

## ABOUT CURRENT CONNECT

It gives us immense pleasure to present an innovative approach to master current affairs. Current is a passing wind and diverse issues happen at the same time. It is to an extent chaotic. Newspapers, magazines and various other sources report the chaos per se. With our experience of current affairs we have tried to give “the current” a medium to travel. It is the syllabus of the UPSC with their components that are the medium through which the “Current is Passed” to the readers. Ever since the new syllabus of the UPSC came into existence, current has been gaining significance both at prelims as well as mains examination. This book is meant to cover current affairs and related questions arising from those events. We have not only covered the current events for their factual contents but also presented it in such a way that any question asked from that topic gets covered. Moreover, topics are also “peppered” with the relevant facts/key concepts that are related to the theme. We have also given questions for practice both, subjective and objective, so that candidates are oriented to the examination mode. It is a collection covering myriad source yet in a manageable size. To use this book we recommend you to master the components of general studies (GS) syllabus as broken into rows and columns (provided in the beginning after preface). Each cell comprising of the portion of GS becomes the connect for the current and every news subsequently covered guides the reader to the address of the syllabus. It is logical to expect that same issue may be connected to more than one topic of the syllabus. Further, the news also has some additional vistas opened for the readers by adding a box with a title “PEPPER IT WITH” where we expect the students to build further around the theme.

We are also trying to reach the remotest part of the country with our spirit and zeal of “Mains Answer Writing”, which has been admired by students, CSE rankholders and other scholars. Continuing in line with the effort, we have started with programs like 7 Question (7Q) Challenge, Shell Points, Stock Points, Content Enrichment Booklet etc.

When it comes to evaluation, we are altogether at a different level. We are also reaching every nook and corner with this expertise for the aspirants of CSE. Now you can write a Mains Answer and get it evaluated from our Expert Team and can get Feedback. [Drop a mail at evaluation@ksgindia.com for registering yourself in our race to perfection.](mailto:evaluation@ksgindia.com) Don't wait, it's your golden chance to crack this exam and fulfill your passionate dream.

Team KSG

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

**POLITY**

**Minimum Marriage Age of Women**

**News Excerpt**

The Union Cabinet’s decision to raise the legal age of marriage for women is based on the recommendation of a panelled by Jaya Jaitly.

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**Pre-Connect**

- The task force was set up by the Union Ministry of Women and Child Development to re-examine age of marriage and its correlation to health and social indices such as infant mortality, maternal mortality, and nutrition levels among mothers and children.
- The Prohibition of Child Marriage (Amendment) Bill, 2021, which seeks to raise the age of legal marriage for women from 18 to 21, will apply to all communities in the country and, once enacted, will supersede existing marriage and personal laws.
- There is a minimum age of marriage to outlaw the child marriage. This is done through special legislation such as the Prohibition of Child Marriage Act, 2006 and the Protection of Children from Sexual Offences Act, 2012.
- Under the Child Marriage Prevention Act, any marriage below the prescribed age is illegal and the perpetrators of a forced child marriage can be punished.
- Personal laws that govern marriage and other personal practices for communities prescribe certain criteria for marriage, including age of the bride and groom. E.g., Section 5(iii) of The Hindu Marriage Act, 1955, sets a minimum age of 18 for the bride and 21 for the groom. This is the same for Christians under the Indian Christian Marriage Act, 1872 and the Special Marriage Act. For Muslims, the criteria are attaining puberty, which is assumed when the bride or groom turns 15.

**Fact Sheet**

- ❖ Goal 5 of the Sustainable Development Goals (SDGs) categorically asks nation-states to formulate policies to achieve gender equality.
- ❖ India had ratified the Convention on the Elimination of All Forms of Discrimination Against Women in 1993. Article 16 of the Convention strictly forbids child marriage and asks governments to identify and enforce the minimum marriage age for women.
- ❖ Since 1998, India has had national legislation exclusively on human rights protections drafted in consonance with international instruments such as the Universal Declaration of Human Rights, 1948. Protection of women against early and child marriage is a protection of their basic rights.
- ❖ Although India’s maternal mortality ratio has improved to 113 in 2016-18 from 130 in 2014-2016, it is still far below the United Nations Sustainable Development Goals (SDGs) target of 70 deaths per 1,00,000 live births.
- ❖ One of the first law regulating the minimum age of marriage was the Sarda Act or the Child Marriage Restraint enacted in 1929 which was a dead letter and never implemented to protect the sentiments of various communities.

**The opposition arguments**

- Experts have been opposing a raised age of marriage on two broad counts. First, the law to prevent child marriages does not work. While child marriage has declined, it has been marginal: from 27% in 2015-16 to 23% in 2019-20, according to National Family Health Survey (NFHS) 5. The decrease was, however, dramatic in NFHS 4, from 47% in NFHS 3.
- The marriage age at 18 was set in 1978, but child marriage started to decline only in the 1990s, when the government stressed

primary education of the girl child and took measures to reduce poverty. The experts are of the view that girls being taken out of school to be married off is a reasoning blown out of proportion; often the girl child drops out after primary school simply because she has no access to higher education, and is then married off.

- The second objection being raised is the criminalisation of a large number of marriages that will take place once the law comes into effect. While 23% of marriages involve brides under age 18, far more marriages take place under age 21. The median age at first marriage for women aged 20-49 increased to 19 years in 2015-16 from 17.2 years in 2005-06, but remained under 21 years.

**Who will be the beneficiaries of the decision?**

- ✓ According to the panel, the recommendation is not based on the rationale of population control (India’s total fertility rate is already declining) but more with women’s empowerment and gender parity. The committee is of the view that the access to education and livelihood must be enhanced simultaneously for the law to be effective.
- ✓ Experts noted that 70% of early marriages take place in deprived communities such as SCs and STs, and said the law will simply push these marriages underground instead of preventing them. According to NFHS 4 (2015-16), the median age at first marriage for women aged 25-49 is higher among the social categories of Others (19.5 years), OBC (18.5), ST (18.4) and SC (18.1).
- ✓ Rural women will be affected more than urban women. According to NFHS 4, the median age at first marriage (age 25-49) for urban women (19.8) is 1.7 years more than that for rural women (18.1).
- ✓ A study by the International Centre for Research on Women has found that girls out of school are 3.4 times more likely to be married or have their marriage already fixed than girls who are still in school.
- ✓ According to the State of the World Report 2020 by UNFPA, in India, 51% of young women with no education and 47% of those with only a primary education had married by age 18, compared to 29% of young women with a secondary education and 4% with post-secondary education.



**Analytica**

- The government argues that this will empower women and ensure gender parity. For men it is already 21. That might sound possible at first glance, but seen against the backdrop of increasing social and state control over marriage, the proposed law may be disturbing. As critics have pointed out, an 18-year-old person can vote and is considered an adult in other laws, but when it comes to marriage everyone is considered a child until 21.
- Marriage is of course an instrument of social control, but is also a route of escape from conservative shackles for many women.

- There is no law that targets inter-caste marriages, but the stringent conditions of the Special Marriages Act (SMA) make them also difficult.
- When India starts to treat everyone under 21 a child for the purpose of marriage, how far are we from denying them the right to be counted as adults with regard to sexual autonomy. Age of consent was 14 in 1925, 16 in 1940 and 18 in 2013. No girl below the age of 18 can be considered to have given consent to sex, according to the existing law.
- Raising the age of marriage and age of consent have both been considered as progressive measures to favour women, for historical reasons in India. Already, anecdotal evidence suggests widespread criminalisation of consensual sex with girls below 18, at the behest of families.

- ❖ The marriage bill has been sent to a parliamentary committee, but another piece of legislation that was passed makes changes to the law relating to elections. It amends both The Representation of the People Acts of 1950 and 1951. Ironically, in the context of defining everyone under 21 as a child in the marriage law, the election law amendment reinforces the voting rights of 18-year-olds.
- ❖ The Bill also increases the number of qualifying dates for the revision of electoral rolls from one per year to four. At present, January 1 of each year is the qualifying date. Every year, those turning 18 on or before that day is eligible to be a voter. This has been amended to include April 1, July 1 and October 1 so that one need not wait for the end of the year to apply for inclusion.

**Conclusion**

- ✚ Equality emanates from equal laws and social transformations are both the precursors of laws and a consequence of them. A change in law also fundamentally changes social perceptions in progressive societies.
- ✚ The regressive perception that marriage provides women with social protections and recognition needs to change.
- ✚ It has been established that child marriage exposes women to early pregnancy, malnutrition, and violence (mental, emotional, and physical). Such marriages have, therefore, been brought under the ambit of the Prohibition of Child Marriage Act, 2006. However, Section 2(a) of the Act declares women under the age of 18 to be children while for men this age is 21.
- ✚ This difference seems to have no justifiable logic. The age of voting can be equal for men and women under the Representation of Peoples Act, and the age to consensually, wilfully, and validly enter into a contract is the same for men and women.
- ✚ What has stopped us from instilling equality in the age requirements to enter into a valid marriage? This difference in criteria was more social than biological. The general arguments based on local value judgments that women should be younger in a marriage union have faded with time. Today, women stand on equal footing to men in all possible spheres of life.

**PEPPER IT WITH**

Equality before Law and Equal Protection of Laws, Exceptions to the right to equality, Prohibition of Discrimination on Certain Grounds

**Inter-State border dispute between Karnataka and Maharashtra**

**News Excerpt**

An inter-state border dispute between Karnataka and Maharashtra dating back to the period of Independence and the reorganisation of states on linguistic lines in 1956 has reared its head again in the Belagavi region of Karnataka.

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## Pre-Connect

- The successful functioning of the Indian federal system depends not only on the harmonious relations and close cooperation between the Centre and the states but also between the states inter se. Hence, the Constitution makes the following provisions with regard to inter-state comity:
  - Adjudication of inter-state water disputes.
  - Coordination through inter-state councils.
  - Mutual recognition of public acts, records and judicial proceedings.
  - Freedom of inter-state trade, commerce and intercourse.
- The zonal councils have been established by the Parliament to promote inter-state cooperation and coordination.

