
- ❖ An early articulation can be found in the writings of Hippocrates (460-367 BC), who contemplated the relationships between public health and clean environments.
- ❖ The 19th-century German physician and pathologist Rudolf Virchow (1821-1863) later wrote: "Between animal and human medicines there are no dividing lines – nor should there be."

Specialities

- ❖ Human population growth, urbanisation, and industrialisation have compounded the damage to biodiversity and ecosystems.
- ❖ These harmful environmental changes are linked to zoonoses – diseases shared between animals and humans.
- ❖ Researchers have estimated that 60% of emerging diseases that can infect humans are zoonotic in nature. They include bird flu, Ebola, rabies, and Japanese encephalitis.
- ❖ In addition, humankind has also become beset by major issues of antimicrobial resistance, food safety and security, and the control of vector-borne diseases.
- ❖ Taken together, these issues warrant both the intersectoral management and the efficiency that characterises the One Health strategy.
- ❖ One Health minimises resource requirements across sectors. An important way it does this is by encouraging coordination across governmental units, including the Ministries of Health and Family Welfare, Fisheries, Animal Husbandry and Dairying, Environment, and Science and Technology.
- ❖ Taking a One Health approach allows researchers to, for example, share their laboratories and findings, and ultimately make decisions that lead to resilient, sustainable, and predictable policies.

Recent One Health initiatives

- ❖ The COVID-19 pandemic of 2020-2023 highlighted the importance of adopting a One Health approach.
- ❖ The Government of India established its 'Standing Committee on Zoonoses' in 2006 under the Ministry of Health and Family Welfare (MoHFW).
- ❖ The Department of Biotechnology launched India's first consortium on One Health in October 2021.
- ❖ In June 2022, the Department of Animal Husbandry and Dairy (DAHD) – in partnership with the Bill & Melinda Gates Foundation and the Confederation of Indian Industry – launched a One Health pilot project in Karnataka and Uttarakhand.
- ❖ India is also currently preparing for a wider 'National One Health Mission' to be spearheaded by the Office of the Principal Scientific Advisor.

Ways to implement

- ❖ The implementation process can be broken down into four major stages. Each stage requires consistent political will and sustainable financing structures.

Stage 1: Communication

- ❖ In this stage, the basic mechanisms for communication between various ministries and/or sectors are set up. The focus is on keeping the important stakeholders informed and engaged throughout the One Health transformation.

Stage 2: Collaboration

- ❖ After initiating communication between the relevant sectors, sector members need to exchange their knowledge and expertise in order to translate ideas into short-term interventions.
- ❖ **Stage 3: Coordination**
- ❖ The activities carried out during this stage are usually routine and long-term. Initiatives to achieve One Health in this stage are spearheaded by a national or a subnational agency.
- ❖ **Stage 4: Integration**
- ❖ By default, government sectors and their units are designed to function vertically – and this is good for managing individual programmes. However, One Health is implicitly intersectoral, and existing system can't accommodate One Health's goals and mechanisms if it doesn't 'horizontalise': i.e. it needs to integrate and develop synergies between programmes undertaken across various sectors.

Way forward

- ❖ To reap all the advantages of a One Health approach, India should move beyond short-term collaborations and create an integrated, science-based environment.
- ❖ This is a prerequisite for platforms to not just share office space but to also provide access to laboratories and biological samples to the relevant researchers.



CivilsTap Hlmachal

GENERAL STUDIES 3.

ECONOMY

FROM STATE VISIT TO A MORE ROBUST TRADE RELATIONSHIP

CONTEXT

- ❖ Prime Minister Narendra Modi's State visit to Washington on June 22, 2023, was historic — the first for an Indian head of state in 14 years, and only the third for an Indian leader in 75 years since Indian Independence.

A CENTRAL ROLE FOR TRADE

- ❖ In comparison with the substantial progress in many areas, the economic, and more specifically, trade relationship between the two countries, is growing — surpassing U.S.\$120 billion — but it continues to underperform relative to the sheer potential.
- ❖ If this strategic partnership lives up to its billing as one of the most consequential in this century, then trade must be pushed to a more central role as the U.S.-India story continues to unfold.
- ❖ India is exhibiting a remarkable openness to negotiating new trade relationships with important partners around the world.
- ❖ In the last two years, the Narendra Modi government has inked new free trade agreements (FTAs) with the United Arab Emirates and Australia and launched or reinvigorated negotiations for parallel deals with the European Union, the United Kingdom, and Canada.

THE U.S.'S APPROACH

- ❖ In contrast, the Biden administration maintains that it has evolved away from FTAs and discovered a better approach to trade, emphasising resilient supply chains, reshoring or friend-shoring, and prioritising labour rights and climate-friendlier production over craven and mistaken globalisation.
- ❖ This policy has many sceptics at home and abroad, particularly since it ignores that all these objectives could be robustly addressed in a revamped FTA agenda.
- ❖ It is the moment for the U.S. administration to meet India halfway in its trade policy before the strategic side of the relationship leaves the trade side much further behind.
- ❖ There were important results from Mr. Modi's State visit in resolving six disputes under the World Trade Organization (WTO).
- ❖ Building on these wins, and looking to opportune moments ahead following national elections in both countries in 2024, trade negotiators on both sides must be tasked with a more ambitious mandate by their leaders.

INDIA'S PROGRESS IN TRADE

- ❖ India's is in progression in negotiating FTAs with its other trading partners through work at the Atlantic Council.
- ❖ India's agreements to date fall far short of the U.S. gold standard, i.e., the U.S.-Mexico-Canada Agreement (USMCA), but the gaps are decreasing.
- ❖ Even in the sensitive area of agriculture, India has shown surprising readiness to gradually open its market when offered opportunities to win concessions in return through FTAs.
- ❖ Australia, in the Economic Cooperation and Trade Agreement, obtained important gains in the Indian market for wine, wool, and sheep meat, among other goods, while India won nearly duty-free access to the Australian market.

- ❖ In fact, the U.S. and India have been able to agree to transactional concessions in their respective markets (e.g., mangoes and pomegranates for India in exchange for cherries, hay and pork for the U.S.) through the bilateral Trade Policy Forum (TPF) even without an active FTA negotiation.

WAY FORWARD

- ❖ The PM State visit should be a starting point for a more ambitious trade agenda going forward. U.S. and Indian trade negotiators already know how to go small, and even achieve results along the way.
- ❖ But the trade relationship deserves more attention, and a stronger mandate from the leaders of both the Biden and Modi administrations.
- ❖ With greater ambition, the often-mentioned target of \$500-\$600 billion in bilateral trade by 2030 can easily be attained and surpassed.

LICENCE RAJ DOT COM

CONTEXT

- ❖ Recently, government of India issued an order requiring licences to import laptops, tablets and other devices with immediate effect. However later government relax the norms for the firms by proving three months to get the license for import.
- ❖ However, this initiative of government is criticised and regarded as a step to promote the license Raj like pre-1991 era. As In the pre-1991 era, Indian governments routinely relied on repressive policies such as quotas and higher tariffs in order to curb imports

POTENTIAL ADVERSE CONSEQUENCE OF SUCH INITIATIVE

- ❖ This could open the door for imposition of similar licensing requirements in other sectors, increasing the space for bureaucratic discretion.
- ❖ Such controls on economic activities will only diminish the vibrancy of the economy that was unleashed after the '91 reforms.

HOWEVER, IT MAY HELP IN REDUCING THE IMPORT AND PROMOTE DOMESTIC ELECTRONIC INDUSTRIES

- ❖ The move is ostensibly aimed at promoting domestic manufacturing and curbing imports from China.
- ❖ As In 2022-23, imports of personal computers, laptops etc stood at \$5.3 billion, with China accounting for an overwhelming share of these.
- ❖ However, as no warning or time has been given to equipment manufacturers. This decision will lead to unnecessary disruption in the immediate term, create supply shortages and drive-up prices of equipment.
- ❖ While it may force companies to manufacture in the country considering the huge market that India offers, there may be cost disadvantages.
- ❖ Moreover, it is one thing for the government to adopt policies that facilitate the creation of a computer manufacturing ecosystem in the country and quite another to use a sledgehammer approach to achieve its goals

RECENT ACTIONS OF GOVERNMENT THAT ARE CRITICISED BY ECONOMIST FOR ADOPTING SOCIALIST PAST POLICY THAT AFFECTED INDIA'S ECONOMY.

- ❖ The policy establishment has in recent years drawn inspiration from the country's socialist past far too often.
- ❖ For instance, the government has recently banned the exports of rice and imposed stock holding limits on pulses.
- ❖ It had also brought spending by credit card under the liberalised remittance scheme — now in abeyance — which meant that transactions via cards outside India would attract a higher rate of TCS (tax collected at source).
- ❖ Such moves indicate that even as the rest of the country has travelled well beyond its socialist past, the establishment hasn't, at least not adequately.

CONCLUSION

- ❖ This tendency threatens to undo the economic gains that have accrued to the country from the dismantling of the licence permit raj in the decade of the '90s.

- ❖ Therefore, while framing such norms government should provide due time to the firms and also their views should be considered before implementing the norms.

IS INDIA'S SUGAR SURPLUS LEADING TO A CRISIS?

INTRODUCTION

- ❖ India became the world's top sugar producer in 2021-2022, surpassing Brazil with a record of 359 lakh tonnes. However, the extensive use of resources in sugar production is depleting rapidly, leading to a potential crisis in the future. Over-cultivation of sugarcane has caused a sugar surplus and high exports, impacting groundwater negatively. To prevent the risk of agricultural collapse, addressing groundwater overuse in the sugar industry is crucial.

HIKE IN SUGAR PRODUCTION

- ❖ India is the world's largest consumer of sugar, and thus has to produce enough to meet its huge domestic demand.
- ❖ But the excess production stems from policies and measures that make farmers favour sugarcane cultivation.
- ❖ The Central government offers a fair and remunerative price (FRP) scheme, which mandates a minimum price that sugar mills have to pay to sugarcane farmers, ensuring that farmers always get fair profits for their crop.
- ❖ State governments also offer heavy subsidies to incentivise sugarcane cultivation.
- ❖ In fact, Brazil, Australia, and Guatemala filed a complaint with the World Trade Organization (WTO) against India for violating international trade rules by offering excessive export subsidies and domestic support to farmers to outcompete other countries in the global sugar market. The WTO ruled against India and India also lost its appeal.

EFFORTS FOR ADDRESSING THE ISSUE

- ❖ To deal with the sugar surplus, the Indian government considered diverting it to the production of ethanol, an organic compound made by fermenting sugarcane molasses or sugar.
- ❖ Ethanol is the active ingredient in alcoholic beverages and is also used in the chemicals and cosmetics industries.
- ❖ In the transport sector, the use of ethanol-blended petrol (EBP) significantly reduces harmful emissions, such as carbon monoxide and various hydrocarbons, from vehicles.
- ❖ The government launched the EBP programme in 2003 to reduce crude oil imports and curtail greenhouse gas emissions from petrol-based vehicles; it has been fairly successful.
- ❖ It started with the modest goal of achieving a blending rate of 5%, but the target set for 2025 is 20%.
- ❖ The government also reduced the Goods and Services Tax on ethanol from 18% to 5% in 2021.
- ❖ In the same year, of the 394 lakh tonnes of total sugar produced, about 350 lakh tonnes were diverted to produce ethanol, while India achieved a blending rate of 10% months ahead of the target.

EXCESSIVE SUGARCANE CULTIVATION IMPACTING GROUNDWATER

- ❖ India's EBP program reduced crude-oil imports, sugar exports, and greenhouse-gas emissions. However, sugarcane's water-intensive cultivation has taken a toll.
- ❖ Sugarcane requires 3,000 mm of rainfall, but top-growing States get 1,000-1,200 mm, relying heavily on groundwater from confined aquifers, a limited resource.
- ❖ 100 kg of sugar needs two lakh litres of groundwater for irrigation, raising concerns as these States are already drought-prone and groundwater-stressed, as per a 2022 CGWB report.

THE SOLUTIONS

- ❖ A better and more sustainable way would be to assess and then correct incentives that skew in favour of sugarcane over other crops, leading to a consistent surplus.
- ❖ Introducing fair and comprehensive subsidy schemes for a variety of crops can help farmers diversify as well as distribute cultivation evenly, prevent monocultures, and ensure an equitable income.
- ❖ The availability of a wider range of profitable and less resource-intensive crops can lower the strain on vital natural resources.

- ❖ This must be complemented by environmentally responsible sugarcane cultivation practices that prioritise groundwater, such as drip irrigation, to tackle the issue in the long run.
- ❖ In drip irrigation, water is allowed to drip slowly but directly to the roots of sugarcane plants, reducing water consumption by up to 70% relative to the current flood irrigation method.
- ❖ This method has already been made mandatory in many parts of India, and the government has also offered subsidies to farmers for setting up the system.
- ❖ Next, India needs to invest in overall water-saving and management systems.

WAY FORWARD

- ❖ Concerted efforts to adopt cleaner practices such as rainwater harvesting, wastewater treatment, and canal irrigation networks, will help minimise stress on groundwater reservoirs as other water sources become available for irrigation.
- ❖ Although the CGWB conducts significant research and generates valuable data, many aspects of groundwater availability and distribution remain poorly understood and/or mapped.
- ❖ Investment in groundwater research, therefore, needs to be considered seriously.
- ❖ As India continues to become more of a global frontrunner in the agricultural sector, it must put sustainability at the centre.

INDIA'S MINING POLICY SHIFT

CONTEXT

- ❖ On August 2, Parliament passed the Mines and Minerals (Development and Regulation) Amendment Bill, 2023, in a bid to attract private sector investment in the exploration of critical and deep-seated minerals in the country.

ABOUT

- ❖ The Bill puts six minerals, including lithium — used in electric vehicle batteries and other energy storage solutions — into a list of “critical and strategic” minerals. The exploration and mining of these six minerals, previously classified as atomic minerals, were restricted to government-owned entities.

IMPORT OF INDIA'S CRITICAL MINERALS

- ❖ The clean energy transitions of countries including India, seeking to meet their net-zero emission goals, are contingent on the availability of critical minerals such as lithium, which has also been called ‘white gold’, and others including cobalt, graphite, and rare earth elements (REEs).
- ❖ These are also crucial for the manufacture of semiconductors used in smart electronics; defence and aerospace equipment; telecommunication technologies and so on.
- ❖ The lack of availability of such minerals or the concentration of their extraction or processing in a few geographical locations leads to import dependency, supply chain vulnerabilities, and even disruption of their supplies.
- ❖ As per figures quoted by the Ministry, India is 100% import-dependent on countries including China, Russia, Australia, South Africa, and the U.S. for the supply of critical minerals like lithium, cobalt, nickel, niobium, beryllium, and tantalum.
- ❖ Also for deep-seated minerals like gold, silver, copper, zinc, lead, nickel, cobalt, platinum group elements (PGEs) and diamonds, which are difficult and expensive to explore and mine as compared to surficial or bulk minerals, India depends largely on imports.

CRITICAL MINERALS EXPLORATION

- ❖ The primary step to discovering mineral resources and eventually finding economically viable reserves is mineral exploration, which comes in various stages before mining.
- ❖ The stages of exploration are divided as per the United Nations Framework for Classification of Resources into G4 (Reconnaissance), G3 (Prospecting), G2 (General Exploration), and G1 (Detailed Exploration).
- ❖ Notably, it is estimated that India has explored just 10% of its Obvious Geological Potential (OGP), less than 2% of which is mined and the country spends less than 1% of the global mineral exploration budget.
- ❖ Exploration requires techniques like aerial surveys, geological mapping, and geochemical analyses and is a highly specialised, time-intensive and monetarily risky operation with less than 1% of explored projects becoming commercially viable mines.

INDIA'S MINING POLICY

- ❖ The Mines and Minerals (Development and Regulation) Act (MMDR Act), 1957, the primary legislation governing mining in the country has been amended several times since its enactment including recently in 2015, 2020, and 2021.
- ❖ Later, private companies could also get Prospecting Licences (PL) or Mining Leases (ML), and could even apply for early-stage or greenfield exploration through Reconnaissance Permits (RPs).
- ❖ In 2015, the MMDR Act was amended to allow private companies to participate in government auctions for Mining Leases and Composite Licences (CLs).
- ❖ However, due to the Evidence of Mineral content (EMT) rule, only government-explored projects were auctioned, limiting private sector involvement.
- ❖ The amendment also permitted private firms to register as exploration agencies, with the National Mineral Exploration Trust (NMET) funding for G4 to G1 exploration, but private participation remained limited.

THE MINES AND MINERALS BILL 2023

- ❖ Firstly, the Bill omits at least six previously mentioned atomic minerals from a list of 12 which cannot be commercially mined.
- ❖ Being on the atomic minerals list, the exploration and mining of these six — lithium, beryllium, niobium, titanium, tantalum and zirconium, was previously reserved for government entities.
- ❖ Secondly, the Act prohibits pitting, trenching, drilling, and sub-surface excavation as part of reconnaissance, which included mapping and surveys. The Bill allows these prohibited activities.
- ❖ The Bill also proposes a new type of licence to encourage reconnaissance — level and or prospective stage exploration by the private sector.
- ❖ This exploration licence (EL), for a period of five years (extendable by two years), will be granted by the State government by way of competitive bidding.
- ❖ This licence will be issued for 29 minerals specified in the Seventh Schedule of the amended Act, which would include critical, strategic, and deep-seated minerals.

WAY FORWARD

- ❖ Privatization comes with risks of monopolization and black marketizing. Mining sector already prone to irregularities and corruption. Thus, the Government should design a mechanism to include safeguards.
- ❖ Nothing in the Bill ensures that mineral allocation will be prioritized for public sector companies. The Government must make provisions for allocation to public sector first and the remaining should be allocated to the private companies.

WHAT IS THE JAN VISHWAS BILL, 2023 PROPOSED BY CENTRE?

CONTEXT

The Jan Vishwas (Amendment of Provisions) Bill, 2023 was passed in Parliament recently.

THE JAN VISHWAS BILL

- ❖ Introduced by Commerce and Industry Minister Piyush Goyal, the Bill aims at giving further boost to ease of living and ease of doing business.
- ❖ The Jan Vishwas (Amendment of Provisions) Bill, 2022 amends 42 laws, across multiple sectors, including agriculture, environment, and media and publication and health.
- ❖ The Bill converts several fines to penalties, meaning that court prosecution is not necessary to administer punishments. It also removes imprisonment as a punishment for many offences.
- ❖ Covered under the Jan Vishwas (Amendment of Provisions) Bill, 2023 are changes in the Drugs and Cosmetics Act, 1940, the Food Safety and Standards Act, 2006 and the Pharmacy Act, 1948.
- ❖ This has evoked heated debate about its pros and cons among health care activists, experts in the field of pharmacy and patient-welfare groups.
- ❖ Among these, the changes proposed to the Drugs and Cosmetics Act, 1940 have been the most contentious.
- ❖ The Act regulates the import, manufacture, distribution and sale of drugs and cosmetics in the country.
- ❖ Currently, the Act defines four categories of offences— adulterated drugs, spurious drugs, mislabelled drugs, and Not of Standard Quality drugs (NSQs) — and lays out degrees of punishment (a combination of prison time and fine) based on the degree of offence.

THE PROS AND CONS OF THE AMENDMENTS

- ❖ The amendments have brought in sharp criticism from health activists.
- ❖ First, it allows manufacturers of Not of Standard Quality Drugs (NSQ) drugs to escape significant penalties despite the fact that these drugs can have an adverse effect on the patient.
- ❖ For example, drugs that lack the adequate active ingredient or fail to dissolve will not cure the disease it is meant to and that will result in a poor treatment outcome for the patient.
- ❖ Second, the Bill also reduces penalties for owners of pharmacies who violate the terms of their licence.
- ❖ The Indian pharmaceutical sector, manufacturing and pharmacies included, are already subject to extremely lax regulation as evidenced by the explosion of scandals recently across the world linked to 'Made in India' medicine.
- ❖ The government should be tightening the regulatory screws, not giving the industry a literal "get out of jail" pass.

WAY FORWARD

- ❖ The laws shouldn't become a cost-to-operation component for companies but should install in them the greater sensibilities and responsibilities towards the society.
- ❖ India is the pharmacy of the world and we have to work towards ensuring that the best medicines are provided while reasonable benefits are offered to business.
- ❖ Rationalising laws, eliminating barriers and bolstering growth of businesses are important.

CAN SMRS HELP INDIA ACHIEVE NET ZERO

INTRODUCTION

- ❖ The world's quest to decarbonise itself is guided, among other things, by the UN Sustainable Development Goal 7: "to ensure access to affordable, reliable, sustainable and modern energy for all".

CHALLENGES OF DECARBONISATION

- ❖ The transition from coal-fired power generation to clean energy poses major challenges, and there is a widespread consensus among policymakers in several countries that solar and wind energy alone will not suffice to provide affordable energy for everyone.
- ❖ According to the International Energy Agency, the demand for critical minerals like lithium, nickel, cobalt, and rare earth elements, required for clean-energy production technologies, is likely to increase by up to 3.5 times by 2030.
- ❖ This jump poses several global challenges, including the large capital investments to develop new mines and processing facilities.
- ❖ The environmental and social impacts of developing several new mines and plants in China, Indonesia, Africa, and South America within a short time span, coupled with the fact that the top three mineral-producing and mineral-processing nations control 50-100% of the current global extraction and processing capacities, pose geopolitical and other risks.

THE ISSUES WITH NUCLEAR POWER

- ❖ Nuclear power plants (NPPs) generate 10% of the world's electricity and help it avoid 180 billion cubic metres of natural gas demand and 1.5 billion tonnes of CO₂ emissions every year.
- ❖ NPPs are efficient users of land and their grid integration costs are lower than those associated with variable renewable energy (VRE) sources because NPPs generate power 24x7 in all kinds of weather.
- ❖ Nuclear power also provides valuable co-benefits like high-skill jobs in technology, manufacturing, and operations.
- ❖ Conventional NPPs have generally suffered from time and cost overruns. As an alternative, several countries are developing small modular reactors (SMRs) — nuclear reactors with a maximum capacity of 300 MW — to complement conventional NPPs.
- ❖ SMRs can be installed in decommissioned thermal power plant sites by repurposing existing infrastructure, thus sparing the host country from having to acquire more land and/or displace people beyond the existing site boundary.

ADVANTAGES OF SMRS

- ❖ SMRs are designed with a smaller core damage frequency and source term (a measure of radioactive contamination) compared to conventional NPPs.
- ❖ They also include enhanced seismic isolation for more safety.
- ❖ SMR designs are also simpler than those of conventional NPPs and include several passive safety features, resulting in a lower potential for the uncontrolled release of radioactive materials into the environment.
- ❖ The amount of spent nuclear fuel stored in an SMR project will also be lower than that in a conventional NPP.
- ❖ Studies have found that SMRs can be safely installed and operated at several brownfield sites that may not meet the more stringent zoning requirements for conventional NPPs.
- ❖ Accelerating the deployment of SMRs under international safeguards, by implementing a coal-to-nuclear transition at existing thermal power-plant sites, will take India closer to net-zero and improve energy security because uranium resources are not as concentrated as reserves of critical minerals.
- ❖ Since SMRs are mostly manufactured in a factory and assembled on site, the potential for time and cost overruns is also lower.
- ❖ Further, serial manufacture of SMRs can reduce costs by simplifying plant design to facilitate more efficient regulatory approvals and experiential learning with serial manufacturing.

INTEGRATION OF SMRS WITH THE NATIONAL GRID

- ❖ India's Central Electricity Authority (CEA) projects that the generation capacity of coal-based thermal power plants (TPPs) in India must be increased while enhancing the generation capacity of VRE sources.
- ❖ The CEA also projects that TPPs will provide more than half of the electricity generated in India by 2031-2032 while VRE sources and NPPs will contribute 35% and 4.4%, respectively.
- ❖ Since India has committed to become net-zero by 2070, the country's nuclear power output needs a quantum jump.
- ❖ Since the large investments required for NPP expansion can't come from the government alone, attracting investments from the private sector (in PPP mode) is important to decarbonise India's energy sector.

WAY FORWARD

- ❖ The Atomic Energy Act will need to be amended to allow the private sector to set up SMRs.
- ❖ To ensure safety, security, and safeguards, control of nuclear fuel and radioactive waste must continue to lie with the Government of India.
- ❖ The government will also have to enact a law to create an independent, empowered regulatory board with the expertise and capacity to oversee every stage of the nuclear power generation cycle.
- ❖ The security around SMRs must remain under government control, while the Nuclear Power Corporation can operate privately-owned SMRs during the hand-holding process.
- ❖ Finally, the Department of Atomic Energy must improve the public perception of nuclear power in India by better disseminating comprehensive environmental and public health data of the civilian reactors, which are operating under international safeguards, in India.

SHORING UP RESISTANCE

CONTEXT

- ❖ Recently, Monetary policy committee of the Reserve Bank of India has voted unanimously in its August meeting to keep the policy repo rate unchanged at 6.5 per cent.
- ❖ Alongside, the committee members voted 5-1 to keep the stance unchanged, focusing on the withdrawal of accommodation to ensure that "inflation progressively aligns with the target"

REASON FOR MAINTAINING THE STATUS QUO OF REPO RATE

- ❖ It will help in reaffirming the monetary policy objective of aligning inflation with the central bank's target of 4 per cent Consumer Price Index (CPI) inflation with the upper tolerance limit of 6 per cent and the lower tolerance limit of 2 per cent.

- ❖ However, considering that the requirement for a policy response at this juncture is curtailed due to a supply-side induced spurt in food inflation and a moderation in core inflation, it would seem that the MPC is likely to maintain status quo on rates in the near term.

WHAT IS THE INFLATION TARGET?

- ❖ Under the Under Section 45ZA of RBI act1934, the Central Government, in consultation with the RBI, determines the inflation target in terms of the Consumer Price Index (CPI), once in five years and notifies it in the Official Gazette
- ❖ Under which Central Government notified in the Official Gazette 4 per cent Consumer Price Index (CPI) inflation as the target for the period from August 5, 2016 to March 31, 2021 with the upper tolerance limit of 6 per cent and the lower tolerance limit of 2 per cent.
- ❖ On March 31, 2021, the Central Government retained the inflation target and the tolerance band for the next 5-year period – April 1, 2021 to March 31, 2026.
- ❖ Section 45ZB of the RBI Act provides for the constitution of a six-member Monetary Policy Committee (MPC) (which is headed by RBI governor) determine the policy rate required to achieve the inflation target.
- ❖ Therefore, Inflation target is set by central government and it is maintained by RBI through monetary policy tools.

HOWEVER, THE TRAJECTORY OF INFLATION UNPREDICTABLE.

- ❖ In its June policy, the RBI had projected it at 5.2 per cent in the second quarter. In its August meeting, it substantially revised its projection upwards to 6.2 per cent as prices of vegetables have soared in July and August.
- ❖ While this surge is likely to be temporary — the commentary from the RBI does suggest that the central bank believes that vegetable prices will correct in the near term there remains considerable ambiguity over food prices on account of uncertainty over the distribution of monsoon and impact of El Nino.
- ❖ During such periods, as the RBI Governor has underlined, “supply side interventions” can limit the “severity and duration of such shocks”
- ❖ Recently, Union food ministry announced that it was offloading 50 lakh metric tonnes of wheat in the open market in a phased manner. This could have a moderating influence on prices
- ❖ However, other factors, such as higher crude oil prices, also pose risks to the trajectory of inflation. The central bank has now revised upwards its full year inflation forecast to 5.4 per cent, from 5.1 per cent earlier.
- ❖ Alongside, it has also taken steps to absorb the surplus liquidity generated by the return of the Rs 2,000 notes to the banking system by imposing an incremental cash reserve ratio of 10 per cent.

IT IS NECESSARY TO MAINTAIN GROWTH WHILE CONTROLLING THE INFLATION

- ❖ On the growth front, the RBI remains optimistic, expecting the economic momentum to continue.
- ❖ The central bank has retained its forecast for GDP growth this year at 6.5 per cent, even as external demand weakens and the cumulative rate hikes of 250 basis points are still working their way through the system.
- ❖ However, considering the uncertainty in the global economy, the central bank must remain vigilant on all fronts. While it has done well to look through this spurt in inflation, it must be cautious.
- ❖ As the governor’s statement also acknowledges, “frequent incidences of recurring food price shocks, however, pose a risk to anchoring of inflation expectations”.
- ❖ The future course of monetary policy will be influenced by how growth and inflation evolve over the coming quarters.

CONCLUSION

- ❖ Therefore, while consider the global economic situation and food-based inflation, the stand of Monetary policy committee to unchanged repo rate will help in controlling inflation along with maintaining the economic growth.