## Background: An Apple of Discord

### Why are Maharashtra and Karnataka fighting over a district?

- Belgaum was originally part of the erstwhile Bombay Presidency which was a multi-lingual province. Karnataka districts such as Vijayapura, Belagavi, Dharwad and Uttara-Kannada used to be part of the Bombay Presidency.
- After India's independence in 1947, Belgaum came under Bombay State. As per the 1881 census, 64.39 per cent people in Belgaum were Kannada-speakers while 26.04 per cent spoke Marathi.
- However, in the 1940s Marathi-speaking politicians dominated Belgaum and requested to include the district in the proposed Samyukta Maharashtra state.
- Notwithstanding their demands, the States Reorganisation Act of 1956, made Belgaum and 10 talukas of Bombay State a part of the then Mysore State, which was renamed as Karnataka in 1973. The Act divided states along linguistic and administrative lines.



### The Mahajan Commission report

- ✓ The Bombay government lodged a protest with the Centre which led to the formation of the Mahajan Commission under former Chief Justice Mehr Chand Mahajan in 1966.
- ✓ The Commission in its report, released in 1967, granted 264 villages in the disputed region to Maharashtra and 247 villages to Karnataka. However, the commission ruled that the Belgaum should continue in Karnataka.

- ✓ While Maharashtra rejected the report, Karnataka demanded the status quo. In 2006, the Maharashtra government filed a petition in the Supreme Court staking claim over Belgaum city. The state government cited, "feeling of insecurity among the Marathi speaking people living in Karnataka, in the recent days." Meanwhile, Belgaum district along with Belgaum city continues to be a part of Karnataka.

**Conclusion**

The Maharashtra government has challenged the integration of Belagavi with Karnataka and the matter is in the Supreme Court. Maharashtra have also in the past sought declaration of Belagavi as a union territory. The Marathi sympathizers in 2005 passed a resolution when they were in power in the Belagavi City Council to approach the state and centre for integration of Marathi areas in Belagavi with Maharashtra. The Karnataka government ordered dissolution of the BCC over the move. Successive Karnataka governments have passed multiple resolutions endorsing the Mahajan commission report which gave Belagavi to Karnataka excepting for around 200 border villages.

**PEPPER IT WITH**  
Inter-State Trade and Commerce, Zonal Councils, Inter-State Water Disputes

**Multi-State Cooperatives**

**News Excerpt**

Union Home and Cooperation Minister has said the Centre has decided to amend the Multi State Cooperative Societies (MSCS) Act, 2002 to "plug the loopholes in the Act".

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**Pre-Connect**

- Cooperatives are a state subject, but there are many societies such as those for sugar and milk, banks, milk unions etc. whose members and areas of operation are spread across more than one state. The Act was passed to govern such cooperatives. E.g., most sugar mills along the districts on the Karnataka-Maharashtra border procure cane from both states.
- Cooperatives draw their membership from both states, and they are thus registered under the MSCS Act. Their board of directors has representation from all states they operate in.
- Administrative and financial control of these societies is with the central registrar, with the law making it clear that no state government official can wield any control on them.

**Why does the government plan to amend the Act?**

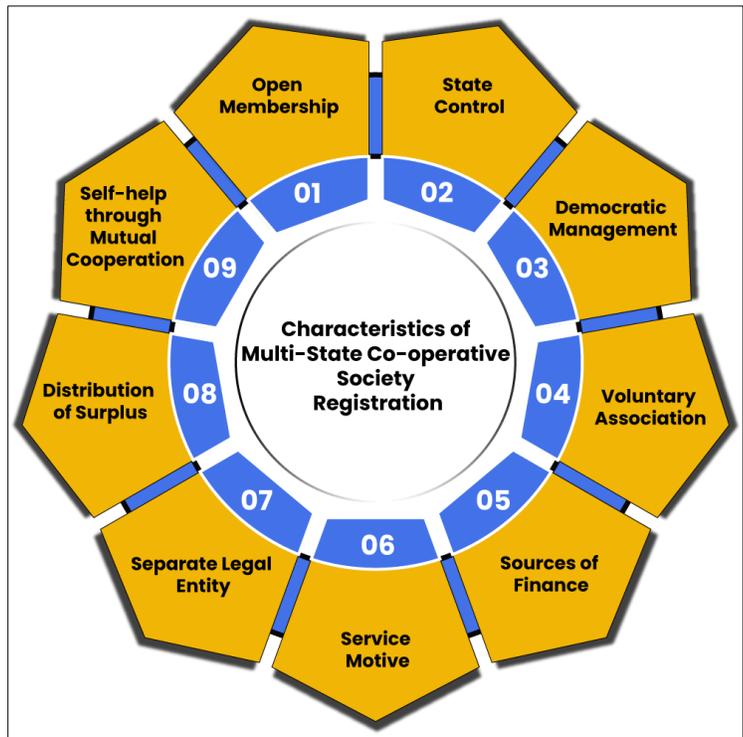
- Experts on cooperatives talk of loopholes in the Act. The exclusive control of the central registrar, who is also the Central Cooperative Commissioner, was meant to allow smooth functioning of these societies. The central Act cushions them from the interference of state authorities so that these societies are able to function in multiple states. What was supposed to facilitate smooth functioning, however, has created obstacles.
- Experts pointed out for state-registered societies, financial and administrative control rests with the state registrars who exercise it through district- and tehsil-level officers. Thus, if a sugar mill wishes to buy new machinery or go for expansion, they would first have to take permission from the sugar commissioner for both. Post this, the proposal would go to the state-level committee that would float tenders and carry out the process.
- While the system for state-registered societies includes checks and balances at multiple layers to ensure transparency in the process, these layers do not exist in the case of multistate societies. Instead, the board of directors has control of all finances and administration. For

**PEPPER IT WITH**  
Laws Inconsistent with Fundamental Rights, Cultural and Educational Rights, Right to Constitutional Remedies

expenditure above a certain level, the annual general body meeting of the society has to be called. The annual report of these societies has to be submitted either online or offline to the central registrar before September every year.

**What are the other issues with the Act?**

- ✓ Many experts have noted there is an apparent lack of day-to-day government control on such societies. Unlike state cooperatives, which have to submit multiple reports to the state registrar, multistate cooperatives need not. The central registrar can only allow inspection of the societies under special conditions, a written request has to be sent to the office of the registrar by not less than one-third of the members of the board, or not less than one-fifth of the number of members of the society. Inspections can happen only after prior intimation to societies.
- ✓ The on-ground infrastructure for central registrar is thin. There are no officers or offices at state level, with most work being carried out either online or through correspondence. For members of the societies, the only office where they can seek justice is in Delhi, with state authorities expressing their inability to do anything more than forwarding their complaints to the central registrar.
- ✓ There have been instances across the country when credit societies have launched ponzi schemes taking advantage of these loopholes. Such schemes mostly target small and medium holders with the lure of high returns. Fly-by-night operators get people to invest and, after a few instalments, wind up their operations. In Maharashtra, the state commissioner used to get multiple complaints of this nature but could not take any action, given the lack of ground staff necessary for verifying the antecedents of such societies.
- ✓ Sugar industry experts spoke of a mill in Sangli, which was registered under the central Act and then privatised after the then board of directors passed a resolution. This mill was among the 68 sold off by the Maharashtra State Cooperative Bank for defaulting on loans. Taking advantage of the multistate status, the mill declared itself as a sick unit before it was auctioned off.



**Conclusion**

The Centre is holding extensive consultations with experts from various fields like bankers, sugar commissioners, cooperative commissioners, housing societies federations etc. Senior central government officials opines that they will also increase their manpower, first in Delhi and then in the states, to ensure better governance of the societies. Also, technology will be used to bring in transparency. Administrative control of such societies should be vested in the state commissioners. This way, day-to-day control can be wielded to ward off cases of fraud.

## Statutory bail

### News Excerpt

Civil rights groups, even as welcoming the Supreme Court order granting default bail to Advocate Sudha Bharadwaj, have demanded that release of all human rights defenders arrested in the Bhima Koregaon (BK) case.

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### Pre-Connect

- Default bail is also known as the statutory bail, this is a right to bail that accrues when the police fail to complete investigation within a specified period in respect of a person in judicial custody.
- This is enshrined in Section 167(2) of the Code of Criminal Procedure where it is not possible for the police to complete an investigation in 24 hours, the police produce the suspect in court and seek orders for either police or judicial custody. This section concerns the total period up to which a person may be remanded in custody prior to filing of charge sheet.
- For most offences, the police have 60 days to complete the investigation and file a final report before the court. However, where the offence attracts death sentence or life imprisonment, or a jail term of not less than 10 years, the period available is 90 days. In other words, a magistrate cannot authorise a person's judicial remand beyond the 60-or 90-day limit.
- At the end of this period, if the investigation is not complete, the court shall release the person "if he is prepared to and does furnish bail".
- The right of an accused, an undertrial prisoner or a convicted person awaiting appeal court's verdict to seek bail on suspension of sentence is recognised in Sections 439, 438 and 389 of the Code of Criminal Procedure.

### How does the provision vary for special laws?

- The 60- or 90-day limit is only for ordinary penal law. Special enactments allow greater latitude to the police for completing the probe. In the Narcotic Drugs and Psychotropic Substances Act, the period is 180 days. However, in cases involving substances in commercial quantity, the period may be extended up to one year. This extension beyond 180 days can be granted only on a report by the Public Prosecutor indicating the progress made in the investigation and giving reasons to keep the accused in continued detention.
- In the Unlawful Activities (Prevention) Act, the default limit is 90 days only. The court may grant an extension of another 90 days, if it is satisfied with a report by the Public Prosecutor showing the progress made in the investigation and giving reasons to keep the accused in further custody. These provisions show that the extension of time is not automatic but requires a judicial order.