INDIA NEEDS A NEW ECONOMIC POLICY

INTRODUCTION

- ❖ The National Statistical Office (NSO) has released the 2022-23 GDP fourth-quarter growth rate figures. Measured against fourth-quarter figures of the previous year, the data give a gloomier picture than what the media publications of the Press Information Bureau present.

THE NSO DATA CONCLUSIONS

- ❖ According to NSO data, in the first COVID-19 pandemic quarter of 2020-21, i.e., April 1 to June 30, 2020, GDP growth rate was minus 23.8% when compared to GDP of the same period in 2019-20.
- ❖ Three conclusions based on NSO data since 2014-2015 are important for a reality check.
- ❖ First, the growth rate of GDP, since 2015-16 had been declining annually, and has fallen in the fourth quarter to what it was earlier, and sneeringly referred to by economists as “The Hindu Rate of Growth” — 3.5% growth rate in GDP.
- ❖ Second, it is essential to recognise that since 2014, Prime Minister Narendra Modi’s widely publicised “Vikas” in reality achieved the so-called “Hindu rate of growth” in GDP of what had been achieved in the period 1950-77 — the socialism period.
- ❖ Third, during the tenures of P.V. Narasimha Rao and Manmohan Singh, GDP growth rates rose for the first time to between 6% to 8% per year over a 15-year period, i.e., 1991-96 and 2004-2014 (with the usual cyclic ups and downs).

THE ALARMING SITUATION

- ❖ What is alarming today is the serious and continuous decline in GDP growth rates which began in 2016. And that decline continues even now.
- ❖ The growth rate of GDP has been consistently in decline since 2016.
- ❖ No policy structuring has been presented.

STEPS TO BE TAKEN

- ❖ By “structuring”, this writer means a clear implementation of what the economic objectives will be, and priorities that should be assigned to the various objectives.
- ❖ Thereafter, there ought to be a strategy on what should be incentivised and what should be deleted or discontinued.
- ❖ For example, in today’s dark economic condition, it is essential that personal income tax is abolished and Goods and Services Tax scrapped to incentivise investors and earners.
- ❖ Resources by the government should be mobilised through indirect taxes and also by liberal printing of currency notes and which is circulated by paying wages to the employment generated in extensive public works.
- ❖ The annual interest paid on fixed-term savings in bank accounts should be 9% or so to increase purchasing power of the middle classes. Interest rates on loans to small and medium industries should be no more than 6% of the loans to increase production of these sectors, and thus employment.
- ❖ India needs a new economic policy urgently. It needs to be a policy that is based on clear objectives, priorities, have a strategy to achieve targets, and spell out an intelligent and transparent resource mobilisation plan to finance policies.
- ❖ The market system is not a free-for-all or an ad hoc measure. It has a structure with rules for transactions.
- ❖ Market system capitalism works as the principal drivers are incentive and capital (whose use for innovation raises factory productivity and the growth rate of GDP).
- ❖ Deregulations should also not mean that we reject government intervention for safety nets, affirmative action, market failure and creating a level-playing field.
- ❖ Democratic institutions have to be empowered to guard against public disorder arising from rapid de-regulation — as it happened in Russia post-1991.

WAY FORWARD

- ❖ The trade-off between the public sector and de-regulation and the sale of loss-making units, increasing employment, through affirmative action, and easy access to social security and a safety net are essential to create a stake for the poor in the system.
- ❖ This creates a level-playing field in a competitive system, ensures transparency, accountability, and trusteeship (philanthropy), as well as corporate governance to legitimise profit-making smoothly which drives the market system.

- ❖ Such steps reduce monopolistic tendencies and help in the formation of a democratic and harmonious society.

A FRAGILE UPTICK

Context

- ❖ Over the past few weeks, several firms have released their financial results for the first quarter (April-June) of the ongoing financial year. These results provide information of how various sectors have fared during this period

New trends which reflect current economic situation

- ❖ On closer examination of available data. It was observed that
- ❖ some firms have observed a slight pick-up in demand in the consumer non-durables segment in rural areas.
- ❖ And two, the smaller firms in the FMCG sector are witnessing a strong resurgence.
- ❖ These nascent trends, however, rest on fragile foundations, they do point towards an improvement at both the consumption and production ends of the spectrum.

Smaller firms are growing at a faster pace than larger ones

- ❖ As per reports, the smaller local players are seeing much faster volume growth than the larger national brands. This holds true across segments and regions.
- ❖ Considering that the smaller firms have faced a series of crushing blows over the past few years from demonetisation to GST to the funding squeeze after the NBFC crisis to the pandemic — these are encouraging signs for the larger MSME universe.

Challenges face by small firms (MSME)

- ❖ Unlike the larger firms, these smaller firms, especially those in the informal sector, are less equipped to deal with such shocks because of limited internal resources.
- ❖ They also have less access to formal sources of finance.
- ❖ And as policy support typically tends to flow through formal monetary channels, this leaves them more vulnerable
- ❖ However, data now seems to suggest that these smaller firms are expected to grow again as
- ❖ moderation in inflation, is observed. This would impact MSME production these units are less able to absorb high input/commodity prices, as well as household consumption, by increasing their spending capacity.
- ❖ Another possible factor is the easing of logistical constraints. This would impact both production (inputs need to be moved) and end sales (via distribution).

Challenges related to credit flow within the economy.

- ❖ The flow of credit to the broader economy had begun to decline even before the pandemic. In fact, it started with the NBFC crisis — the collapse of IL&FS and the subsequent implosion of DHFL
- ❖ There are several channels through which money flows into the broader economy banks, NBFCs, and cooperatives.
- ❖ Data shows that growth in bank credit to the commercial sector through various avenues (non-food bank credit, investments in commercial paper, shares, bonds/debentures) began to slow down in 2019, averaging in single digits in the three years ending March 2022
- ❖ A similar deceleration can be seen in loans and advances by NBFC and urban cooperative banks. However, credit flow picked up thereafter, even as interest rates rose
- ❖ Despite this uptick, however, loans outstanding as a percentage of GDP are lower than the pre-NBFC crisis levels. As finance greases the workings of an economy for instance, the economic cycle as seen through the ups and downs in sales of two-wheelers and commercial vehicles is closely aligned with the credit cycle

Economic momentum is likely to slow down over the coming quarters.

- ❖ Some NBFCs are already turning cautious seeing risk in some forms of retail lending. This may limit credit flow.
- ❖ Moreover, these trends may also not be reflective of the economic circumstances of large sections. After all, real wage growth remains stagnant.
- ❖ And more individuals are availing work under MGNREGA indicating labour market slack. Though it is possible that improvements in the job market are seen with a lag.

Conclusion

- ❖ There are expectations that a good monsoon in large parts of the country will help revive rural demand, injecting vibrancy into the broader economy. Along with, an increase in the income support that is extended to farmers through PM-Kisan could be a trigger for a broader revival or rural demand.

GLOBAL HEADWINDS

Recent Context

- ❖ Recently Trade data released by the Ministry of Commerce and Industry points towards a continuing weakness in India's exports

Highlights of Trade related data

- ❖ Merchandise exports fell to a nine-month low of \$32.25 billion in July, a decline of almost 16 per cent. Alongside, goods imports also fell by 17 per cent to \$52.9 billion.
- ❖ In the first four months of the financial year (April-July), exports and imports have now contracted by 14.5 per cent and 13.8 per cent respectively.
- ❖ While part of the decline can be traced towards lower commodity prices, both non-oil exports and imports have fallen indicating weak global and domestic demand. These are worrying signs.

Sector and regional specific decline in trade:

- ❖ The disaggregated data shows that 19 of the 30 major export items have declined during April-July.
- ❖ These also include labour intensive sectors such as gems and jewellery, leather products, textiles and others.
- ❖ However, electronic exports continue to grow at a robust pace, rising by 37.6 per cent in the financial year so far.
- ❖ As per an analysis by Crisil, the decline in India's exports has been more pronounced in the Asia Pacific region.
- ❖ In the first two months of the financial year, exports to APAC declined by 21.8 per cent, followed by the US (12.9 per cent), Africa (8.6 per cent) and Europe (6 per cent).
- ❖ As per this analysis, the share of APAC in India's goods exports has been on a decline since the beginning of the pandemic.
- ❖ While in 2019, the region accounted for 33 per cent of India's merchandise exports, by 2022-23, its share in the country's export basket had declined to 26.5 per cent, while the combined share of the US and the EU rose to 34 per cent.

Global economic situation which going to impact India's export

- ❖ In the near term, slowing global demand and trade will continue to weigh down exports.
- ❖ As per the International Monetary Fund's, World Economic Outlook report, the world economy is likely to grow at 3 per cent this year, down from 3.5 per cent the year before.
- ❖ Alongside, world trade volume growth (goods and services) is expected to slow down from 5.2 per cent last year to 2 per cent this year.
- ❖ In fact, growth this year is now projected to be 0.4 percentage points lower than the IMF's earlier forecast.

The Government has taken the following measures to boost exports

- ❖ Foreign Trade Policy (2015-20) extended upto 31-03-2023.
- ❖ Interest Equalization Scheme on pre and post shipment rupee export credit has also been extended upto 31-03-2024.
- ❖ Assistance provided through several schemes to promote exports, namely, Trade Infrastructure for Export Scheme (TIES) and Market Access Initiatives (MAI) Scheme.
- ❖ Rebate of State and Central Levies and Taxes (RoSCTL) Scheme to promote labour-oriented textile export has been implemented since 07.03.2019.
- ❖ Remission of Duties and Taxes on Exported Products (RoDTEP) scheme has been implemented since 01.01.2021.

- ❖ Common Digital Platform for Certificate of Origin has been launched to facilitate trade and increase Free Trade Agreement (FTA) utilization by exporters.
- ❖ 12 Champion Services Sectors have been identified for promoting and diversifying services exports by pursuing specific action plans.
- ❖ Districts as Export Hubs has been launched by identifying products with export potential in each district, addressing bottlenecks for exporting these products and supporting local exporters/manufacturers to generate employment in the district.
- ❖ Active role of Indian missions abroad towards promoting India's trade, tourism, technology and investment goals has been enhanced.

Way Forward

- ❖ Investment in Infrastructure sector: Improved infrastructure and logistics are critical for enhancing export competitiveness.
- ❖ India should prioritise investments in transportation networks, ports, customs clearance processes, and export-oriented infrastructure such as export promotion zones and specialised manufacturing zones.
- ❖ This can reduce transportation costs, improve supply chain efficiency, and boost export capabilities.
- ❖ Skill Development and Technology Adoption: Skill development programs should be implemented to enhance the availability of skilled labour in export-oriented industries.
- ❖ Additionally, incentivizing and promoting technology adoption, such as automation, digitization, and Industry 4.0 technologies, can boost productivity, competitiveness, and innovation in the export sector.
- ❖ Exploring Joint Development Programmes: Amidst a wave of deglobalisation and slowing growth, exports cannot be the sole engine of growth.
- ❖ India can also explore joint development programmes with other countries in sectors like space, semiconductor, solar energy to improve India's medium-term growth prospects.

Conclusion

- ❖ Considering its broader economic implications such as on job creation and the current account, policy must focus on boosting merchandise exports.

THE ISSUE IS NOT ABOUT INDIA'S GDP, BUT ITS JDP

Introduction

- ❖ India's Gross Domestic Product (GDP) growing in double digits, the Indian economy being the world's fastest, and also highlighted glowing reports by foreign institutions such as the International Monetary Fund (IMF) and Morgan Stanley. The whole debate among India's leading economic policymakers has revolved around whose GDP growth was higher (i.e. the National Democratic Alliance or the UPA), or what must be done to achieve higher growth.

The issue is job potential

- ❖ India's economy is growing so rapidly, but the demand for minimum wage work under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme also growing fast.
- ❖ That is, when India was apparently the fastest growing economy in the world, more and more people were also clamouring for MGNREGA work.
- ❖ If the economy is doing well, it should be creating many jobs, which should then lower the demand for minimum wage MGNREGA work. MGNREGA demand should be inversely proportional to economic growth.
- ❖ Clearly, there is a big dissonance between GDP growth and its translation into actual jobs and incomes for people.
- ❖ Further, even the jobs that are being created tend to exacerbate India's social fissures.
- ❖ People from higher castes constitute nearly three quarters of the formal service sector jobs that GDP growth produces while 80% of workers under the MGNREGA programme are from the oppressed castes of Dalits, tribals and backward castes.
- ❖ here is an alarming decline in the number of jobs that are being created with every percentage growth in GDP. This is a function of the poor quality of GDP growth, rapid increase in productivity and extreme automation.

- ❖ Thus, it is important to focus on the job intensity of economic initiatives rather than merely chase headline GDP growth.

The Mines and Minerals Bill, India's future

- ❖ The MMA Bill can be a potential booster shot in India's economic arm, if administered properly.
- ❖ The world is in the midst of an inevitable transition to electric mobility. While electronic chips and equipment are key to this transition, the fountainhead for this change are minerals such as lithium, cobalt, graphite and other 'rare earths'.
- ❖ These minerals are the foundation for the whole electric mobility supply chain which countries such as China are pursuing aggressively.
- ❖ China dominates this supply chain through a belligerent geo-economic policy of sourcing, extracting and refining these minerals from various parts of the world.
- ❖ Various studies have shown that India's topography is very conducive to finding similar mineral deposits as found in Afghanistan and Western Australia
- ❖ But India has not explored even 10% of its potential mineral deposits below the earth and has mined even less.
- ❖ With a coastline that is over 7,000 kilometres long, India's potential in finding rich strategic minerals can be even greater through deep sea mining.
- ❖ However, lack of access to latest mining technologies, environmental concerns and previous incidents of labour exploitation in mines have prevented India thus far from exploring this opportunity.
- ❖ The new MMA Bill promises to change that through private sector participation in exploration of strategic minerals including lithium.

Way forward

- ❖ It is very important for political leaders to change the nation's economic discourse and abandon this blind quest for headline GDP growth.
- ❖ Economists, technocrats and the IMF peddle GDP growth, since it is a convenient measure to compare what they can forecast through excel models on their computers.
- ❖ For political leaders who are entrusted with people's real welfare, it is critical not to fall prey and question whether such headline GDP delivers true economic prosperity to all its people.

WHAT IS RBI'S NEW PILOT FOR FRICTIONLESS CREDIT?

Context

- ❖ On August 17, the RBI commenced a pilot programme endeavouring to evaluate the feasibility and functionality of the 'Public Tech Platform for Frictionless Credit'. The suggested platform would strive to "enable delivery of frictionless credit by facilitating seamless flow of required digital information to lenders."

The Platform

- ❖ Digital delivery of credit (delivering credit/loans through digital means) or any loan is preceded by a process of scrutiny known as credit appraisal.
- ❖ The process attempts to evaluate and accordingly predict the prospective borrowers' ability for repayment of credit/loan and adhering to the credit agreement.
- ❖ This pre-disbursal process is particularly important for banks since it would in turn determine their interest income and impact on the balance sheet.
- ❖ The central banking regulator has observed that the data required for the process rests with different entities like central and state governments, account aggregators, banks, credit information companies, and digital identity authorities.
- ❖ This new platform would bring all of it together in a single place. To facilitate "frictionless" and "timely delivery" of loans, the central banking regulator had instituted a pilot project for the digitalisation of Kisan Credit Card (KCC) loans.
- ❖ It tested "end-to-end digitalisation of the lending process in a paperless and hassle-free manner".
- ❖ The pilot is currently ongoing in select districts of Madhya Pradesh, Tamil Nadu, Karnataka, Uttar Pradesh and Maharashtra.
- ❖ It provides for "doorstep disbursement of loans in assisted or self-service mode without any paperwork."

About new pilot

- ❖ The platform is premised around the learnings from all the ongoing programmes, and further expands the scope to all types of digital loans.
- ❖ The public platform will be developed by its wholly owned subsidiary, the Reserve Bank Innovation Hub (RBIH).
- ❖ The proposed end-to-end platform will have an open architecture, open Application Programming Interfaces (API) and standards, to which all financial sector players would be able to connect seamlessly in a 'plug and play' model.
- ❖ With the participation from certain banks, the platform would extend its focus also towards dairy loans, MSME loans (without collateral), personal loans and home loans.
- ❖ It is expected to link with services like Aadhar e-KYC, Aadhar e-signing, land records from onboarded State governments, satellite data, PAN validation, transliteration, account aggregation by account aggregators (AAs), milk pouring data from select dairy co-operatives, and house/property search data.
- ❖ Thus, it would cover all aspects of farming operations alongside those necessary for ascertaining financial profiles.
- ❖ Based on the learnings from this project, the scope and coverage would be further expanded to include more information providers and lenders.

Serving the purpose

- ❖ Experts, including the World Bank, point out that improved access to information provides the basis for fact-based and quick credit assessments.
- ❖ It ensures that credit is extended to a larger set of borrowers with good credit history.
- ❖ The borrowers too would benefit by the resulting lower cost of accessing capital, which would translate into productive investment spending.
- ❖ Availing formal credit may entail multiple visits to the bank alongside cumbersome documentation.
- ❖ This translates to higher operational costs for lenders which may also get distributed to borrowers.

Conclusion

- ❖ As per media reports, an RBI survey indicated that processing of farm loans used to take two to four weeks and cost about 6% of the loan's total value. All in all, the lending platform would bring about "reduction of costs, quicker disbursement and scalability," RBI noted.

UNDERSTANDING CURBS ON RICE EXPORTS

Context

- ❖ In a move to check domestic rice prices and ensure domestic food security, the Indian government has prohibited the export of white rice, levied a 20% export duty on par-boiled rice and permitted the export of Basmati rice.

Rice production estimate

- ❖ According to the third Advanced Estimate of the Department of Agriculture and Farmers Welfare, during the Rabi season 2022-2023, rice production was 13.8% less, during Rabi 2021-2022.
- ❖ Kharif sowing data show that rice is sown on 384.05 lakh hectares this year compared with 367.83 lakh hectares during the same period last year.
- ❖ But, in States such as Tamil Nadu where the Samba crop sowing starts usually in August in the Cauvery delta area, a section of farmers says there will be delayed sowing due to a shortfall in the south west monsoon.
- ❖ Trade and rice millers say that new season crop arrivals will start after the first week of September and that El Nino effects are likely to impact arrivals to some extent.

Rice exports

- ❖ India is the largest rice exporter globally with a 45% share in the world rice market.
- ❖ Overall rice exports in April-May of 2023 were 21.1% higher compared with the same period last financial year.
- ❖ Export of Basmati rice was 10.86% higher than its exports in May 2022. Non-Basmati rice shipments were 7.5% more, despite the government introducing a 20% export duty on white rice and prohibiting the export of broken rice last September.

- ❖ The shipment of non-Basmati rice has been on the rise for the last three years and the export of Basmati rice in 2022-2023 was higher than the previous year.
- ❖ The data shared by the government says that total rice exports (except broken rice) were 15% more against the 6.3 the corresponding period last year.
- ❖ Trade sources add that Thailand expects nearly 25% lower production in 2023-2024; Myanmar has stopped raw rice exports; and the crop is said to be hit in Iraq and Iran as well.

State of the farmers

- ❖ The government has increased the Minimum Support Price (MSP) for rice, and the paddy procured now by rice millers are at a price higher than the MSP.
- ❖ The prices will not decline for farmers. The restrictions on exports will ensure that there is no steep climb in rice prices in the market.
- ❖ When the benchmark price set by the government is high, the farmers will realise better prices, say trade sources.
- ❖ For domestic consumers, though there is a slight increase in rice prices at present, in the long run, availability is secured, and prices are not expected to spiral.

The overall situation

- ❖ Prices of Indian par-boiled rice in the international market is competitive even with the levy of a 20% duty.
- ❖ Countries such as Indonesia, which are rice exporters, are looking at imports (raw rice) now.
- ❖ When the global rice market is bullish, it will absorb volume in high prices too.
- ❖ The government should look at classifying rice as common rice and speciality rice for export policy decisions rather than classifying as Basmati and non-Basmati.
- ❖ As many as 12 varieties of rice have Geographical Indication (GI) recognition and these should be insulated from general market interventions.

Conclusion

- ❖ Since Indian rice quality and the consistency in supply is good, export demand for Indian rice went up. Basmati is a speciality rice and new crop arrivals will start soon and there is no need for restrictions.

SCIENCED AND TECHNOLOGY

THE HYBRID EV IMPERATIVE

Introduction

- ❖ With their higher fuel economy and reduced carbon emissions, hybrid EVs offer an opportunity for economically developing countries to kick start the shift towards sustainable transportation while addressing infrastructure and cost challenges associated with full EV adoption.

Different types of EVs

- ❖ Any vehicle propelled by an electric drivetrain, taking electric power from a portable, electrical energy source, is called an Electric vehicle (EV).
- ❖ In a hybrid EV, an internal combustion engine (ICE) is used to produce electricity with an electrical generator. A small battery, typically 1-5kWh, is used in a hybrid EV as an energy buffer to store the electricity.
- ❖ A full EV – a.k.a. a battery EV or a plug-in EV – has no ICE and hence no tailpipe emissions. The battery typically is much larger at 20-120 kWh. And it can only be charged from the grid.
- ❖ A plug-in hybrid EV is still a hybrid EV with a much larger battery, typically 5-15 kWh. This larger battery can also be charged from the grid. This means a plug-in hybrid operates like a fully electric vehicle as long as there is energy in the battery.
- ❖ A fuel-cell EV uses a fuel cell to produce electricity for the drivetrain together with a small battery buffer to manage variations.

Fuel economy of hybrid and fully electric EVs

- ❖ The use of an ICE in combination with a generator and battery in a hybrid EV results in the fuel economy of these vehicles being 1.5-2x times higher than in conventional ICE vehicles for city driving and 1-1.5x times higher for highway driving.
- ❖ A plug-in hybrid EV combines the best of both hybrid and full EVs. Using a small battery (5-15kWh) that can be charged from the grid, it can cover 80-90% of all short, day-to-day commutes in a fully electric mode with 3-4x higher fuel economy than conventional vehicles.

Net emissions of hybrid EVs

- ❖ Apart from fuel economy, an important metric is the net emissions of a vehicle.
- ❖ Well-to-wheel emissions include both tailpipe emissions and emissions due to fuel production – electricity or fossil fuels.
- ❖ The life-cycle emissions is a more comprehensive index that includes well-to-wheel emissions and emissions due to vehicle and battery production, maintenance, and end-of-life recycling.
- ❖ The grids of different countries are decarbonised to different extents at present
- ❖ In the case of full EVs: the lower the emissions from power production, the lower the vehicle's well-to-wheel and life-cycle emissions.

EVs' life-cycle emissions compared to ICE vehicles

- ❖ According to an analysis, switching to full EVs will result in 19-34% lower emissions by sedans and 38-49% by SUVs – even with the fossil-fuel-dominated energy mix in India.
- ❖ By 2030, when renewables account for a greater share in the grid, emissions are expected to be 30-56% lower.

Challenges to transitioning to electric mobility

- ❖ Successful transition to full EVs requires fast-charging infrastructure along highways.
- ❖ This is vital because people generally want to own one affordable car serving both short and long-distance travel needs over 5-15 years, and want to drive without range anxiety.

- ❖ Second, many parts of the world, especially economically developing nations, don't yet have access to a grid or the grid isn't 100% reliable.
- ❖ The relatively high charging power for slow-charging (<22kW) and fast-charging (<350kW) make the problem more prominent vis-à-vis generation and transmission capacities.
- ❖ Third, mass-market price points of cars in the economically developing world are much lower, ~\$12,000 – whereas EVs with a range of 300-400 km will reach at a price of \$25,000-35,000 in the short term.
- ❖ This is due to the high battery costs. Vs with higher range will need larger battery packs and thus be more expensive.

Help in decarbonising

- ❖ The current focus in the industry is on full EVs, which isn't practical for the immediate future, given grid reliability, state of highway charging infrastructure, and prohibitive vehicle costs.
- ❖ Hybrid EVs – either full or plug-in hybrids – present a big opportunity to lower emissions in the interim.
- ❖ The 1.5-2x higher fuel economy of hybrids and 3-4x higher fuel economy of plug-in hybrids in electric mode drastically reduces fuel costs, emissions, and oil imports.
- ❖ Regenerative braking in hybrid EVs – i.e. recovering the kinetic energy of the vehicle while slowing down instead of dissipating it as heat in the braking system – can improve fuel economy esp. in urban areas with frequent stop-go conditions and in hilly conditions.

Conclusion

- ❖ In an ideal future, all our electricity comes from renewable sources and we power our EVs using solar energy during the day and with wind energy at night. For countries that can already work towards this goal now, our priority must be to realise this vision. In places where transitioning to renewables for power and building fast-charging infrastructure will take a decade or more, we need to switch to hybrid EVs as a short-term solution due to the fuel-economy and emissions benefits.

AKIRA RANSOMWARE: WHY HAS THE GOVERNMENT ISSUED A WARNING AGAINST IT?

Context

- ❖ The Computer Emergency Response Team of India issued an alert for the ransomware dubbed “Akira.” The ransomware, found to target both Windows and Linux devices, steals and encrypts data, forcing victims to pay double ransom for decryption and recovery.

Akira ransomware

- ❖ The Akira ransomware is designed to encrypt data, create a ransomware note and delete Windows Shadow Volume copies on affected devices.
- ❖ The ransomware gets its name due to its ability to modify filenames of all encrypted files by appending them with the “.akira” extension.
- ❖ The ransomware is designed to close processes or shut down Windows services that may keep it from encrypting files on the affected system.
- ❖ It uses VPN services, especially when users have not enabled two-factor authentication, to trick users into downloading malicious files.
- ❖ Windows Shadow Volume files are instrumental in ensuring that organisations can back up data used in their applications for day-to-day functioning.
- ❖ VSS services facilitate communication between different components without the need to take them offline, thereby ensuring data is backed up while it is also available for other functions.
- ❖ Once the ransomware deletes the VSS files it proceeds to encrypt files with the pre-defined the “.akira” extension.

The working

- ❖ The ransomware also terminates active Windows services using the Windows Restart Manager API, preventing any interference with the encryption process.
- ❖ It is designed to not encrypt Program Data, Recycle Bin, Boot, System Volume information, and other folders instrumental in system stability.
- ❖ It also avoids modifying Windows system files with extensions like .syn, .msl and .exe.
- ❖ Once sensitive data is stolen and encrypted, the ransomware leaves behind a note named akira_readme.txt which includes information about the attack and the link to Akira's leak and negotiation site.
- ❖ Each victim is given a unique negotiation password to be entered into the threat actor's Tor site.
- ❖ Unlike other ransomware operations, this negotiation site just includes a chat system that the victim can use to communicate with the ransomware gang, a report from The Bleeping Computer shares.

The process of infecting devices

- ❖ Ransomware is typically spread through spear phishing emails that contain malicious attachments in the form of archived content (zip/rar) files.
- ❖ Other methods used to infect devices include drive-by-download, a cyber-attack that unintentionally downloads malicious code onto a device, and specially crafted web links in emails, clicking on which downloads malicious code.
- ❖ The ransomware reportedly also spreads through insecure Remote Desktop connections.
- ❖ Once it breaches a corporate network, the ransomware spreads laterally to other devices after gaining Windows domain admin credentials.
- ❖ The threat actors also steal sensitive corporate data for leverage in their extortion attempts.

Protecting against the ransomware

- ❖ CERT-In has advised users to follow basic internet hygiene and protection protocols to ensure their security against ransomware.
- ❖ These include maintaining up to date offline backups of critical data, to prevent data loss in the event of an attack.
- ❖ Additionally, users are advised to ensure all operating systems and networks are updated regularly, with virtual patching for legacy systems and networks.
- ❖ Companies must also establish Domain-based Message Authentication, Reporting, and Conformance, Domain Keys Identified Mail (DKIM), and Sender policy for organisational email validation, which prevents spam by detecting email spoofing.
- ❖ Strong password policies and multi-factor authentication (MFA) must be enforced.
- ❖ The agency has also advised periodic security audits of critical networks/systems, especially database servers.

Conclusion

- ❖ Continuous efforts are needed to Secure (National Cyberspace), Strengthen (Structures, People, Processes, and Capabilities), and Synergise (Resources including Cooperation and Collaboration) in the field of cyberspace in India.

THE DANGERS IN THE DIGITAL PERSONAL DATA PROTECTION BILL

CONTEXT

- ❖ The government is set to introduce the Digital Personal Data Protection (DPDP) Bill in Parliament.

RECHECKING THE ERRORS

- ❖ The Data Protection Bill of 2022 includes a provision to amend the Right to Information (RTI) Act, which has empowered millions of Indian citizens since its enactment in 2005.
- ❖ To effectively hold their governments accountable in a democracy, people need access to information, including various categories of personal data.