### What are the laid-down principles on this aspect?

Default or statutory bail is a right, regardless of the nature of the crime. The stipulated period within which the charge sheet has to be filed begins from the day the accused is remanded for the first time. It includes days undergone in both police and judicial custody, but not days spent in house-arrest. A requirement for the grant of statutory bail is that the right should be claimed by the person in custody. If the charge sheet is not filed within the stipulated period, but there is no application for bail under Section 167(2), there is no automatic bail. In general, the right to bail on the investigation agency's default is considered an 'indefeasible right', but it should be availed of at the appropriate time.

### What happened in Sudha Bharadwaj's case?

In the Bhima Koregaon case, which is under UAPA, the prosecution got the 90-day limit extended to 180 days. Ms. Bharadwaj completed 90 days in prison in January 2019, but the charge sheet

was filed later. Meanwhile, she had applied for default bail on the ground that the extension given by a Sessions Court earlier was without jurisdiction. The court agreed that only a Special Court could have authorised the extension beyond 90 days. Therefore, she was entitled to statutory bail. However, eight others, who had argued that the court order taking cognisance of the charge sheet was defective, but did not specifically seek default bail, were not given the same relief.

**Conclusion**

The National Investigation Agency (NIA) has approached the Supreme Court against a Bombay High Court order granting bail to advocate and activist Sudha Bharadwaj. In its bail order, the court has asked the NIA Court to decide the conditions for her release on December 8. While she was given 'default bail', eight others were denied the benefit in the same case. The case highlights the nuances involved in a court determining the circumstances in which statutory bail is granted or denied, even though it is generally considered "an *indefeasible right*". It is unfortunate that courts seem to be considering bail only on medical grounds, and in this one case, on the ground of default. It is time they examined the merit behind the sweeping claims in the charge sheet and also took heed of Supreme Court judgments that have granted bail even under UAPA if the trial is unlikely to be completed in the foreseeable future.

**PEPPER IT WITH**  
Civil Society, Pressure Groups,  
Anticipatory bail, Interim bail

**Central Bureau of Investigation (CBI)**

**News Excerpt**

Supreme Court has said the provision that makes state government's prior approval mandatory for the CBI's investigation in its jurisdiction is in tune with the principle of federalism that guarantees sharing of powers between the centre and states.

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**Pre-Connect**

- The functioning of the Central Bureau of Investigation is regulated by the Delhi Special Police Establishment (DSPE) Act, 1946.
- Sections 5 and 6 of the DSPE Act deal with the extension of powers and jurisdiction of special police establishment to other areas and the requirement of consent of the state governments.
- Section 5 of the DSPE Act reads: **Extension of powers and jurisdiction of special police establishment to other areas:** -
  - (1) *The Central Government may by order extend to any area (including Railways areas), in a State, not being a Union territory, the powers and jurisdiction of member of the Delhi Special Police Establishment for the investigation of any offences or classes of offences specified in notification under section 3.*
  - (2) *When by an order under sub-section (1) the powers and jurisdiction of members of the said police establishment are extended to any such area, a member thereof may, subject to any orders which the Central Government may make in this behalf, discharge the function of a police officer in that area and shall, while so discharging such functions, be deemed to be a member of a police force of that area and be vested with the powers, functions and privileges and be subject to the liabilities of a police officer belonging to that police force.*
  - (3) *Where any such order under sub-section (1) is made in relation to any area, then, without prejudice to the provisions of sub-section (2) any member of the Delhi Special Police Establishment of or above the rank of Sub-Inspector may subject to any orders which the Central Government may make in this behalf, exercise the powers of the officer in charge*

*of a police station in that area and when so exercising such powers, shall be deemed to be an officer in charge of a police station discharging the functions of such an officer within the limits of his station.]*

- Section 6 of the DSPE Act reads: **Consent of State Government to exercise of powers and jurisdiction:** - *Noting contained in section 5 shall be deemed to enable any member of the Delhi Special Police Establishment to exercise powers and jurisdiction in any area in 5[a State not being a Union Territory or railways area], Without the consent of the Government of that State.]*

**Highlights of the verdict**

- Referring to the sections 5 and 6 of the DSPE Act, the Supreme Court has said that though Section 5 enables the Centre to extend powers and jurisdiction to the DSPE members beyond union territories to a state, Section 6 makes it compulsory to take prior approval from the concerned state for the same.
- The Supreme Court’s clarification comes at a time when at least eight states, have withdrawn their consent to the CBI to initiate fresh probes in their jurisdictions. The states include Kerala, West Bengal, Jharkhand, Punjab, Mizoram, Jharkhand, Rajasthan and Chhattisgarh.
- Meanwhile, it may be noted that the federal structure of the Indian Constitution is at times described as “quasi federal”. The Supreme Court has on multiple occasions commented on the structure of the Indian Constitution in this regard.
- In the often-quoted, *SR Bommai vs Union of India case*, the Supreme Court had described federalism as “a concept which unites separate States into a Union without sacrificing their own fundamental political integrity.”
- Obviously, the provisions are in tune with the federal character of the Constitution. The Supreme Court said referring to the DSPE Act sections, besides asserting that federalism has been held as one of the basic structures of the Constitution.
- The Supreme Court, being the final interpreter of the Constitution, may declared as void any law enacted by the Parliament if it violates the Constitution. Terming the provisions of the DSPE Act as in tune with the principle of federalism, the court has given a strong message regarding the rights guaranteed to the states under the constitutional sharing of powers.
- The court has drawn references to the Constitution of the United States to further assert that there are “limitations” in the Indian Constitution that indicate it is not truly federal in nature as is commonly invoked as understood by lawyers in America.

**PEPPER IT WITH**

Comptroller and Auditor General of India, Attorney General of India, Special Officer for Linguistic Minorities

**Conclusion**

Separate States, therefore, desire to unite so that all the member-States may share in formulation of the basic policies applicable to all and participate in the execution of decisions made in pursuance of such basic policies. Thus, the essence of a federation is the existence of the Union and the States and the distribution of powers between them. Federalism, therefore, essentially implies demarcation of powers in a federal compact.

**Demand for Inclusion of Ladakh under Sixth Schedule**

**News Excerpt**

Parliamentarian from Ladakh demand safeguards for land, employment and cultural identity provided for by the Sixth Schedule of the Constitution. The Ladakh

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MP's demand came a day after the region observed a complete shutdown demanding statehood and protection for land and jobs.

### Pre-Connect

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

#### **Sixth Schedule – How it protects Tribals**

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

### What is at the heart of the demand?

- This has to do with Article 35A, which gave the erstwhile state of Jammu and Kashmir power to define permanent residents who can only buy land or take jobs in the state. However, abolition of Article 370 has taken away this protection from Jammu & Kashmir and Ladakh — two new Union Territories carved out on August 5, 2019.
- Article 35 A was believed to be good for the people of Ladakh as nobody from outside could buy land here. But now, the people as well as council can transfer lands to anyone. This can change if safeguards are granted under the Sixth Schedule. Then after, people here can't transfer land to non-tribals. They can transfer their land to only tribals.
- There are administrative issues too that have cropped up after Ladakh became a Union Territory. At present, the officers at the council are accountable to the Centre. Their transfer and annual progress report is under Centre, so when a decision taken at the council level gets delayed in execution because the person or the chief executive overseeing the development is accountable to the Centre. These issues, can only be resolved when the council is given autonomy under the Sixth Schedule.

- The government to amend the Ladakh Hill Development Council Act, passed in 1997. It needs to be defined what will be the role and responsibility of the central government, the Union Territory administration and the Lieutenant-Governor.
- Along with this, (it needs to define) how the roles of gram panchayats and town councils will be streamlined with. The LAHDC Act also needs to be amended to grant Constitutional safeguards with regard to land, employment and cultural identity on the lines of certain regions in the North-East under the Sixth Schedule.

**Fear of demographic change in Ladakh**

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

**Conclusion**

This development dragged media attention from Ladakh’s border to inner Ladakh when a body called the “Apex Body of Peoples Movement for Sixth Schedule for Ladakh” called for complete boycott of the upcoming sixth round of Ladakh Autonomous Hill Development Council (LAHDC) Leh elections. This came immediately after a media report suggested the central government had defied Ladakh’s demand for inclusion in the Sixth Schedule of the Indian constitution. The Apex Body of Peoples Movement for Sixth Schedule for Ladakh, unanimously resolved to boycott the ensuing 6th LAHDC Leh election till such time the constitutional safeguard under the sixth schedule on the lines of Bodo territorial council in not extended to UT Ladakh and its people.

**PEPPER IT WITH**  
Creation of Union Territories, Administration of Union Territories, Administration of Scheduled and Tribal Areas

**The ‘Right to be Forgotten’ in India**

**News Excerpt**

The Centre recently told the Delhi High Court that the “right to be forgotten” is part of the fundamental right to privacy, but added it has no significant role to play in the matter. Petitions across the courts have been seeking enforcement of this “right” — a legal principle that is not yet backed by statute in India.

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**Pre-Connect**

- Internet users in Europe can make use of their right to be forgotten to get any uncomfortable data removed. The right to be forgotten, also known as the right to erasure, is the common name for a right that was first established in the European Union in 2014 after a ruling by the Court of Justice of the European Union.
- The General Data Protection Regulation (GDPR) adopted by the European Union in 2018 lays out the circumstances under which the right applies. Each request is evaluated individually for its merits.

- The GDPR provides protection for personal information that is incorrect, misleading, excessive, or irrelevant. The right to have personal information removed can be exercised if such data is no longer necessary for the purpose an organisation originally collected it or if it processed the data unlawfully.
- Clause 20 of the Indian Personal Data Protection (PDP) Bill, 2019 provides a mechanism to implement this right. So, all such cases will come under the purview of this law once it is passed. A Joint Parliamentary Committee (JPC) is likely to submit its report on the bill soon.

**What is the right to be forgotten?**

- It allows a person to seek deletion of private information from the Internet. The concept has found recognition in some jurisdictions abroad, particularly the European Union. While the right is not recognised by law in India, courts in recent months have held it to be an intrinsic part of the right to privacy.
- At least eight petitions are pending before Delhi High Court seeking removal of private information from the Internet, court records of previous convictions and proceedings, and news reports of past events. Only a few have been able to get that relief from courts so far.

**Which countries have such laws?**

The EU in 2018 adopted the General Data Protection Regulation (GDPR), Article 17 of which provides for the right to erasure of certain categories of personal data — that which is considered no longer necessary, that for which consent has been withdrawn or processing of which has been objected to, personal data unlawfully processed, and data where there is a legal obligation for erasure. However, the regulations limit the right to erasure in certain circumstances, including for reasons of public interest in the area of public health, for archiving purposes “in the public interest, scientific or historical research purposes or statistical purposes in accordance” and for “establishment, exercise or defence of legal claims.”

Russia in 2015 enacted a law that allows users to force a search engine to remove links to personal information on grounds of irrelevancy, inaccuracy and violation of law. The right to be forgotten is also recognised to some extent in Turkey and Siberia, while courts in Spain and England have ruled on the subject.

**What is the position in India?**

In a brief reply in one of the petitions earlier this week, the Centre told the Delhi High Court that the right to privacy has been recognised as a fundamental right in the K S Puttaswamy judgment (2017) and that the ‘right to be forgotten’ is evolving in India. The government said the Personal Data Protection Bill (a Joint Parliamentary Committee’s report on which was tabled on December 16), contains provisions to the doctrine of the ‘right to be forgotten’.

<p><b>PEPPER IT WITH</b></p> <p>Highlights of the landmark decision on <i>Justice K.S. Puttaswamy v. Union of India</i>, Section 43A and 72A of the Information Technology (Amendment) Act, 2008</p>
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**How have courts ruled on this?**

- ✓ In May 2019, the Delhi High Court dealing with a civil suit seeking removal of certain news reports on MeToo allegations against the managing director of a media house, said the “right to be forgotten” and “right to be left alone” are inherent aspects of the right to privacy, and restrained republication of these news reports.
- ✓ In April 2021, the court directed removal of a judgment from search results; the order is now being opposed by Google. In January 2017, the Karnataka High Court ordered its registry to ensure that any Internet search engine does not reflect a woman’s name in an order passed in 2015. And in November 2020, the Orissa High Court, ruling in a case relating to videos uploaded on Facebook by a rape accused, opined that “allowing such

objectionable photos and videos to remain on a social media platform, without the consent of a woman, is a direct affront on a woman’s modesty and, more importantly, her right to privacy”. It did not, however, pass an order on removal of the videos.

**Conclusion**

- Videos or photos of juvenile brushes with the law, imprudent social media posts made years ago or a glimpse from an uncomfortable moment may be itched in the virtual memory forever, even if you have long forgotten them. They come across as a shock to many when they google their name. And for the rest of the lot, they are uncomfortable secrets which are out in the open. And in both cases, people just want their past to be erased. They simply want to be forgotten by the internet.
- But all this does not mean that anyone can exercise this right to get any information about himself removed. It is not an absolute right and applies in limited situations. An individual can also request removal of data when they no longer consent to processing it. However, a search engine’s right to process someone’s data might override their right to be forgotten. Organisations don’t have an obligation to delete a person’s data if such data is needed to exercise the right to freedom of expression or if there is a legal obligation to keep it. The data is not required to be erased if it is necessary in the public interest, scientific or historical research purposes or statistical purposes. So, a law on the right to be forgotten will go a long way in addressing genuine cases, where people want some uncomfortable piece of information removed from the internet. They will not need to take rounds of courts for this.

## SOCIAL ISSUES, SCHEMES, REPORTS & INDICES

### Foreign funding for charity

#### News Excerpt

Union Home Ministry declined to renew the registration of Missionaries of Charity under the Foreign Contribution (Regulation) Act.

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#### Pre-Connect

- The Foreign Contribution (Regulation) Act, 2010 regulates foreign donations and ensures that such contributions do not adversely affect internal security.
- It was First enacted in 1976, it was amended in 2010 when a slew of new measures was adopted to regulate foreign donations.
- The FCRA is applicable to all associations, groups and NGOs which intend to receive foreign donations. It is mandatory for all such NGOs to register under the FCRA, initially valid for five years that can be renewed subsequently if it complies with all norms.
- The MHA is the controlling authority of FCRA and it conducts inspections and audits of NGOs to establish if their books are in order.
- Registered associations can receive foreign contribution for social, educational, religious, economic and cultural purposes. Filing of annual returns, on the lines of Income Tax, is compulsory.
- In 2015, the MHA notified new rules, which required NGOs to give an undertaking that the acceptance of foreign funds is not likely to prejudicially affect the sovereignty and integrity of India or impact friendly relations with any foreign state and does not disrupt communal harmony.

#### Who cannot receive foreign donations?

Members of legislatures, political parties, government officials, judges, media persons are prohibited from receiving any foreign contribution. However, in 2017 the MHA through the Finance Bill route amended the 1976-repealed FCRA law paving the way for political parties to receive funds from the Indian subsidiary of a foreign company or a foreign company where an Indian holds 50% or more shares.

#### How else can one receive foreign funding?

The other way to receive foreign contributions is by applying for prior permission. It is granted for receipt of a specific amount from a specific donor for carrying out specific activities or projects. But the association should be registered under statutes such as the Societies Registration Act, 1860, Indian Trusts Act, 1882 or Section 25 of the Companies Act, 1956 etc. A letter of commitment from the foreign donor specifying the amount and purpose is also required.

#### When is a registration suspended or cancelled?

The MHA on inspection of accounts and upon receiving any adverse input against the functioning of an association can suspend the FCRA registration initially for a period of 180 days. The MHA can cancel the registration of an organisation which will not be eligible for registration or grant of 'prior permission' for three years from the date of cancellation.

#### What's the matter in hand?

- The Ministry stated that the FCRA registration of Missionaries of Charity, a Catholic religious congregation set up by Nobel laureate Mother Teresa, was not renewed as it did not meet eligibility conditions after "some adverse inputs" were received. It also mentioned audit irregularities.

- The registration under FCRA was valid up to October 31, 2021, but had been extended till December 31, 2021. Ministry of Home affairs did not freeze any account of the Missionaries of Charity but that the State Bank of India had informed it that the organisation itself sent a request to the bank to freeze its accounts, which the Missionaries of Charity too confirmed.
- The registration of thousands of NGOs is due for renewal in 2020-2021. Due to the COVID-19 pandemic and the amendments to the FCRA Act in 2020 that introduced other compliance measures, many NGOs could not complete the process.
- The MHA had given a relief up to September 2021 to NGOs whose registration was expiring between September 29, 2020-September 30, 2021 to apply for a renewal.
- The MHA extended the deadline till December 31. According to Section 16 of the Act, the certificate of registration should be renewed within six months of its expiry.
- The MHA had earlier informed NGOs that it cannot receive or utilise foreign contribution if the certificate of registration has lapsed and not renewed. The NGO registered in Kolkata has more than 250 bank accounts across the country to utilise foreign funds.
- According to the 2020-21 annual financial returns filed by the Missionaries of Charity on December 13, it had received over ₹75 crore worth of donations from 347 foreign individuals and 59 institutional donors. It had a balance of ₹27.3 crore in its FCRA account carried forward from the previous year and the total balance stood at ₹103.76 crore.

**The added compliance requirements for NGOs**

- ❖ The Act made Aadhaar a mandatory identification document for all the office-bearers, directors and other key functionaries of an NGO and capped the administrative expenses at 20% of the total foreign funds received earlier, the upper limit was 50%.
- ❖ The amendment also barred sub-granting by NGOs to smaller NGOs who work at the grass roots level. The changes implied that every renewal process is as good as a fresh registration.

**Conclusion**

The government has also cracked down on foreign donors such as U.S. based Compassion International, Ford Foundation, World Movement for Democracy, Open Society Foundation and National Endowment for Democracy. Earlier this year, at least 10 international NGOs, including the European Climate Foundation, Omidyar Network and Walk Free Foundation, were placed on the Prior Reference

**PEPPER IT WITH**  
Fair Credit Reporting Act, Money Laundering Act

Category (PRC). Since 2011 when the Act was overhauled, the registration of 20,664 associations was cancelled for violations such as misutilisation of foreign contribution, non-submission of mandatory annual returns and for diverting foreign funds for other purposes.

**The Status of the Smart Cities Mission**

**News Excerpt**

Centre has extended the timeline for the implementation of the Smart Cities Mission to June 2023.

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**Pre-Connect**

- The main objective of the Smart Cities Mission is to promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of ‘smart solutions’.

- The Mission aims to drive economic growth and improve quality of life through comprehensive work on social, economic, physical and institutional pillars of the city.
- The Mission is operated as a Centrally Sponsored Scheme. Centre will give financial support to the extent of Rs. 48,000 crores over 5 years i.e., on an average Rs.100 crore per city per year. An equal amount on a matching basis is to be provided by the State/ULB.
- Additional resources are to be raised through convergence, from ULBs’ own funds, grants under Finance Commission, innovative finance mechanisms such as Municipal Bonds, other government programs and borrowings.
- Emphasis has been given on the participation of private sector through Public Private Partnerships (PPP). Citizens’ aspirations were captured in the Smart City Proposals (SCPs) prepared by the selected cities.
- There is no standard definition or template of a smart city. In the context of our country, the six fundamental principles on which the concept of Smart Cities is based are:



### Issues Faced by Smart Cities

- In practice, smart city plans have been critiqued as being distanced from elected democratic institutions and wide public discussion, reflected in project finalisation that involves mainly State governments, the bureaucracy and independent experts. This is in spite of processes that have been incorporated to tap public sentiment using online tools and platforms.
- The smart city mission aims to harness the smart technologies to develop the city into a smart one. However, most of the urban local bodies have a limited technical capacity to ensure the development of the smart cities. These technical and technological limitations hinder the cost-effective and timely implementation of the smart steps. Moreover, the investment in technology is being done for a time-frame of 5-10 years. Moreover, the latest technology, i.e., internet of things (IoT) is still a new concept for many. If the smart cities do not keep options for adaption and upgradation in technology, they might lag behind using obsolete technologies in the technologically-evolving world.
- Due to infrastructural development, people are eager to buy a property and invest in the country’s smart cities. However, the challenge lies in identifying the weak areas of the city that would experience retrofitting and be transformed into a smart area. The challenge lies in analyzing the entire city area and finding out the areas where retrofitting can be performed and how. Moreover, retrofitting the areas with historical importance or that have any heritage value would also be a challenge in transforming cities into smart one.
- Keeping the funds and finances flowing in for the smart cities mission can also be a challenge for the Indian government. Getting the right finances flowing in for the completion of the project and later the maintenance of the technological developments in the smart cities can be a challenge.
- A smart, reliable, sustainable, and affordable transport system is at the core of turning a city into a smart one. There is a need for urban mobility connecting people and cities seamlessly. However, urbanizing the public transport for urban mobility can be a challenge for the Indian

government due to the inadequate transport system currently persisting in the cities. Various factors like lack of investment, high population density, zoning, and poor urban planning have been making the transit system in Indian cities inadequate. Optimal utilization of mass transit and the urbanization of public transport should be the key focus of smart city initiative to overcome this challenge.