- ❖ For example, the Supreme Court of India has held that citizens have a right to know the names of wilful defaulters and details of the Non-Performing Assets (NPAs) of public sector banks.
- ❖ Democracies routinely ensure public disclosure of voters' lists with names, addresses and other personal data to enable public scrutiny and prevent electoral fraud.
- ❖ Experience of the use of the RTI Act in India has shown that if people, especially the poor and marginalised, are to have any hope of obtaining the benefits of government schemes and welfare programmes, they must have access to relevant, granular information.
- ❖ For instance, the Public Distribution System (PDS) Control Order recognises the need for putting out the details of ration card holders and records of ration shops in the public domain to enable public scrutiny and social audits of the PDS.

THREAT TO TRANSPARENCY, ACCOUNTABILITY

- ❖ The RTI Act includes a provision to harmonise peoples' right to information with their right to privacy through an exemption clause under Section 8(1)(j).
- ❖ The DPDP Bill 2022, however, proposes amendments to Section 8(1)(j) to expand its purview and exempt all personal information from disclosure.
- ❖ This threatens the very foundations of the transparency and accountability regime in the country.
- ❖ The DPDP Bill, 2022, unfortunately, empowers the executive to draft rules and notifications on a vast range of issues.
- ❖ For instance, the central government can exempt any government or even private sector entity from the application of provisions of the law by merely issuing a notification.
- ❖ This would potentially allow the government to arbitrarily exempt its cronies and government bodies such as the Unique Identification Authority of India (UIDAI), resulting in immense violations of citizens' privacy.

NO AUTONOMY

- ❖ Further, to meet its objective of protecting personal data, it is critical that the oversight body set up under the legislation be adequately independent to act on violations of the law by government entities.
- ❖ The draft Bill does not even make a pretence of ensuring autonomy of the Data Protection Board — the institution responsible for enforcement of provisions of the law.
- ❖ The central government is empowered to determine the strength and composition of the board, as well as the process of selection and removal of its chairperson and other members.
- ❖ The chief executive responsible for managing the board is to be appointed by the government, giving it direct control over the institution.
- ❖ The creation of a totally government-controlled Data Protection Board, empowered to impose fines upto ₹500 crore, is bound to raise serious apprehensions of it becoming another caged parrot — open to misuse by the executive to target the political opposition and those critical of its policies.

CONCLUSION

- ❖ These concerns need to be urgently addressed before the DPDP Bill is enacted. Unfortunately, given the manner in which Bills are being passed in the Parliament, without any debate or discussion, the citizens of the country might end up with a law that empowers the central government while taking away peoples' democratic right to seek information and use it to hold the powerful to account.

ENDOGAMY LINKED TO PERSISTENCE OF HARMFUL GENETIC VARIANTS

CONTEXT

- ❖ A new study has found higher frequency of homozygous genotypes in South-Asian populations, most likely as a result of caste, endogamy, and consanguineous sexual unions. Such a frequency could lead to higher risk of genetic disorders.

THE STUDY

- ❖ In 2009, a study in Nature Genetics by the group of Kumarasamy Thangaraj, at the Centre for Cellular and Molecular Biology, Hyderabad, reported a fascinating finding on why a small group of Indians were prone to cardiac failure at relatively young ages.

- ❖ They found that the DNA of such individuals lacked 25 base-pairs in a gene crucial for the rhythmic beating of the heart (a 25-base-pair deletion).
- ❖ Intriguingly, this deletion was unique to the Indian population and, barring a few groups in Southeast Asia, was not found elsewhere.
- ❖ They estimated that this deletion arose around 30,000 years ago, shortly after people began settling in the subcontinent, and affects roughly 4% of the Indian population today.
- ❖ Another recent study found stark genetic differences between people from different regions of the subcontinent.
- ❖ While this is to be expected between different countries in the region, it was actually evident even at the level of smaller geographies within India.
- ❖ Unbiased computational approaches showed little mixing between individuals from different communities.
- ❖ It is a no-brainer that endogamous practices (including caste-based, region-based, and consanguineous marriages) in the subcontinent are responsible for such conserved genetic patterns at the community level.
- ❖ In an ideal scenario, there would have been random mating in a population, leading to greater genetic diversity and lower frequency of variants, which are linked to disorders.

A WORRYING TREND

- ❖ The study also highlighted a worrying trend in the Indian population.
- ❖ Compared with a relatively outbred population, like that of Taiwan, the South Asian cohort – and within it, the South-Indian and Pakistani subgroups – showed a higher frequency of homozygous genotypes.
- ❖ Humans typically have two copies of each gene. When an individual has two copies of the same variant, it is called a homozygous genotype.
- ❖ Most genetic variants linked to major disorders are recessive in nature and exert their effect only when present in two copies.
- ❖ Having different variants – being heterozygous – is usually protective.
- ❖ The South Indian and Pakistani subgroups were estimated to have a high degree of inbreeding, while the Bengali subgroup showed significantly lower inbreeding.

MAP OF THE INDIAN GENOME

- ❖ It has been some 20 years since scientists published the human genome sequence.
- ❖ In this time, several studies have shown important ethnic differences in the genome. Thanks to this, scientists have sequenced populations from Africa and China – but a detailed map of the Indian genome has been missing.
- ❖ This is important because of India's incredible diversity as well as for economic, matrimonial, and geographical reasons.
- ❖ The study has not just highlighted this but also indicated how our cultural aspects might need mending for the sake of population health.
- ❖ This is obviously fraught with sensitivities owing to deep-rooted customs and biases, but we must move away from the idea of genetic puritanism because it will be the simplest way to prevent major hereditary disorders.

WAY FORWARD

- ❖ Genetics was once practised with the sole aim of ensuring the lineage of European royal families. Since then, we have come a long way to mapping the human genome and identifying genes linked to haemophilia, skin colour, and cardiac failure.
- ❖ We need to develop the competence and infrastructure to undertake a study of this magnitude within the country and as a multi-centre collaboration.
- ❖ Conducting such studies within the country would also help safeguard the many vulnerable communities within the country who might be exploited.
- ❖ As an ambitious nation, we should devote efforts to harness the power of such studies for our well-being.

NEITHER THE RIGHT TO PRIVACY NOR THE RIGHT TO INFORMATION

CONTEXT

- ❖ The Digital Personal Data Protection Bill 2023 makes the government less transparent to the people and ends up making them transparent to both the government and private interests.

THE BILL

- ❖ Personal data bill will boost digital economy, says Nasscom.' This industry response to the Digital Personal Data Protection (DPDP) Bill 2023 that was introduced in Parliament reveals the real purpose of the Bill — legalising data mining rather than safeguarding the right to privacy.
- ❖ The right to privacy was reaffirmed by a nine-judge Constitutional bench of the Supreme Court in 2017.
- ❖ The right to information provides us access to government documents to ensure transparency and accountability of the government.
- ❖ Enacted as a law, the Right to Information Act (RTI) 2005 has played a critical role in deepening democratic practices.
- ❖ The much-awaited DPDP Bill 2023 ends up undermining our right to information, without doing much to protect our right to privacy.

THE ISSUES OF RIGHTS

- ❖ In a crucial way, the two rights complement each other.
- ❖ Broadly speaking, the right to information seeks to make the government transparent to us, while the right to privacy is meant to protect us from government (and increasingly, private) intrusions into our lives.
- ❖ Yet, there are some tensions between the right to information and the right to privacy.
- ❖ However, the recently introduced DPDP Bill 2023 makes little attempt to deal with these hard questions. Instead, it makes the government less transparent to us while making us transparent to both the government and private interests.

UNDERMINING THE RIGHT TO INFORMATION

- ❖ The Right to Information Act 2005 anticipated some of these tensions and the consequent need to limit its own reach.
- ❖ Therefore, Section 8 of the RTI 2005 listed situations where “exemption from disclosure of information” would be granted.
- ❖ Section 8(1)(j) grants exemption from disclosure if the information which relates to personal information sought has no relationship to any public activity or interest, or which would cause unwarranted invasion of the privacy of the individual, unless a public information officer feels that larger public interest justifies disclosure.
- ❖ It set a high benchmark for exemption – information which cannot be denied to the Parliament or a State Legislature shall not be denied to any person.
- ❖ The DPDP Bill 2023 suggests replacing Section 8(1)(j) with just “information which relates to personal information”. This will undermine the RTI 2005.

IGNORING SOCIAL, POLITICAL AND LEGAL CONTEXT

- ❖ The DPDP 2023 suffers from other shortcomings. For instance, the Data Protection Board, an oversight body will be under the boot of the government as the chairperson and members are to be appointed by the central government.
- ❖ The DPDP Bill 2023 attempts to pass off a lame-duck as a watchdog.
- ❖ In Europe, the General Data Protection Regulation (GDPR) set a high standard for data protection. It has a strong watchdog that operates in a society with universal literacy, and high digital and financial literacy.
- ❖ Restricting data collection is not even being discussed in India.

CONCLUSION

- ❖ A weak board combined with the lack of universal literacy and poor digital and financial literacy, as well as an overburdened legal system, mean that the chances that citizens will be able to seek legal recourse when privacy harms are inflicted on them are slim.

HOW DID THE DINOSAURS BECOME BIRDS? MAYBE THE NOSE KNOWS

INTRODUCTION

- ❖ In a famous 1859 book, *On the Origin of Species*, the British naturalist Charles Darwin presented the world with the theory that life-forms evolved through natural selection. The anatomist Thomas Henry Huxley suggested that the birds of today could be the descendants of the extinct dinosaurs.

EVOLUTION OF DINOSAURS

- ❖ The evolution of the skull of dinosaurs to birds has been one of the main focuses in dinosaur palaeontology for a long time.
- ❖ By focusing on the nose, this study helped us improve our understanding of the cranial evolution of dinosaurs to birds.
- ❖ In 1998, two fossils discovered in China provided paleontological evidence that modern birds had evolved from theropod dinosaurs.
- ❖ The 120-million-year-old fossils, of the species *Protarchaeopteryx* and *Caudipteryx*, depicted different stages in the evolution of birds from terrestrial, two-legged dinosaurs with feathers.
- ❖ The dinosaurs had slowly developed bird-like features, such as wings, wishbones, and feathers.
- ❖ Even today, scientists are not sure whether dinosaurs were warm-blooded or cold-blooded.
- ❖ The word 'dinosaur' comes from the Greek words 'deinos' and 'sauros', meaning "terrible lizard", and lizards are ectotherms.
- ❖ On the other hand, dinosaurs are also related to birds, which are warm-blooded.
- ❖ The location of non-avian dinosaurs in the phylogenetic tree – a diagram depicting how different life-forms are related to each other by evolution – is somewhere between animals that depend on environmental conditions to regulate body temperature (e.g. lizards and crocodiles) and those that can regulate it on their own (e.g. birds and humans).

ASK THE NOSE

- ❖ The nasal cavity of warm-blooded animals houses a complex scroll-like structure made of thin bony plates called the nasal, or respiratory, turbinate.
- ❖ Nasal turbinates are found only in warm-blooded creatures. They are responsible for regulating heat and moisture exchange during respiration.
- ❖ Because of their gelatinous composition, nasal turbinates rarely survive fossilisation.
- ❖ The team obtained computed tomography (CT) scans of 51 present-day species: 21 birds, eight mammals, four Crocodylia (crocodiles and alligators), three Testudines (turtles and tortoises), and 11 Lepidosauria (snakes, lizards, iguanas, etc.). The scan data was then used for 3D reconstruction of their nasal cavities.
- ❖ The team also digitally reconstructed a three-dimensional nasal cavity of a velociraptor (a type of theropod) based on fossils.
- ❖ Comparing these 3D scans, the researchers found that, relative to the size of their heads, warm-blooded animals had much larger nasal cavities than cold-blooded animals.

WORLD OF THE DINOSAURS

- ❖ The reconstruction and some analysis also shed light on a lesser-known physiological function of respiratory turbinates: brain-cooling.
- ❖ The study discovered that one of the primary functions of the respiratory turbinate and the bigger nasal cavity of [warm-blooded animals] is to cool their larger brains, not for whole-body metabolism.
- ❖ The researchers also found that the velociraptor had a smaller nasal cavity than that of modern birds, and that the theropod didn't possess a fully developed cooling system that would be required for a brain that could 'operate' a warm-blooded animal.
- ❖ Birds and mammals on the other hand had large nasal cavities that in turn accommodated a well-developed respiratory turbinate, and that in turn cooled their brains efficiently.
- ❖ They also found that in the velociraptor, the maxilla had a significant influence on the shape of the nasal passage.
- ❖ Based on this, they have proposed that a great reduction of the maxilla on the theropod lineage resulted in the nasal cavity becoming an important apparatus for their thermal regulation strategy.

CONCLUSION

- ❖ Organisms do not evolve in a vacuum but in relation to their surrounding environment. The study of evolution of dinosaurs and the environment of the earth they walked on will be crucial in understanding the lineages that lead to each phylum or class in the Animal kingdom.

INDIA TAKES FIRST STEP TO REMOVE ANIMALS FROM DRUG-TESTING

- ❖ India takes first step to remove animals from drug-testing

INTRODUCTION

- ❖ An amendment to the New Drugs and Clinical Trial Rules (2023), recently passed by the Government of India, aims at stopping the use of animals in research, especially in drug testing. The amendment authorises researchers to instead use non-animal and human-relevant methods, including technologies like 3D organoids, organs-on-chip, and advanced computational methods, to test the safety and efficacy of new drugs.

CURRENT DRUG-DEVELOPMENT PIPELINE

- ❖ Every drug in the market goes through a long journey of tests, each designed to check whether it can treat the disease for which it was created and whether it has any unintended harmful effects.
- ❖ For a long time, the first step of this process has been to test the candidate molecule in at least two animal species: a rodent (mouse or rat) and a non-rodent, such as canines and primates.
- ❖ However, humans are more complex creatures, and biological processes and their responses often vary from person to person as well, based on factors such as age, sex, pre-existing diseases, genetics, diet, etc. – and a lab-bred animal species reared in controlled conditions may not fully capture the human response to a drug.
- ❖ This ‘mismatch’ between the two species is reflected in the famously high failure-rate of the drug development process.
- ❖ Despite increasing investment in the pharmaceutical sector, most drugs that cleared the animal-testing stage fail at the stage of human clinical trials, which come towards the end of the pipeline.

ALTERNATIVE TESTING MODES

- ❖ In the last few decades, several technologies have been developed using human cells or stem cells. These include millimetre-sized three-dimensional cellular structures that mimic specific organs of the body, called “organoids” or “mini-organs”.
- ❖ Another popular technology is the “organ-on-a-chip” which are AA-battery-sized chips lined with human cells connected to microchannels, to mimic blood flow inside the body.
- ❖ These systems capture several aspects of human physiology, including tissue-tissue interactions and physical and chemical signals inside the body.
- ❖ Researchers have also used additive manufacturing techniques for more than two decades.
- ❖ In 2003, researchers developed the first inkjet bioprinter by modifying a standard inkjet printer. Several innovations in the last decade now allow a 3D bioprinter to ‘print’ biological tissues using human cells and fluids as ‘bio-ink’.
- ❖ These systems promise to reshape drug-design and -development. Since they can be built using patient-specific cells, they can also be used to personalise drug-tests.