- Effective horizontal as well as vertical coordination between the different institutions is imperative for the implementation of the smart city solutions. The center, state, and the local bodies need to be in perfect coordination to ensure that the proper development of smart cities. However, there is a lack of coordination among the three-tier governance which might be a big roadblock in the successful completion of this project.

**Conclusion**

Ongoing smart city plans also face the pressure of designing for climate change. The Climate Smart Assessment Framework would need to put in compulsory features to align all investments with national commitments towards obligations under the Paris Agreement of the UN Framework Convention on Climate Change (UNFCCC) and UN Sustainable Development Goals (SDG).

**PEPPER IT WITH**  
Digital India, Industry 4.0,  
AMRUT, e-governance

**The World Inequality Report**

**News Excerpt**

The latest edition of the World Inequality Report has confirmed that the world continues to sprint down the path of inequality.

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**Pre-Connect**

- The World Inequality Lab, a research centre at the Paris School of Economics, released the 2022 World Inequality Report (WIR).
- The report authored by a team of top economists led by Lucas Chancel, and coordinated by Nobel-winning economist Thomas Piketty, synthesises data and analyses generated by more than 100 researchers over four years.
- It’s main finding is that the gap between the rich and the poor in terms of share of national income is quite large, and growing rapidly as a result of government policies that favour the affluent elite.

**Why do we need a report of this kind?**  
While all governments regularly release economic numbers, such as the Gross Domestic Product (GDP) and growth rate, these do not tell us how growth is distributed across the population – which sections are gaining, and which ones losing. The World Inequality Report studies different kinds of financial data to find out how a country’s (and the world’s) income and wealth are distributed. This is vital information because in most democracies, the wealthy can, and do, transform their economic power into political power, and therefore, the higher the inequality, the greater the likelihood that an affluent minority could end up determining the fate of the majority. Availability of accurate data about levels of inequality can help generate public opinion in favour of policy measures that can mitigate them.

**Key Points**

- Global multimillionaires have captured a disproportionate share of global wealth growth over the past several decades.
- The top 1% took 38% of all additional wealth accumulated since the mid-1990s, whereas the bottom 50% captured just 2% of it.

- It means that the gap between the top 1% and the bottom 50% is widest for India among the major economies in the world. The gap is wider in India than the United States, the United Kingdom, China, Russia and France.

### The global trends in inequality

- ✓ The report finds that global inequality today is back to where it was in the early 20th century. The richest 10% of the global population takes home 52% of the global income, whereas the poorest 50% got only 8.5% of it. Global wealth inequities are worse than income inequalities. While the poorest 50% own just 2% of the global wealth, the richest 10% own 76% of all the wealth. While Europe was the region with the least amount of inequality (the income share of the top 10% was 36%), inequality was highest in the MENA (Middle East and North Africa (MENA) region, where the share of the top 10% was 58%.
- ✓ One major trend highlighted by the report is that inequality between countries was narrowing while inequality within countries was increasing. It points out that while the gap between the average incomes of the richest 10% of countries and the average incomes of the poorest 50% of countries has dropped from 50x to less than 40x, the gap between the average incomes of the top 10% and the bottom 50% of individuals within countries has almost doubled, from 8.5x to 15x.
- ✓ The report also found that the share of privately owned wealth in national wealth was rising, while that of public wealth (buildings, universities, roads, hospitals etc.) was shrinking. In other words, while countries are growing richer, governments are becoming poorer.

#### **What about income inequality in India?**

- The report has found India to be one of the world's most unequal countries, with the top 1% getting 21.7% of the national income. Top 10% of Indians capture 57% of the national income, while the share of the bottom 50% is only 13%. While the average national income of the bottom 50% stood at ₹53,610, the top 10% earned more than 20 times more, ₹11,66,520. For comparison, this ratio in the case of France and Germany was 7 and 10 respectively.
- The report reveals that income inequality in India today is worse than it was under British rule. Under the British (1858-1947), the top 10% got about 50% of the national income (lower than today's 57%). In the decades after India got independence, socialistic economic policies reduced income inequality, bringing the share of the top 10% to 35-40%. But starting from the 1980s, the report states, "deregulation and liberalisation policies have led to one of the most extreme increases in income and wealth inequality observed in the world."

### How does India fare on wealth inequality and gender?

- Wealth inequality in India is even worse than income inequality. The bottom 50% own "almost nothing", with an average wealth of ₹66,280, while the middle class was also "relatively poor", with an average wealth of ₹7,23,930. However, the top 10% and 1% owned on average ₹63,54,070 and ₹3,24,49,360 respectively. The top 1% owned 33% of national wealth in India.
- The report also notes that the female labour income share in India is 18%, one of the lowest in the world. This is lower than both the Asian average (21%) and barely above the average in the Middle East (15%), pointing to high gender inequality in India.
- It also finds that over the past three years, the quality of inequality data released by India has deteriorated.

### Conclusion

The report marked that the share of income of the poorest 50% of the world’s population today is lower than what it was in 1820 – before colonialism upended their lives. In other words, half of humanity is worse off today than it was 200 years ago. The report, however, points out that inequality and poverty are not inevitable but mainly the effect of policy choices. It tracks how inequalities burgeoned around the globe from the 1980s onward – in contrast to the previous three decades – following the liberalisation programmes that were implemented in different countries. It recommends wealth taxes on the super-rich and a robust redistribution regime as policy measures that could arrest, if not reverse, the current trend of rising inequality.

**PEPPER IT WITH**  
Lorenz curve

## Road Accidents on Highways

### News Excerpt

Union Minister of Road Transport and Highways stated that 53,872 people died due to road accidents on National Highways and expressways in 2019.

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### Pre-Connect

- It is being observed that the major causes of the accidents on the NHs were vehicle design and condition, road engineering, speeding, drunken driving/ consumption of alcohol and drugs, driving on the wrong side, jumping the red light, use of mobile phones, etc.
- The ministry has issued guidelines for improving the road safety through safety audits at all stages — design stage, construction stage and O&M stage— by engaging independent road safety experts.
- Road accident "black spots "are locations which attract more accidents by comparison with other similar locations on the road system, or locations which have an accident number and/or rate greater than a defined minimum. Black spots may be intersections, long lengths of road, or very short sections of road which may have features such as bridges.
- The objective of identifying accident black spots is to establish a systematic and logical basis for indicating any need for safety improvements involving the construction, operation or maintenance of road facilities.
- The different techniques of accident black spot identification are reviewed, and appropriate procedures are recommended for various circumstances. There are certain methods of collecting data for the identification of potential black spots using techniques which do not rely on recorded accidents.
- Five states/UTs, namely Delhi, Madhya Pradesh, Odisha, Rajasthan, and Uttar Pradesh have provided the facility of online filing of e-FIR for complaints of theft of vehicles, mobile phones and documents where accused are unknown, through their State Citizen Service Portals.

### Black spot management crucial to road safety

- Black spots account for 90% of road accidents in the country and short- and long-term measures chalked out by the Union Ministry of Road Transport and Highways (MoRTH) to curb accidents in such spots assume significance.
- With the mounting number of accidents and fatalities, analysis of accident-prone stretches and removing black spots have been given priority.
- An analysis of accident-prone stretches based on **a district-wise Accident Severity Index (ASI) value of MoRTH** had listed 355 black spots on the road network in the State. The National Transportation Planning and Research Centre (Natpac) has now revised the list based on the new parameters of MoRTH and the road accident statistics provided by the State Crime Records Bureau (SCRB).

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- As per the Ministry’s Protocol for identification of black spots, an accident black spot is a road corridor of about 500 m long on which either five road accidents, involving fatalities and grievous injuries, had been reported during the last three calendar years or 10 fatalities during the last three years.

**Analytica**

- ✓ India had not been successful in terms of ensuring road safety for its citizens, and that accident figures reported in India were “embarrassing” compared to those of other countries. It is embarrassing that whenever India represents in the world forums, it has come to light that the countries which had really high numbers of accidents have reduced those figures, and India continues to be at the same platform. Many innocent lives perish on the road every day. Indian roads witness accidents every passing hour.
- ✓ As per the reports of the Indian government, India ranks first in the number of road accident deaths across 199 countries and accounts for almost 11% of all accident-related deaths in the world. Accidents on the road occur due to speeding, drunk driving, potholes, carelessness etc. Considering the increasing deaths owing to road accidents, the Ministry of Road Transport and Highways came up with a National Road Safety Week to create awareness on road safety.

**National Road Safety Week 2022**

This year marks the 33rd Road Safety Week under the theme “*Sadak Suraksha Jeevan Raksha*”. During the week’s celebrations, awareness is created using posters, banners, short films on road safety, leaflets distribution etc. Various activities and competitions are also conducted as a part of creating awareness. The usually conducted activities include slogan writing contest, poster making contest, article writing competition on road safety, road safety quiz etc. People participate in-it by logging in to the government website.

**Good Governance Index**

**News Excerpt**

Centre has celebrated Good Governance Week on 20-25th December as part of the Azadi Ka Amrit Mahotsav celebration.

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**Pre-Connect**

- Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.
- The theme of the Good Governance Week is “*Prashasan Gaon Ki Aur*”- a Nation-wide campaign for Redressal of Public Grievances and Improving Service Delivery was held in all Districts, States, and Union Territories of India.
- Over 700 Districts Collectors has participated in the “*Prashasan Gaon Ki Aur*” and during the weeklong event, has visited Tehsil/Panchayat Samiti Headquarters to provide timely grievance redressal and improve service delivery. Guidelines have been issued by DARPG and the State Governments on the activities that was taken by the District Collectors at Tehsil/Panchayat Samiti Offices.
- Every District Collector presented one successful good governance practice of the district and one successfully redressed Public Grievance case on the portal. Video Clips of district-wise good governance practices was also created and documented.

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- The “Prashasan Gaon Ki Aur” campaign during the Good Governance Week was created a National Movement for good governance and inspire future generations.
- On December 25th, 2021, “Good Governance Day” would be celebrated. On the occasion, screening of Film on “Sushaasan Saptah – Prashasan gaon ki aur” was done and “Good Governance Index- an Assessment of State of Governance in States/UTs” was launched.

## Manual scavenging in India

### News Excerpt

In response to a question in the Lok Sabha during the Winter Session, the union government has replied that it has achieved the target of abolishing manual scavenging.

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### Pre-Connect

- Manual scavenger is the person could have been employed by any one - say, someone from their village or by an agency or contractor. It does not matter if she was given regular employment or engaged on contract basis, she is covered under this law.
- Manual scavenger is the person who has been employed to handle undecomposed human waste from an insanitary latrine, open drain or pit or railway track is a manual scavenger under this law. Any person who has been employed to clean human waste and does so with the help of the appropriate protective gear and equipment will not be considered a manual scavenger under this law.
- Another group of people called “safai karamcharis” are also sometimes considered as manual scavengers - however, they usually refer to people working as sweepers or cleaning workers in the municipalities, government or private organisations.

### Manual Scavenging

- Manual scavenging is the practice of physically removing human excreta by hand from sewers or septic tanks. The work is mostly undertaken by members of the Dalit caste, which is at the bottom of India's archaic caste system. Women are also employed in large numbers in this practice, particularly in rural areas.
- According to the UN India, manual scavenging refers to the practice of manual cleaning, disposing, or handling of the human excreta, in any manner, from dry latrines and sewers. Due to the prevalence of the caste system in India, such harmful tasks are mostly done by those belonging to the lower rung of the caste hierarchy. Like many other dangerous tasks, manual scavenging workers are exposed to the risk of getting infected with diseases like cholera, hepatitis, tuberculosis, typhoid, and many more.
- According to a study conducted by Water Aid India in 2018, 1,136 women were engaged in manual cleaning of dry latrines in just 36 settlements across four states. Even with all these risks, a study by TERI shows, the wages they receive are generally low, ranging somewhere between INR 40 to INR 100 for cleaning around 50 dry toilets and the maximum is INR 500 to INR 1,000 for cleaning four drainage lines and sewers depending on the choice of employers.

### Manual Scavenging and the Lex Loci

- ✓ The practice of manual scavenging poses several questions over equal access to protection offered by the Indian Constitution and the Indian judiciary guaranteeing rights to all its citizens. Various legislations like Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993 and Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013 (PEMSR) have been brought to provide the group with the rights they deserve and are necessary

for living a dignified life. However, due to the lack of pace of the reform drive, changes have been less than expected.

- ✓ Despite these legislations, no significant improvement in the condition of manual scavengers is witnessed. The same can be witnessed through the recent declaration by the government in the Parliament, whereby no deaths due to manual scavenging per se were reported in the country; however, 941 deaths were reported while the cleaning of sewer/septic tanks.

#### A 'dehumanizing practice'

- The Indian government distinguishes between manual scavenging and the practice of cleaning sewers and septic tanks. But labor activists argue that the latter is a mere extension of the former. The term "*manual scavenger*" broadly represents sanitation workers who are involved in cleaning, carrying and disposing of untreated human excreta.
- India has banned the practice under the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013. Outlawing the practice began in 1993, but in 2013, the definition of manual scavengers was broadened to include people employed to clean septic tanks, ditches or railway tracks. The Act recognizes this as a "*dehumanizing practice*," and cites a need to "*correct the historical injustice and indignity suffered by the manual scavengers*." Many who refuse to work as scavengers face coercion and threats from dominant castes of the society, according to a Human Rights Watch report published in 2014.
- However, a lack of implementation has led to the continuation of the practice in several parts of the country. A 2019 study by the World Health Organization (WHO) said "*weak legal protection and lack of enforcement of the laws, as well as the poor financial status of sanitation workers, contributes to the practice still prevailing*." The study, authored jointly by the World Bank, WHO, International Labor Organization (ILO) and WaterAid, said that sanitation workers are poorly and irregularly paid. The study found that in some cases, workers had money extorted from them or were paid in leftover food or basic food items.

#### Railways is the biggest violator

- ✚ Indian Railways (IR) is the largest user of dry toilets in India, IR has 296,012 dry toilets, which require manual cleaning, making it the biggest violator. Indian railway has installed 258,906 bio-vacuum toilets in all the long-distance travelling trains, which is not only helping save 400 crores of the additional maintenance cost, if steps like these are applied in all types of trains running, it can solve the issue of manual scavenging in government enterprise and will broadcast a positive message to other sectors who are relying on the practice of manual scavenging.
- ✚ Such denial of the practice can also be related to the recent Swachh Bharat Mission (SBM), which has also been criticised for perpetuating the practice of manual scavenging in India by increasing the number of toilets that require manual cleaning. Based on the analysis of toilets constructed under the SBM till 2017, 13 percent have twin pits, 38 percent have septic tanks, and 20 percent have single pits, all of these come under dry toilets that require manual cleaning.

#### Conclusion

- Indian government announced a slew of measures under the Swachh Bharat Abhiyaan (Clean India initiative) to end the discriminatory and hazardous practice of manual scavenging by August 2021. The goal is far from complete, as the Union Ministry of State for Social Justice and Empowerment claims 66,692 manual scavengers were identified across the country during parliamentary proceedings last month.
- As the economic slowdown gets even worse due to COVID-19 resulting in a subsequent rise in unemployment, these manual scavengers will be forced to stick with the decades-long distressing activity which is already a stigma to their identity. If action is not taken

immediately, all the previous gains made will go in vain. Organizations and the government have to come together in solving the problem, with zeal and sincerity.

### Key factor in defining institutional delivery

#### News Excerpt

Education and exposure to a community health worker too score higher than age of marriage in accessing a facility, says study.

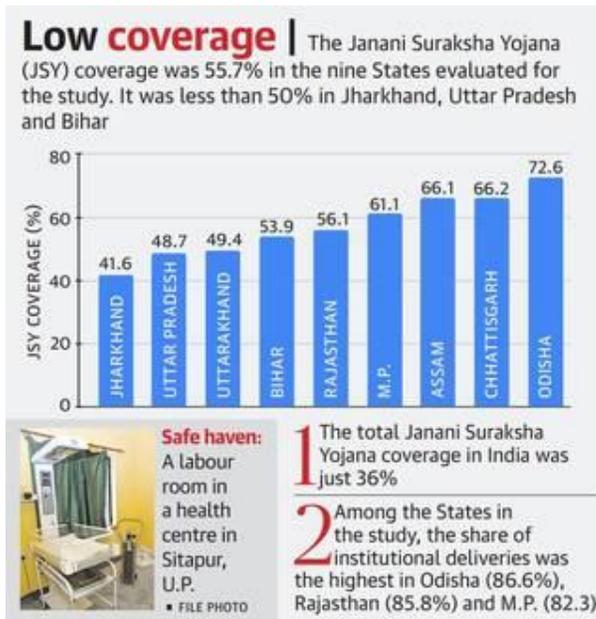
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#### Pre-Connect

- All women should have access to skilled care during pregnancy and childbirth to ensure prevention, detection and management of complications.
- Assistance by properly trained health personnel working within an enabling environment is needed to eliminate preventable maternal and newborn deaths.
- A key strategy to ensure skilled care during childbirth is to that all births take place in health facilities in which obstetric complications can be treated when they arise.
- The minimum target for this indicator should be set by national or local governments, and many countries have made having 100% of deliveries in institutions their main strategy for reducing maternal mortality.

#### Key Highlights

- Poverty, education, and exposure to a community health worker are more important than age at marriage in determining whether a mother will be able to have a safe birth in a medical facility, according to a first-of-its-kind study on utilisation of institutional delivery in the country.
- The research comes at a time the government has proposed to raise the age of marriage for women to 21 years in order to reduce maternal deaths. A decision that has come under heavy criticism for ignoring social realities such as poverty, education and access to health services that are said to play a bigger role in preventing child marriages.
- Published in the peer-reviewed journal Global Health Action, the study analyses data on State-level maternal mortality ratio (2016 to 2018), as well as the National Family Health Survey-4 (2015-2016). The study is unique in its exploration of socio-demographic factors as well as barriers in low coverage of institutional deliveries, which is a key intervention in averting the risk of maternal mortality due to childbirth-related complications.
- The study is authored by Ria Saha, a public health consultant in the U.K., and Pintu Paul, a Ph.D. candidate at the Jawaharlal Nehru University, New Delhi.
- It focuses on nine low-performing States (LPS) with high burden of maternal mortality — Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and Uttarakhand.