DEVELOPING THE ORGAN-ON-A-CHIP SYSTEM

- ❖ One problem is that developing an organ-on-a-chip system typically requires multidisciplinary knowledge.
- ❖ This means expertise in cell biology to recreate the cellular behaviour in the lab; materials science to find the right material to ensure that the chip does not interfere with biological processes; fluid dynamics to mimic blood flow inside the microchannels; electronics to integrate biosensors that can measure pH, oxygen etc. in the chip; engineering to design the chip; and pharmacology and toxicology to interpret action of the drugs in the chips.
- ❖ It’s a truly interdisciplinary endeavour and needs focused training and human-resource building, which is lacking in the country at present.

WAY FORWARD

- ❖ To manage the complexity of recreating human tissues and organs in the petri dish, researchers often minimise the number of components required to simulate the disease being investigated.
- ❖ It is important to bring out guidelines on the minimal quality criterion and standards for these systems.
- ❖ Also, the current guidelines on animal testing requirements must be re-evaluated and revised, considering newer developments in cell-based and gene-editing based therapeutics.

WHY IS INDIA'S DEFENCE MINISTRY DITCHING MICROSOFT WINDOWS FOR MAYA OS?

Context

- ❖ India's Defence Ministry has decided to replace the Microsoft Operating System (OS) in all its computers that can connect to the Internet with Maya, an Ubuntu-based OS built locally.

Maya, the new OS

- ❖ The new OS is currently being rolled out only in the Defence Ministry computers, and not the three Services.
- ❖ While the Navy is said to have cleared Maya for use in its systems, the Army and the Air Force are still evaluating the software.
- ❖ Maya has been developed by Indian government agencies within six months, and it is aimed at preventing malware attacks by cybercriminals who are increasingly targeting critical infrastructure and government agencies.
- ❖ The new OS will be backed by a protection system called Chakravayuh.

Maya VA Microsoft OS

- ❖ While the two operating systems provide a platform for the user to interact with computer hardware, Maya and Windows differ significantly, both in terms of cost and build.
- ❖ Windows is a commercial software sold by Microsoft for a license fee. It is the most widely used OS, and is easy to install and run.
- ❖ Devices powered by Microsoft's OS run on the Windows NT kernel.
- ❖ A kernel is the core of an operating system. It runs on a computer's Random Access Memory (RAM) and gives the device instructions on how to perform specific tasks.
- ❖ Prior to building the kernel architecture, programmers used to run codes directly on the processor.
- ❖ In the 1970s, Danish computer scientist Per Brinch Hansen pioneered the approach of splitting what needs to be done by a processor from how it executes that task, thus introducing the kernel architecture in the RC 4000 multiprogramming system.

Difference in the core

- ❖ This design was monolithic, meaning a single programme contained all necessary codes to perform kernel-related tasks.
- ❖ This architecture provided rich and powerful abstraction for the underlying hardware. But it was also large and difficult to maintain as the lines of codes ran in the millions.
- ❖ Limitations in the traditional architecture led to a new kernel design called the microkernel.
- ❖ This design broke down the monolithic system into multiple small servers that communicate through a smaller kernel while giving more space for user customisations.
- ❖ This change allowed developers to run patches easily without rebooting the entire kernel. It did have some drawbacks like larger running memory space and more software interactions that reduced the computer's performance.
- ❖ Windows runs on a hybrid kernel architecture which is a microkernel design coupled with additional codes that help enhance performance.
- ❖ Apple's MacOS also uses a hybrid kernel called XNU. And Ubuntu, a Linux OS that was used to build Maya, runs on monolithic architecture.
- ❖ Linux versions are called "distributions" or "distro", and they comprise free and open-source software. In fact, Android is also based on the Linux kernel.

Conclusion

- ❖ India's switch to the Ubuntu-based Maya OS comes at a time when cyberspace is increasingly becoming vulnerable to malware and ransomware attacks.

- ❖ Such cyber threats arising from proprietary software are once again making global governments look to free and open-source software (FOSS) to develop their own OS.
- ❖ Apart from cybersecurity, the reason behind this move is to assist IT modernisation efforts that are underway — like digitising government services and making them interoperable.

INDIAN RUSSIA MOON MISSION

Context

- ❖ Recently Russia launched Luna-25, mission to moon. It is likely to enter the moon's orbit by August 16 and attempt the soft landing by August 21 or 22
- ❖ India also launched Chandrayaan-3 mission to moon which is expected to land on south pole of moon after 23 August 2023.

Why is Russia reaching the moon earlier than India?

- ❖ Although Luna-25 was launched earlier this week aboard its Soyuz rocket — almost a month after the launch of Chandrayaan-3 on July 14. It will cover the 3.84-lakh-km journey within days.
- ❖ This is because the Russian mission was able to follow a more direct trajectory towards the moon, owing to its lighter payload and more fuel storage.
- ❖ The lift-off mass for Luna 25 is just 1,750 kg as compared with the 3,900 kg of Chandrayaan-3. Chandrayaan's Lander-Rover alone weighs 1,752 kg, with the propulsion module weighing another 2,148 kg.
- ❖ To make up for the lower fuel reserve available on the LVM3 vehicle that launched India's mission, a more circuitous route was taken. After being launched around the Earth, the orbit of the spacecraft was increased in a series of manoeuvres to help it gain velocity.
- ❖ Over the next few days, Chandrayaan-3 will reduce its orbit and velocity around to the moon in preparation for the soft landing likely to be attempted on August 23
- ❖ Another reason Luna-25 can land a couple of days before India is because lunar dawn at its landing site will happen earlier.
- ❖ One lunar day is equal to 14 Earth days. With the payloads being powered by solar panels, landing at the beginning of a lunar day ensures that the experiments get the full 14 earth days.

How do the missions differ?

- ❖ Apart from being lighter than the Indian mission, Luna-25 does not carry a rover.
- ❖ The Russian lander has eight payloads mainly to study the soil composition, dust particles in the polar exosphere, and most importantly, detect surface water.
- ❖ The Indian mission also has scientific instruments to study the lunar soil as well as water-ice. The location near the southern pole was chosen because of the presence of craters that remain in permanent shadow, increasing the likelihood of finding water-ice.
- ❖ Instrument to Chandrayaan-3: The lander will carry four experiments on-board.
- ❖ The Radio Anatomy of Moon Bound Hypersensitive ionosphere and Atmosphere (RAMBHA) has a Langmuir probe used to study properties of electrons and ions such as temperature and density. It will study these properties near the surface of the moon and how they change over time.
- ❖ The Chandra's Surface Thermo physical Experiment (ChaSTE) will study the thermal properties of the lunar surface near the polar region. T
- ❖ The Instrument for Lunar Seismic Activity (ILSA) will measure the lunar quakes near the landing site and study the composition of the moon's crust and mantle.
- ❖ The LASER Retroreflector Array (LRA) is a passive experiment sent by NASA on-board the mission. LRAs are optical instruments that act as a target for lasers and can be used for very precise tracking by spacecrafts in the lunar orbit

Is India also in the race to land humans on moon?

- ❖ It was the discovery of water molecules by India's Chandrayaan-1 mission in 2008 that has propelled another race to the moon.
- ❖ The United States and China now have plans to take humans to moon again; a first after the cold war era. To date, only 12 men aboard US' Apollo Missions have set foot on the lunar surface.

- ❖ Although India with its limited resources has been able to catch up with countries with more advanced and older space agencies, there is still a long way to go before humans can be sent to the moon.

How have India and Russia collaborated on moon missions and other space activities?

- ❖ Many have speculated whether Russia's launch was targeted for the same time as India's mission, but Russia dismissed this.
- ❖ As, India and Russia have been long-time collaborators, especially when it comes to space activities.
- ❖ In fact, Russia was initially supposed to design the lander-rover for India's Chandrayaan-2 mission. However, it withdrew after the failure of its Fobos Grunt mission to one of Mars' moons. This then prompted India to develop the lander-rover independently. This is the reason there is a gap of 11 years between the Chandrayaan-1 and Chandrayaan-2 missions.
- ❖ Also, the predecessors of the LVM3 that launched Chandrayaan-3 were based on cryogenic engines sold to India by Russia. India later developed the technology on its own as Russia did not transfer the technology.

Conclusion

- ❖ Therefore, India and Russia missions to moon are sent their respective objectives to carry put moon related study. It will shape the future mission to moon and other celestial body of space.

ON SMARTPHONE MANUFACTURING IN INDIA

Context

- ❖ Over the last few months, former RBI governor Raghuram Rajan and the Minister of State for Electronics Rajeev Chandrasekhar have sparred over how well a Central government scheme to boost electronics manufacturing has been faring.

The issue

- ❖ It started when Mr. Rajan, along with two other economists, released a brief discussion paper arguing that the programme isn't really pushing India towards becoming a self-sufficient manufacturing powerhouse.
- ❖ Instead, the government is using taxpayer money to create an ecosystem of low-level assembly jobs that will still depend heavily on imports.

The PLI scheme

- ❖ Around five years ago, the Government of India decided it wanted more companies to make things in India.
- ❖ Manufacturing is a key ingredient to economic growth and also comes with what economists call a multiplier effect — every job created and every rupee invested in manufacturing has a positive cascading effect on other sectors in the economy.
- ❖ However, the problem was that many industries didn't want to set up shop in the country.
- ❖ India's infrastructure isn't great, the country's labour laws are archaic, and the workforce isn't very skilled.
- ❖ To solve this, the government used, and uses, a carrot-and-stick approach. The 'stick' is raising import duties, thus making it more expensive for companies to import stuff from somewhere else and sell it in India. The 'carrot' is to provide subsidies and incentives.
- ❖ One key set of incentives is the production-linked incentives (PLI) scheme. Here, the government gives money to foreign or domestic companies that manufacture goods here. The annual payout is based on a percentage of revenue generated for up to five years.
- ❖ The industry that has shown the most enthusiasm for the scheme is smartphone manufacturing.
- ❖ Companies like Micromax, Samsung, and Foxconn (which makes phones for Apple) can get up to 6% of their incremental sales income through the PLI programme.
- ❖ And with the scheme, mobile phone exports jumped from \$300 million in FY2018 to an astounding \$11 billion in FY23. And while India imported mobile phones worth \$3.6 billion in FY2018, it dropped to \$1.6 billion in FY23.

The glitches

- ❖ The export boom hides more than it reveals. While imports of fully put-together mobile phones have come down, the imports of mobile phone components — including display screens, cameras, batteries, printed circuit boards — shot up between FY21 and FY23.
- ❖ Incidentally, these are the same two years when mobile phone exports jumped the most. This matters because manufacturers aren't really making mobile phones in India in the traditional sense.

- ❖ That would involve their supply chain also moving to India and making most of the components here as well.
- ❖ This is important as low-level assembly work doesn't produce well-paying jobs and doesn't nearly have anywhere the same multiplier effect that actual manufacturing might provide.

Conclusion

- ❖ The main divide is over whether the PLI programme will be able to create long-lasting jobs and firmly establish India as a manufacturing and supply hub that adds value to the production process.

HOW SCIENTISTS FOUND THAT LK-99 IS PROBABLY NOT A SUPERCONDUCTOR

Introduction

- ❖ Tiny wires inside computers and cell phones dissipate heat, draining the batteries in the process. So it is natural that scientists are looking for materials that can conduct electricity without resistance, especially for applications where heat loss is a deal-breaker.

An elusive material

- ❖ More than a century ago, scientists discovered that many metals become superconducting – i.e. allow current to flow with zero resistance – if cooled to below -250°C .
- ❖ This gave birth to a big physics puzzle about superconductor. The breakthrough came in the 1950s and 1960s, when scientists developed a theory of superconductivity.
- ❖ With this theory, they found that superconductors aren't just materials with zero resistance: they have a remarkable new quantum state in which the electrons in the material work together.
- ❖ Several fantastic properties of superconductors then came to light, opening the door to new technologies – including advanced medical imaging, 'maglev' trains, and quantum computers.
- ❖ However, superconductivity also remained an extremely-low temperature-phenomenon for a long time.
- ❖ It was only in the mid-1980s that scientists discovered copper-oxide superconductors, whose transition temperature was higher than -200°C .
- ❖ But to this day, scientists haven't made significant progress to elevate this figure to at or near ambient conditions.
- ❖ One of the highest transition temperatures has been found in a sulphide compound, but it needs to be placed under extreme pressures – like that found at the centre of the earth!
- ❖ The all-important discovery of an ambient-condition superconductor, which can herald radical new technologies, has eluded several generations of scientists.

Surprise and scepticism

- ❖ In July 2023, a group of scientists in South Korea uploaded two preprint papers claiming that a lead apatite material was an ambient condition superconductor.
- ❖ Apatites are materials that have a regular arrangement of tetrahedrally shaped phosphate ions (i.e. one phosphorus atom and four oxygen atoms).
- ❖ When lead ions sit in between these phosphate motifs, it is lead apatite.
- ❖ The novelty of the South Korean group's work was to replace 10% of the lead ions in lead apatite with copper, to produce the supposed wonder material that they had christened LK-99 (after their own last names).

Independent verification

- ❖ In their papers, the group described subjecting their LK-99 samples to a variety of tests. They measured the material's electric resistance, which seemed to drop below a certain temperature.
- ❖ They showed that the low resistance state vanished when a sufficiently strong magnetic field was applied.
- ❖ In their second paper, the team had provided instructions to synthesise LK-99.
- ❖ Researchers in Australia, China, India, the U.S., and several European countries followed them and tried to replicate the South Korean team's findings – but no one found conclusive evidence of superconductivity in their samples.
- ❖ In fact, the Indian group, from the CSIR-National Physical Laboratory, New Delhi, was one of the first to report that it didn't find any signs of superconductivity in LK-99.
- ❖ Some of the most recent work also tried to produce LK-99 using alternative methods. At least one group was able to make a highly pure crystal – where all the ions are regularly arranged in space.
- ❖ It had a brownish-purple hue and was transparent, which was unusual for a superconductor.

- ❖ More remarkably, this single crystal behaved like an insulator, showing no signs of superconductivity from low temperatures up to 800° C.
- ❖ Researchers also found that it was ferromagnetic – i.e. it could be magnetised by, say, rubbing a magnet on it. Superconductors cannot have this property.