- These States constitute about half of the country’s population and contribute 62% of maternal deaths, 71% of infant deaths, 72% of under-five (years) deaths, and 61% of births in the country. They also account for 12% of global maternal deaths.
- India has an average maternal mortality rate of 113 per 100,000, and the rate remains “alarmingly high” in these nine States at 161 deaths per 100,000.
- The influence of educational attainment appeared to be strongest in Assam and Chhattisgarh, where women with a higher level of education were about five times more likely to deliver in a health facility than women who had no education.
- In Assam, women from the richest wealth index were almost 14 times more likely to deliver in a health institution than those from the poorest wealth index. Similarly, the odds of delivering in a health facility among the richest women were about five to six-fold higher in states likes Jharkhand, Madhya Pradesh, and Uttarakhand than the poorest women, according to the study.
- As far as barriers in accessing institutional deliveries were concerned, about 17% of women expressed distance or lack of transportation, and 16% cited costs, to be some of the challenges. Other reasons were facility closures (10%), poor service or trust issues (6%).
- The authors recommend State-specific interventions not only to increase the number of public health facilities but also to improve associated quality of care, underlining that inadequate clinical training and insufficient skilled human resources affected the quality of available maternity services resulting in low coverage of institutional deliveries.

**Conclusion**

As far as socio-demographic factors are concerned poverty (1.4 to 3.5) is responsible more than twice as much as age at marriage (.78) in determining whether a woman will seek institutional delivery. Education (1.2 to 3.8) is 1.5 times more important than age at marriage. Among other factors, interaction with a community health worker (1.63) and awareness campaigns (1.1 to 1.3) had a greater impact than age at marriage. However, distance to the health facility (.79) and age at marriage had almost similar influences on institutional deliveries.

**State Health Index**

**News Excerpt**

NITI Aayog released the fourth edition of the State Health Index for 2019–20. The report, titled “*Healthy States, Progressive India*”, ranks states and Union Territories on their year-on-year incremental performance in health outcomes as well as their overall status.

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**Key Findings**

- Round IV of the report focuses on measuring and highlighting the overall performance and incremental improvement of states and UTs over the period of 2018–19 to 2019–20.
- The report was released jointly by NITI Aayog and World Bank. The report has been developed by NITI Aayog, with technical assistance from the World Bank, and in close consultation with the Ministry of Health and Family Welfare (MoHFW).
- The State Health Index is annual tool to assess the performance of states and UTs. It is a weighted composite index based on 24 indicators grouped under the domains of ‘Health Outcomes’, ‘Governance and Information’, and ‘Key Inputs/Processes’. Each domain has been assigned weights based on its importance with higher score for outcome indicators.
- To ensure comparison among similar entities, the ranking is categorized as ‘Larger States’, ‘Smaller States’ and ‘Union Territories’.

- On overall ranking based on the composite index score in 2019–20, the top-ranking states were Kerala and Tamil Nadu among the ‘Larger States’, Mizoram and Tripura among the ‘Smaller States’, and DH&DD and Chandigarh among the UTs.

**The Mechanism**

- A robust and acceptable mechanism is used for measuring performance. Data is collected online through a portal maintained by NITI on agreed indicators. The data is then validated through an independent validation agency selected through a transparent bidding process. The validated data sheets are shared with the states for verification, followed by video conferences with the states for resolving any disagreements or disputes. The final sheets thus settled are shared with the states, and after agreement, the data is finalized and used for analysis and report-writing.
- States are beginning to take cognizance of indices such as the State Health Index and use them in their policymaking and resource allocation. This report is an example of both competitive and cooperative federalism.
- The index is being compiled and published since 2017. The reports aim to nudge states/UTs towards building robust health systems and improving service delivery.
- The importance of this annual tool is reemphasized by MoHFW’s decision to link the index to incentives under National Health Mission. This has been instrumental in shifting the focus from budget spending and inputs to outputs and outcomes.



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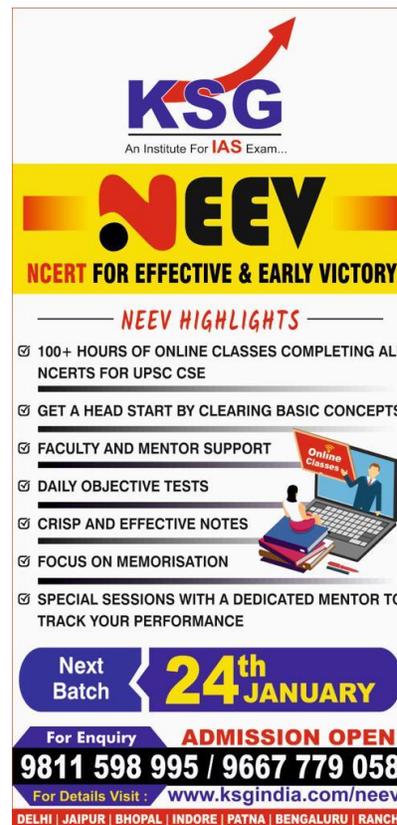
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## ECONOMY

### Tokenisation of debit and credit cards

#### News Excerpt

The Reserve Bank of India (RBI) has extended the deadline given to online merchants and financial payments companies for the tokenisation of card data used for online transactions.

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#### What is tokenisation?

Tokenisation refers to replacement of actual credit and debit card details with an alternate code called the “token”, which will be unique for a combination of card, token requestor and device.

#### Analytica

- It is the new rules to enhance the security of online transactions made using debit and credit cards.
- To put an end to the practice of online merchants storing the card details of customers, which the Central bank believed could lead to misuse of cards by fraudsters.
- RBI mandated the adoption of **card-on-file (CoF) tokenisation** as an alternative to card storage. In this online merchants use **token numbers instead of card data (card-on-file) to store customers’ cards on their platforms.**
- This way, the RBI will ensure that sensitive details such as card numbers are wiped off merchant sites and replaced by random numbers. Once cards are tokenised, card data would remain only in the records of banks and card companies.

#### Concerns of the merchants

- Critics of the RBI’s Order believe that online card transactions are already secure enough since customers need to authenticate transactions through CVV, OTP and other means.
- They argue, this will affect their business. Online merchants can lose up to 20-40% of their revenues due to tokenisation norms.
- If implemented in the present state of readiness, the new mandate could cause major disruptions and loss of revenue, especially for merchants. Disruptions of this nature erode trust in digital payments and reverses consumer habits back towards cash-based payments.
- Time given to adopt the system is too little.

**PEPPER IT WITH**  
Merchant Discount Rate,  
Types of cards (white, brown, green), NFC etc.

#### Impacts on customers

- ✓ People who have stored their card details for online transactions on various platforms, could be impacted if the online players and merchants are not able to implement the changes at their backend.
- ✓ Customers may also decide not to tokenise their cards and simply opt to switch to cash or other forms of online payment that involve less hassle.

#### Preparedness so far for the tokenisation

- HDFC Bank, ICICI and SBI Cards already have the card tokenisation system in place for online transactions, while few players have device-based tokenisation (SBI Cards with Samsung) for contactless NFC (near field communication) payments. Other banks have already initiated the process and many are ready with the new system.
- **Three steps** have to be completed for smooth implementation of tokenisation.

- **Token provisioning:** the consumer's card number should be convertible into a token, which means the card networks have to be ready with the relevant infrastructure.
- **Token processing:** Consumers should be able to complete their transaction successfully through the tokens.
- **Scale-up for multiple use cases:** Consumer should be able to use the token for things like refunds, EMIs, recurring payments, offers, promotions, guest checkouts etc.

**Way forward**

It is **hard to judge** whether the RBI's tokenization policy is right unless we can find a way to weigh the costs and benefits of the policy against the costs and benefits of its alternatives. This, however, is **only possible when there are multiple private regulatory bodies competing for business by offering different policies**. Competition between regulatory regimes would then lead to an equilibrium that properly balances the risks of card data storage (such as fraud) against the benefits (such as ease of making repeat payments).

**Anti-dumping duty**

**News Excerpt**

India has imposed anti-dumping duty **on five Chinese products**, including certain aluminium goods and some chemicals, for five years to guard local manufacturers from cheap imports from the neighbouring country.

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**More about the news**

- **WTO report:** Countries, led by the US, India and China, doubled their use of anti-dumping measures in the pandemic period (July 2020-June 2021) against cheap inflow of certain goods, such as steel and chemicals, but most nations demonstrated restraint in the imposition of new trade restrictive measures related to the pandemic
- The sharp increase in anti-dumping measures is mainly due to a fall in demand in the exporting country caused by the pandemic leading to unutilised capacities and lowering of export prices.
- The **WTO allows imposition of anti-dumping measures in the form of additional duties**.
- A country imposing anti-dumping duties has to also establish that the dumping of the item is causing injury to the domestic producers in the importing country.

**The Directorate General of Trade Remedies**

- ❖ DGTR functions as an attached office of **Department of Commerce, Ministry of Commerce and Industry**.
- ❖ DGTR now deals with Anti-dumping, CVD and Safeguard measures.
- ❖ DGTR provides a **level playing field to the domestic industry** against the adverse impact of the unfair trade practices like dumping and actionable subsidies from any exporting country, by using Trade Remedial methods under relevant framework of **WTO arrangements, Customs Tariff Act & Rules** and other relevant laws and International agreements, in a transparent and time bound manner.

**Pre-Connect:-**

- **Directorate General of Trade Remedies (DGTR)** recommends the imposition of such duties on imported items.
- However, the **final decision** to impose these duties and issues notification for the same is taken by the **Ministry of Finance**.
- Both India and China are members of the Geneva-based World Trade Organisation (WTO).

- Anti-dumping duty is **valid for five years** from the date of imposition unless it is canceled earlier by the government.
- **Anti-dumping duty**- It is a protectionist tariff that a domestic government imposes on foreign imports that it believes are priced below fair market value (home market), and seen as dumping.
- **Countervailing duties (CVDs)** - are **tariffs levied** on imported goods **to offset subsidies offered to producers** of these goods in the exporting country. CVDs are meant to level the playing field between domestic producers of a product and foreign producers of the same product who can afford to sell it at a lower price because of the subsidy they receive from their government.
- **Safeguard duty**- it is imposed, if unexpectedly increasing imports **pose a threat to the domestic industry**.
- It **can be extended** for a further period of five years **through a sunset or expiry review** investigation conducted.

The sharp increase in anti-dumping measures is surely emanating from the pandemic as it has created excess capacities in several sectors with falling demand. When there are huge unutilised capacities and demand takes a hit, prices go down and manufacturers tend to export their products at low prices.