Science in action

- ❖ The South Koreans had made lead sulphate react with copper phosphide to produce polycrystalline LK-99 (i.e. small crystallites randomly arranged in space, unlike in a single crystal, where the atoms are arranged regularly over very large distances) and some by-products.
- ❖ One of the important by-products was copper sulphide, which could have become embedded in the LK-99 matrix.
- ❖ Independent researchers confirmed this by using X-rays to ‘look’ inside the crystal.
- ❖ Researchers also found a more mundane way to explain the levitation: that the LK-99 sample also contained impurities (other by-products) that were diamagnetic, i.e. materials that could be magnetised but whose magnetic field is the opposite direction of the applied field. Diamagnetic materials can also partially levitate above magnets as a result.

Conclusion

- ❖ The current evidence suggests that LK-99 is not a superconductor. Even as the replication efforts were underway, some scientists also made models of LK-99’s quantum properties. They found that if copper atoms replaced a certain set of lead atoms in LK-99, the material would have some electronic states that are very interesting in that their kinetic energy could take on very restricted values. These are called flat-band systems. Electrons in flat-bands can interact strongly with each other and are predicted to form superconducting phases, but only at very low temperatures.

NEWS MEDIA VERSUS OPENAI’S CHATGPT

Context

- ❖ A group of news media organisations, including The New York Times, Reuters, CNN and the Australian Broadcasting Corporation, recently shut off OpenAI’s ability to access their content.

About

- ❖ The development comes in the wake of reports that The New York Times is planning on suing the artificial intelligence (AI) research company over copyright violations, which would represent a considerable escalation in tensions between media companies and the leading creator of generative artificial intelligence solutions.

OpenAI

- ❖ The company is best known for creating ‘ChatGPT’, which is an AI conversational chatbot.
- ❖ Users can ask questions on just about anything, and ChatGPT will respond pretty accurately with answers, stories and essays.
- ❖ It can even help programmers write software code. The hype around ChatGPT — specifically, the breathtaking advancements in the field of AI required to create it — has propelled OpenAI into becoming a \$30 billion company.

The face-off between news outlets and OpenAI

- ❖ Software products like ChatGPT are based on what AI researchers call ‘large language models’ (LLMs).
- ❖ These models require enormous amounts of information to train their systems.
- ❖ If chat bots or digital assistants need to be able to understand the questions that humans throw at them, they need to study human language patterns.
- ❖ Tech companies that work on LLMs like Google, Meta or Open AI are secretive about what kind of training data they use.
- ❖ But it’s clear that online content found across the Internet, such as social media posts, news articles, Wikipedia, e-books, form a significant part of the dataset used to train ChatGPT and other similar products.
- ❖ This data is put together by scraping it off the Internet. Tech companies use software called ‘crawlers’ to scan web pages, hoover up content and put it together in a dataset that can be used to train their LLMs.
- ❖ This is what news outlets took a stand against last week when The New York Times and others blocked a web crawler known as GPT bot, through which OpenAI used to scrape data.

Other media companies

- ❖ Search engines like Google or Bing also use web crawlers to index websites and present relevant results when users search for topics.
- ❖ The only difference is that search engines represent a mutually beneficial relationship.
- ❖ Google, for instance, takes a snippet of a news article (a headline, a blurb and perhaps a couple of sentences) and reproduces them to make its search results useful. And while Google profits off of that content, it also directs a significant amount of user traffic to news websites.
- ❖ OpenAI, on the other hand, provides no benefit, monetary or otherwise, to news companies. It simply collects publicly available data and uses it for the company's own purposes.
- ❖ But it's also true that some news outlets probably view ChatGPT as a potential competitor that will profit off their journalism.

Way forward

- ❖ Tech gurus like to argue that the value of online content only exists in the aggregate.
- ❖ Or in other words, ChatGPT could still exist as a high-quality product without CNN's reporting. But all media publications across the world refused to provide access to OpenAI, it's likely that the final product would be of lower quality.
- ❖ And, of course, if every single creator of online content turned down OpenAI, then ChatGPT would almost certainly not exist.

SCIENTISTS FINALLY FINISH SEQUENCING 'WEIRD' MALE Y CHROMOSOME

Introduction

- ❖ The Y chromosome is a never-ending source of fascination (particularly to men) because it bears genes that determine maleness and make sperm. It's also small and seriously weird; it carries few genes and is full of junk DNA that makes it horrendous to sequence.

Making baby boys

- ❖ We have known for about 60 years that specialised chromosomes-determine birth sex in humans and other mammals.
- ❖ Females have a pair of X chromosomes, whereas males have a single X and a much smaller Y chromosome.
- ❖ The Y chromosome is male-determining because it bears a gene called SRY, which directs the development of a ridge of cells into a testis in the embryo.
- ❖ The embryonic testes make male hormones, and these hormones direct the development of male features in a baby boy.
- ❖ Without a Y chromosome and a SRY gene, the same ridge of cells develops into an ovary in XX embryos. Female hormones then direct the development of female features in the baby girl.

A DNA junkyard

- ❖ The Y chromosome is very different from X and the 22 other chromosomes of the human genome.
- ❖ It is smaller and bears few genes (only 27 compared to about 1,000 on the X).
- ❖ These include SRY, a few genes required to make sperm, and several genes that seem to be critical for life – many of which have partners on the X.
- ❖ Many Y genes (including the sperm genes RBMY and DAZ) are present in multiple copies.
- ❖ Some occur in weird loops in which the sequence is inverted and genetic accidents that duplicate or delete genes are common.
- ❖ The Y also has a lot of DNA sequences that don't seem to contribute to traits.
- ❖ This "junk DNA" is comprised of highly repetitive sequences that derive from bits and pieces of old viruses, dead genes and very simple runs of a few bases repeated over and over.
- ❖ This last DNA class occupies big chunks of the Y that literally glow in the dark; you can see it down the microscope because it preferentially binds fluorescent dyes.

Y chromosome is weird!

- ❖ We have a lot of evidence that 150 million years ago the X and Y were just a pair of ordinary chromosomes (they still are in birds and platypuses).
- ❖ There were two copies – one from each parent – as there are for all chromosomes.

- ❖ Then SRY evolved (from an ancient gene with another function) on one of these two chromosomes, defining a new proto-Y.
- ❖ This proto-Y was forever confined to a testis, by definition, and subject to a barrage of mutations as a result of a lot of cell division and little repair.
- ❖ The proto-Y degenerated fast, losing about 10 active genes per million years, reducing the number from its original 1,000 to just 27.
- ❖ A small “pseudoautosomal” region at one end retains its original form and is identical to its erstwhile partner, the X.
- ❖ There has been great debate about whether this degradation continues, because at this rate the whole human Y would disappear in a few million years (as it already has in some rodents).

Spoiler alert

- ❖ The Y turns out to be just as weird as we expected from decades of gene mapping and the previous sequencing.
- ❖ A few new genes have been discovered, but these are extra copies of genes that were already known to exist in multiple copies.
- ❖ The border of the pseudoautosomal region (which is shared with the X) has been pushed a bit further toward the tip of the Y chromosome.
- ❖ We now know the structure of the centromere (a region of the chromosome that pulls copies apart when the cell divides), and have a complete readout of the complex mixture of repetitive sequences in the fluorescent end of the Y.

Conclusion

- ❖ The most important outcome is how useful the findings will be for scientists all over the world. It's a new era for the poor old Y.

WHAT ARE THE CHANGES TO THE PROCESS FOR SALE OF SIM CARDS?

Introduction

- ❖ Seeking to further tackle the menace of cybercrimes and financial fraud, Union Minister for Telecommunications Ashwini Vaishnaw introduced two reforms. These entail a revision of norms for bulk procurement of SIM cards and registering the final point of sale (PoS) by the licensees (or providers). The reforms are meant to strengthen the citizen-centric portal Sanchar Saathi that was launched in May this year with the same objective.

Sanchar Saathi

- ❖ Broadly, the citizen-centric portal allows citizens to check the connections registered against their names, block mobile phones which are stolen or lost, report fraudulent or unrequired connections and verify the genuineness of a device (before a purchase) using the IMEI (International Mobile Equipment Identity).
- ❖ Sanchar Saathi has, till date, analysed 114 crore active mobile connections.

The reforms on PoS

- ❖ From now on, it will be mandatory for franchisee, agents and distributors of SIM cards — all PoS — to be registered with the licensees or the telecom network operator.
- ❖ The onus would be on the operator to carry out an “indisputable” verification of the PoS.
- ❖ Importantly, police verification (of the dealer) is mandatory.
- ❖ Existing SIM card providers have been given 12 months to comply with the registration requirements.
- ❖ If the PoS is found to be involved in any illegal activity, the agreement would be terminated with the entity being blacklisted for three years. It would also draw a penalty of ₹10 lakh.
- ❖ The DoT holds that these provisions would help in identifying, blacklisting and eliminating rogue PoS, from the licensees' system and provide and encouragement to the upright PoS.

About bulk SIM cards

- ❖ Broadly, the latest provisions would replace the system of ‘bulk procurement’ of SIM cards (by businesses, corporates or those meant for specific events) with a system of entailing ‘business’ connections — sizeable procurement by a registered business entity or enterprise.
- ❖ Elaborating on the premise, 20% of bulk-procured SIMs were misused.

- ❖ In the guise of bulk connections, a lot of SIMs would be procured and then they would make automated calls using a SIM-box.
- ❖ The minister added that another mechanism entailed using a certain number of SIMs from the bulk procurement to make a certain number of calls, destroying them and then using another batch.
- ❖ The latest reforms would endeavour to address these issues. The new norms maintain that though businesses can procure any number of connections, it would be subject to completing KYC requirements for all end-users.
- ❖ In other words, the final user— the executive who would be holding the connection — would have to undergo the KYC procedure.
- ❖ In order to prevent the misuse of printed Aadhaar, the provisions mandate that demographic details would be required by scanning the QR code of the printed Aadhaar. Subscribers would also have to undergo the entire KYC procedure for replacing their SIM; for a period of 24 hours, all outgoing and incoming SMS facilities would be barred.

Conclusion

- ❖ Thus, it would be essential to determine if they possess adequate infrastructure to carry out the entire process and more importantly have the necessary safeguards while dealing with such sensitive data.



CivilsTap Hlmachal

ENVIRONMENT

THE HOLOCENE CLIMATE ANOMALIES

INTRODUCTION

- ❖ Some headlines proclaimed recently that a particular day in July was the warmest in more than a 100,000 years. It is not scientifically possible to make such a claim.

TEMPERATURE ESTIMATES

- ❖ Temperature estimates from before thermometers were invented are derived from “palaeo proxies”.
- ❖ These are biological and chemical signatures of the temperature somewhere having been warmer or colder than a specific baseline temperature.
- ❖ Such a baseline is typically from the modern times, when thermometer records have existed.
- ❖ These measures are called “proxies” because they do not directly measure temperatures. Instead, they are simply the responses of physical, biological, and chemical processes to temperatures at that time having been warmer or colder than the baseline value.
- ❖ Another thing we need to make claims about temperatures of a time in the past are some isotopes that undergo a steady rate of radioactive decay.
- ❖ Knowing this rate, and the expected quantity of the isotope X years ago, scientists can estimate how long it took to diminish to its present quantity.
- ❖ Based on the length of time one needs to go back to, the isotopes could be of carbon or lead, based on their half-lives (5,000 to more than 10 million years).

LONGER AND SHORTER TIMESCALES

- ❖ A major assumption required to make the “paleo proxy” technique workable is that the processes that produced the proxies have operated similarly back then as they do today.
- ❖ More specifically, and crucially, for a period of hundreds of thousands of years, proxies – which are typically buried in the ocean and lake sediments – can only record temperature anomalies, i.e. deviations from the baseline, on time scales of centuries, if not thousands of years.
- ❖ They are mixed by the ocean water above and the microbes within, smoothing out the information they contain over such long timescales.
- ❖ From this object, it is almost impossible to estimate even decadal or annual changes in long-term temperature.
- ❖ Scientists derive estimates of temperature anomalies over shorter time scales from tree rings, corals, and the shells of marine and terrestrial organisms.

THE HOLOCENE EPOCH

- ❖ The most relevant bit of knowledge experts might wish to piece together today from historical temperature-related anomalies is whether any warming during the Holocene epoch can tell us something about the response of modern humans to climate change.
- ❖ There is some evidence as to the causes of demise of various civilisations in this epoch – and a climate-related event was not always the sole or even the proximal cause.
- ❖ At the same time, modern humans’ (bipedal) ancestors also survived larger climatic changes over the evolutionary timescales of hundreds of thousands of years.
- ❖ The earth’s climate has witnessed glacials, or ice ages, and deglacials for at least a million years. The Holocene itself has been a deglacial period, with a relatively small volume of glaciers compared to a proper ice age.

ENDANGERING CLIMATE ACTION

- ❖ It is scientifically impossible to estimate daily temperatures even for a particular day from last year – unless we have a thermometer measurement.

- ❖ To wish to elicit collective and individual climate action while sacrificing scientific rigour and accuracy is a dangerous approach.
- ❖ It simply amounts to an ‘the end justifies the means’ approach that is likely to lead to a loss of credibility for the climate community.

CONCLUSION

- ❖ Modern societies have placed a considerable amount of trust in their scientists. Squandering this trust could render irreversible damage to the efforts that scientists and government officials have been making to improve global participation in climate negotiations, the willingness of governments to adhere to their climate commitments, and the grass roots initiatives that push governments and businesses into action, and to support communities dealing with the consequences of climate change.

THE CHEETAH’S RETURN

CONTEXT

- ❖ In modern times, human impacts are primarily responsible for species extinctions and biodiversity loss.
- ❖ In India’s context, The cheetah, the only large carnivore made extinct in independent India by human actions, was reintroduced by Indian government in September 2022, reinforcing the government’s commitment to conserving our natural heritage.

CHEETAH IS FLAGSHIP AND UMBRELLA SPECIES OF THE ECOSYSTEM

- ❖ The cheetah served as an evolutionary force and was responsible for the fast speed of the blackbuck, its major prey.
- ❖ Unlike tigers, leopards and lions — ambush predators — the cheetah hunts by chasing its prey and thereby removes the sick, old, as well as young from the population, ensuring the survival of the fittest and keeping the prey population healthy.
- ❖ A top carnivore at the apex of the food chain can sustain its population when lower trophic levels are functioning optimally.
- ❖ This is the philosophy of Project Tiger, which uses the tiger as a flagship to garner resources for conserving intact ecosystems. Several ecosystems in India do not have tigers; cheetahs could serve as a flagship for conservation there.

SUCCESSFUL REINTRODUCTIONS REQUIRE LONG-TERM COMMITMENTS

- ❖ Successful reintroductions require long-term commitments in several areas.
- ❖ Re-wilding ecosystems requires a reduction in biotic pressures by incentivized voluntary relocation of communities, as has been done in tiger reserves. Resources required for these need to be committed to a minimum of three to five sites for the long term (25-30 years).
- ❖ As, India does not have Africa’s vast wilderness with low human densities. However, within the historic range of the cheetah, India approximately one lakh square km under protected areas (PAs). However, Individual PAs by themselves are not big enough to sustain a viable cheetah population in the long term.
- ❖ Therefore, conservation practitioners need to be innovative and manage cheetahs from these sites as a metapopulation artificially moving animals between them to mimic natural dispersal for demographic and genetic viability.
- ❖ Once cheetahs build up a population, they will disperse naturally to colonise larger human-dominated landscapes and may potentially exchange individuals between some of the conservation sites naturally.

CONSERVATION EFFORT OF BIODIVERSITY PROVIDES INCENTIVES FOR LOCAL COMMUNITIES

- ❖ As, conservation efforts lead to relocation of forest dwelling communities, incentives are given to local communities by government to relocate them.
- ❖ It is a win-win situation for the local people and biodiversity conservation, and an opportunity for governments to earn peoples’ goodwill.
- ❖ Given an opportunity, most forest communities prefer to join mainstream society that gives them access to markets, roads, electricity, hospitals, jobs, and education.
- ❖ Community-based ecotourism, sharing of gate receipts with buffer zone villages, and an increase in real estate with the arrival of biodiversity are some direct economic benefits to local people if schemes are implemented prudently and equitably

- ❖ Along with, A scheme to compensate for livestock predation that is transparent needs to be implemented.
- ❖ If people benefit economically from having cheetahs in their neighbourhood like people in Saurashtra benefit from lions, they are likely to be more tolerant towards the animals.

CHALLENGES RELATED TO INTRODUCTION OF CHETTAH IN KUNO NATIONAL PARK

- ❖ As Southern Africa, from where the cheetahs have been brought, currently has a cold dry winter in response the animals developed a winter coat. Therefore, their physiological cycle is still tuned to the photoperiod of Southern latitudes.
- ❖ In Kuno, they experienced a hot and humid climate — their winter fur accumulated moisture and the radio collars aggravated the condition making their skin itchy and delicate. Scratching resulted in wounds that were infected by maggots.
- ❖ Unfortunately, the inexperience of the field staff did not allow detection of the infection in time which could have led to an easy cure.
- ❖ Given time, the Southern African cheetahs are likely to adapt to the Indian photoperiod and change their biorhythms to time their coat with Indian winters.

CONCLUSION

- ❖ The release of the first inter-continentally translocated cheetahs, gave the project the required prestige. Metapopulation management along with economic benefits to communities is the only way to reestablish Cheetahs in India.
- ❖ The reintroduction project is much required for the ecological security of India. Therefore, threatened species of the savanna and deciduous forests — wolves, caracal, blackbuck, bustards, four-horned antelopes and chinkara — would benefit from the investments in bringing back the cheetah.

HOW AI IS USED TO INCREASE THE FREQUENCY OF ACOUSTIC SIDE CHANNEL ATTACKS

Context

- ❖ Artificial Intelligence (AI) can be used to decode passwords by analysing the sound produced by keystrokes. The study highlighted the accuracy of Acoustic Side Channel Attacks (ASCA) when state-of-the-art deep learning models were used to classify laptop keystrokes and their mitigation.

Defining ASCA

- ❖ To understand Acoustic Side Channel Attacks, one should know Side Channel Attacks (SCAs).
- ❖ SCAs are a method of hacking a cryptographic algorithm based on the analysis of auxiliary systems used in the encryption method.
- ❖ These can be performed using a collection of signals emitted by devices, including electromagnetic waves, power consumption, mobile sensors as well as sound from keyboards and printers to target devices.
- ❖ Once collected, these signals are used to interpret signals that can be then used to compromise the security of a device.
- ❖ In an ASCA, the sound of clicks generated by a keyboard is used to analyse keystrokes and interpret what is being typed to leak sensitive information.
- ❖ These attacks are particularly dangerous as the acoustic sounds from a keyboard are not only readily available but also because their misuse is underestimated by users.
- ❖ While most users hide their screens when typing sensitive information, no precautionary steps are taken to hide the sound of the keystrokes.
- ❖ And though over time, the sound of keyboard clicks has become less profound with devices making use of non-mechanical keyboards, the technology with which the acoustics can be accessed and processed has also improved drastically.
- ❖ Additionally, the use of laptops has increased the scope of ASCAs as laptop models have the same keyboard making it easier for AI-enabled deep learning models to pick up and interpret the acoustics.

The accuracy

- ❖ The study found that when trained on keystrokes by a nearby phone, the classifier achieved an accuracy of 95%, the highest accuracy seen without the use of a language model.

- ❖ When a deep learning model was trained on the data with default values, the model was able to acquire a meaningful interpretation of the data.
- ❖ Additionally, when the AI model was made to recognise keystrokes using audio captured through a smartphone microphone, it was able to achieve 95% accuracy.

ASCA attacks

- ❖ ASCA attacks are not new and have been around since 1950 when acoustic emanations of encryption devices were used to crack their security.
- ❖ Over the past decades, researchers have published papers talking about the threats from ASCA attacks with the advent of modern technology that brought more microphones in close proximity to keyboards, making it easier to collect and interpret acoustic data.
- ❖ However, with the increasing use of AI and the accuracy with which deep learning models can recognise and analyse keystrokes, the threat from ASCA has resurfaced.

Protection against ASCA

- ❖ While there is no explicit means of defence against ASCAs, simple changes to typing could reduce the chances of attacks.
- ❖ Using touch-based typing can also reduce the chances of successful keystroke recognition from 64% to 40%, making it more difficult for threat actors to leak sensitive information.
- ❖ Additionally, changes in typing style and creating stronger passwords that use a combination of upper- and lower-case alphabets can make it more difficult for criminals to launch successful ASCA attacks.

Way forward

- ❖ Users should also avoid the use of easily recognisable phrases which can make it easier for AI models to predict the text.

ON PROTECTING THE BIODIVERSITY OF THE NORTHEAST

Context

- ❖ To aim for a 10 trillion-dollar economy, without protecting India's environment, is a goal not worth pursuing.

Development and Environment protection

- ❖ Fostering tourism, undertaking construction projects and developing infrastructure are ways through which a State generates revenue and creates employment opportunities.
- ❖ However, some of them come at a steep environmental cost.
- ❖ In the recent case of Re: Cleanliness of Umiyam Lake versus State of Meghalaya (2023), the Chief Justice Sanjib Banerjee and Justice W. Diengdoh, in its order, stated that "In the absence of any other employment opportunities and in the name of promoting tourism, the natural beauty of the State should not be destroyed".

The biodiverse northeast India

- ❖ Northeast India is a green belt region due to its abundant natural resources such as oil, natural gas, minerals and fresh water.
- ❖ The Garo-Khasi-Jaintia hills and the Brahmaputra valley are some of the most important biodiversity hotspots.
- ❖ Though the northeast is industrially backward, deforestation, floods, and existing industries are causing serious problems to the environment in the region.
- ❖ An environmental assessment of the North East Rural Livelihood Project undertaken by the Ministry of Development of the North-eastern Region lays out that Northeast India lies within ecologically fragile, biologically rich region, highly prone to climatic changes, located in trans boundary river basins.
- ❖ Both flora and fauna of the areas are under threat due to deforestation, mining, quarrying, shifting cultivation.

Environmental laws

- ❖ Thus far a considerable number of environmental laws and policies have been developed in the country, especially during the 1980s.

- ❖ Offences related to or against the environment have also taken the shape of “public nuisance” under Sections 268 to 290 of the Indian Penal Code (IPC), 1860, dealing with pollution of land, air, and water.
- ❖ However, as the Sixth Schedule of the Constitution grants autonomy to District Councils, it limits the authority of the State over matters pertaining to the jurisdiction of the District Councils, including the use of land.
- ❖ In many instances, like in the case of the Umiyam Lake, the District Councils do not place any regulations for the preservation and protection of land, especially those around waterbodies.
- ❖ PILs and judicial activism encouraged under Articles 32 and 226 of the Constitution led to a wave of environmental litigation.
- ❖ The enforcement of strict guidelines and imposition of heavy penalties by judicial and quasi-judicial organs of the State, often rescue the ecologically sensitive flora and fauna of these regions.

The pressing priority

- ❖ Central and State governments have to develop infrastructure, generate revenue and create employment through sustainable policies.
- ❖ The ‘Negative List’ in the North East Industrial Development Scheme (NEIDS), 2017 is a step in the right direction.
- ❖ If an entity is not complying with environment standards; not having applicable environmental clearances; does not have consent from the concerned pollution boards, it will not be eligible for any incentive under the NEIDS and will be put on the ‘negative list’.
- ❖ Similarly, the ‘Act Fast for Northeast’ policy should not only include “trade and commerce” but also the preservation of “environment and ecology” in the region.

Conclusion

- ❖ The government should consider the case of creating a uniform environmental legislation, which caters to environmental issues at all levels of governance.

HIMALAYAN BLUNDERS THAT ARE RAVAGING THE HIMALAYAS

Introduction

- ❖ Wonder-struck by the beauty and the magnificence of the Himalaya, the snow-covered peaks, though increasingly diminishing, may still awaken the poet in us, but the barrenness of the hills below tell us the real story — that of steady environmental depredation.

About

- ❖ Today, the repeated tragedies of bridges, roads and buildings being swept by raging rivers in the hill States of Uttarakhand and Himachal Pradesh, epitomise a flawed developmental paradigm institutionalised in an eco-fragile region.
- ❖ Blocked roads after a landslide at Chamoli and sinking in Joshimath in Uttarakhand, road caving in Chamba in Himachal, accidents on the Char Dham routes, and deaths on the all-weather road are reports that have become everyday news from “Devbhoomi” (land of the gods).

Road project, bypassing the rules

- ❖ In 2016, the Chardham Mahamarg Vikas Pariyojna, a massive infrastructure project of road widening to double-laning with a paved shoulder (DLPS) design was implemented in the Garhwal region and a short stretch of Kumaon in Uttarakhand.
- ❖ The project has claimed lakhs of trees and acres of forest land, many human and animal lives, and also the fertile topsoil of the fragile Himalaya.
- ❖ By law, a project of more than 100 km needs environmental clearance. But ambitious projects for tourism and plans that are the result of election agendas are time bound.
- ❖ All laws of land are bypassed. In this case, this massive project was broken up into 53 small projects, each less than 100 km long, thus by-passing environmental impact assessment (EIA) requirements.
- ❖ The dense forests around Chamba, Agrakhal Maletha, Shivpuri, Rudraprayag, Chamoli, Agastmuni, Karnaprayag and Kund (all Uttarakhand) and other such lush green sites are vanishing.
- ❖ Amid the rapacious nature of the Chardham Mahamarg Vikas Pariyojna, only one pristine patch, i.e., the Bhagirathi Eco Sensitive Zone (BESZ), remains.

- ❖ BESZ has the only natural free flow that is left of the Ganga river and was declared a protected site in December 2012 under the Environment Protection Act, 1986.

The underlying issue

- ❖ BESZ stretch is of approximately 100 km could not be touched by the Chardham Mahamarg Vikas Pariyojna project without an approved zonal master plan (ZMP) and a detailed EIA.
- ❖ To facilitate the Chardham Mahamarg Vikas Pariyojna, the ZMP was given hasty approval, negating the directions of even the Supreme Court of India.
- ❖ The mandatory and detailed EIA was not done. And, finally, the BESZ monitoring committee's approval was overseen by most of the State officials on the committee without any discussion or suggestions being made.
- ❖ While experts have repeatedly pointed out that the Chardham shrines of Uttarakhand are already overburdened, their carrying capacities have been increased ignoring all scientific rationale to blindly boost the tourism sector and perhaps to justify the excessively road widening that the government is pursuing in the most vulnerable section of Himalaya.
- ❖ However, after the recent warning signals by mother nature, the State governments of Uttarakhand and Himachal Pradesh propose a reassessment of carrying capacity.
- ❖ The Supreme Court too is setting a committee for the same, but the larger question is whether the recommendations will be implemented or not.

Saving the Gangotri, need for regulation

- ❖ One of the most challenging issues for the Ganga's rejuvenation is conservation of the Gangotri glacier, which is also the fastest receding glacier.
- ❖ With an increase in vehicular movement and episodes of forest fires, black carbon deposits (carbon plus soot) are rising on the glacier, escalating its melting.
- ❖ Black carbon absorbs more light and emits infra-red radiation that increases the temperature. Therefore, an increase in black carbon in the high Himalaya contributes to the faster melting of glaciers.
- ❖ In the persistent debate of environment versus development of the hills, there is a very simple solution to all the chronic and acute problems that the hills face — regulation.
- ❖ In BESZ, the upgradation of roads to an intermediate road width, that will have minimal environmental impact, is the only possible and sustainable solution.

Way forward

- ❖ If reducing a few metres of road width helps ensure the conservation of the only pristine stretch of the Ganga and protection of the Himalaya, then we must make sincere efforts to amend the plan.
- ❖ Most importantly, no development can be sustained if it ends up destroying the main lifeline for millions of people and future generations.



Live
Fee
45000/-

**HPAS Offline/
Live Course**

Offline
Fee
65000/-

Fee
25000/-

**HPAS
Online Course**

Live
Fee
55000/-

**HPAS
Weekend
Offline/Live
Course**

Offline
Fee
75000/-

Fee
25000/-

**HPAS
Hindi Medium
Online Course**

Fee
12500/-

**NT/Allied
Online Course**

Live
Fee
25000/-

**NT/Allied
Offline/
Live Course**

Offline
Fee
38000/-

Fee
10000/-

**HPAS
Prelims + Mains
Test Series**

Fee
4500/-

**HP Govt.
Combo Batch**

Fee
3000/-

**HP Patwari
Online Course**



Fee
6000/-

**HP TGT
Non-Medical
Online Course**

Fee
6000/-

**HP TGT
Medical Online
Course**

Fee
5000/-

**HP TGT Arts
& Commerce
Online Course**

**PGT
Online Course**

Fee
2000/-

**HP TET
Online Course**