**Way Forward**

Dumping of products in a country is a kind of **predatory exports** of good which eventually kill the domestic industry and make the country dependent on imports. The **DGTR should lay down a clear procedure on levying anti-dumping duties** in India such that a balance between domestic production, local consumption and imports be maintained.

**PEPPER IT WITH**  
WTO, WTO boxes, Issues within WTO

**The production-linked incentive (PLI) scheme**

**News Excerpt-**

The Centre recently sanctioned ₹76,000 crore under the production-linked incentive (PLI) scheme to **encourage the manufacturing of various semiconductor goods within India**.

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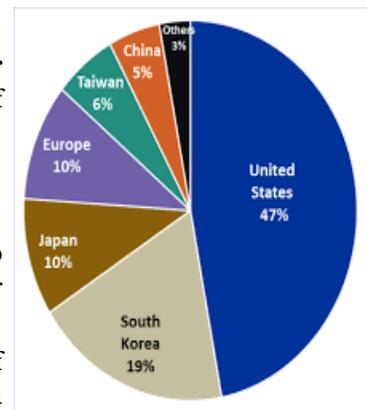
**More about the news**

The scheme comes amid an **inadequate supply of semiconductor chips in the global market** which has severely affected the supply of a number of goods such as cars, laptops and phones.

**Analytica**

**Leading semiconductor chip makers**

- Under the scheme, the Centre will offer **financial support to companies** that want to manufacture a range of semiconductor goods in India.
- The **subsidy will bring down the production costs** of companies manufacturing such goods, and thus encourage them to set up new factories and other facilities.



- It is seen as an attempt to build a strong semiconductor industry that would **put an end to the country's reliance on imports** to meet its semiconductor needs and is also expected to help in the **creation of jobs**. According to estimates, it can help create over 1 lakh new jobs either directly or indirectly
  - Financial support can encourage **businesses to invest** during uncertain times such as the ongoing COVID-19 pandemic by reducing the amount of capital that they need to put at risk.
- Many economists also believe that the Centre, by offering subsidies to businesses, can play a **crucial role in developing India as a global hub for electronic goods**.

**What is production-linked incentive (PLI) scheme?**

- ❖ An initiative that provides incentives to domestic/foreign industries **to boost local production**.
- ❖ To set up or expand on manufacturing units to increase production, to which the government provides **incentives on incremental sales** and to **reward increased production**.

**Why criticism of the scheme?**

- The **burden of subsidies falls on taxpayers**, who will have lesser incentive to work as taxes on them rise.
- Subsidies can lead to **misallocation** of resources.
- Investment decisions in a market economy are generally dictated by the preferences of consumers.
- There is also the **risk of cronyism** that is high when politicians and bureaucrats get to decide which company or sector receives subsidies.

**Other measures to encourage production of semi-conductor**

- ✓ Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors **(SPECS)**
  - It will help **offset the disability for domestic manufacturing** of electronic components and semiconductors in order to strengthen the electronics manufacturing ecosystem in the country.
  - The scheme will **provide financial incentive of 25%** on capital expenditure for the identified list of electronic goods that comprise downstream value chain of electronic products, i.e., electronic components, semiconductor/ display fabrication units, ATMP units, specialized sub-assemblies and capital goods for manufacture of aforesaid goods, all of which involve high value added manufacturing.
- ✓ **National Policy on Electronics 2019 (NPE 2019)**
  - To position India as a global hub for Electronics System Design and Manufacturing (ESDM) by encouraging and driving capabilities in the country for developing core components, including chipsets, and creating an enabling environment for the industry to compete globally.
- ✓ **India's Semiconductor Mission**
  - The India Semiconductor Mission will be led by global experts in semiconductor and display industry. It will act as the nodal agency for efficient and smooth implementation of the schemes for setting up of Semiconductor and Display Fabs.

**PEPPER IT WITH** PLI scheme for other sectors, Ease of doing business report,

**Way forward**

The success of the PLI scheme in building a vibrant semiconductor industry will depend on factors other than just the amount of subsidies offered to investors.

- Investors care more about **ease of doing business**, which is influenced by the **quality of institutions in a country**.

- Some economists even argue that Governments just need to **provide an environment** that is conducive for doing business in order to attract investments.

## SEBI suspended futures trading in agri products

### News Excerpt

Securities & Exchange Board of India (SEBI) issued directions to stock exchanges in the commodity derivatives segment for immediately **suspending** trading in **derivative contracts** in key farm commodities.

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### More about the news-

SEBI has suspended trading in derivative contracts in **seven key farm commodities**, namely paddy (non-basmati), wheat, chana, mustard seeds and its derivatives, soya bean and its derivatives, crude palm oil and moong for a year.

### What are derivative contracts and how it works?

- Derivative contracts are **between two or more parties** where the derivative value is based upon an underlying asset, in this case agri commodities.
- The **prices** of the derivatives are **established by the price fluctuations** of the underlying assets. Derivatives can be **traded on an exchange or over the counter (OTC)**.
- Derivatives trading takes place when traders **speculate on the future price** of an asset through buying or selling of derivative contracts to maximise profit, as compared to buying the underlying asset outright.
- Traders also use derivatives for **hedging to minimise risk** against an existing position. With derivatives, traders can go short and make profit from falling asset prices.
- They also use derivatives to **hedge against any existing long positions**. The ultimate objective is to profit. This is viewed as a deterrent to bring in price discipline in the market.

**PEPPER IT WITH**  
Forward, Futures and  
Options, **NCDEX, ICEX,**  
**MCX**

### Why suspension?

- It is to rein in **rising prices of essential commodities**, which are **fuelling inflation**.
- India is the world's biggest importer of vegetable oil** and this measure **will make it** difficult for edible oil importers and traders to transact business since they use Indian exchanges to hedge their risk.
- It is believed that speculators have a role in jacking up prices and this needed to be discouraged **to curb inflation and support growth** as the economy is recovering from COVID-19 impact.
- This is also to insulate the future shocks.

### What does the SEBI order mean?

- ✓ No new contract will be introduced until further orders.
- ✓ In respect of running contracts, no new position will be allowed to be taken.
- ✓ Only squaring up of position has been allowed.
- ✓ The imports in such commodities, especially edible oils, would reduce in the short term as traders will not have a hedging platform.
- ✓ Hedging, which is speculative in nature, has been made difficult. This will lead to release of blocked local produce supplies into the market, which should cool the prices. Imports of commodities for **speculative gains will be discouraged**.

### How alarming is inflation?

- CPI inflation went up in **October to 4.5% from 4.3% in September**, after falling sharply between June and September 2021.
- The persistence of high core inflation (i.e., CPI inflation excluding food and fuel) since June 2020 has been an area of policy concern as input cost pressures could rapidly be transmitted to retail inflation as demand strengthens.

### Other steps taken to fight inflation

- ✚ The Union Government **substantially reduced taxes on imports** of palm, soy and sunflower oil, but the move had limited impact on combating inflation.
- ✚ The Union and State Governments had also recently **reduced excise duty and VAT on petrol and diesel**, which was aimed at bringing down inflation by way of direct effects as well as indirect effects operating through fuel and transportation costs.

#### Securities & Exchange Board of India (SEBI)

- ❖ The Securities and Exchange Board of India was established on **April 12, 1992** in accordance with the provisions of the **Securities and Exchange Board of India Act, 1992**.
- ❖ It is the **regulatory body** for securities and commodity market in India under the ownership of Ministry of Finance, Government of India.
- ❖ SEBI has its **headquarters in Mumbai** and has Northern, Eastern, Southern and Western Regional Offices in New Delhi, Kolkata, Chennai, and Ahmedabad respectively.

The SEBI is managed **by its members**, which consists of the following:

- ❖ The chairman is nominated by the Union Government of India.
- ❖ Two members, i.e., Officers from the Union Finance Ministry.
- ❖ One member from the Reserve Bank of India.
- ❖ The remaining five members are nominated by the Union Government of India, out of them at least three shall be whole-time members.

## Hallmarking of Gold Jewellery

### News Excerpt

The Government of India has made **hallmarking of gold jewellery mandatory** in the country. It is now being implemented by the **Bureau of Indian Standards (BIS)** in a phased manner.

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### More about the news

- With an aim to bring transparency in the jewellery trade and increase trust among consumers, the Government has also made it mandatory for the introduction of a **Hallmark Unique Identification (HUID) number** in every piece of jewellery.
- In the first phase, it is **being rolled out in 256 districts** of the country, though the move was opposed by jewellers' trade bodies.

### What is Hallmark Unique Identification (HUID) number?

- HUID is a **six-digit alphanumeric code**, or one that consists of **numbers and letters**. It is given to every piece of jewellery at the time of hallmarking and is unique for each piece.

- Jewellery is stamped with the unique number manually at the **Assaying & Hallmarking (A&H) centre**.
- The hallmark consists of **three symbols** which give some information about the jewellery piece. The **first** symbol is the **BIS logo**; the **second indicates purity** and fineness; and the **third symbol is the HUID**.
- Hallmarking & HUID are mandatory for 14-, 18- and 22-carat gold jewellery and artefacts.

**Bureau of Indian Standards (BIS)**

- ❖ The National Standards Body of India under **Department of Consumer affairs, Ministry of Consumer Affairs, Food & Public Distribution**, Government of India.
- ❖ It is established by the **Bureau of Indian Standards Act, 2016** which came into effect on 12 October 2017.
- ❖ Its headquarters are in **New Delhi**, with regional offices in Kolkata, Chennai, Mumbai, Chandigarh and Delhi.
- ❖ Other services it offers: **ISI mark, ECOMARK, BIS mark**.

**Why is it being introduced?**

- ✓ India is the **largest consumer of Gold**. Gold **hallmarking is aimed at protecting consumer interests**.
- ✓ HUID gives a distinct identity to each piece of jewellery enabling traceability. It is critical to the credibility of hallmarking and to help **address complaints against adulteration**.
- ✓ In addition to its role in authentication, it also helps **check malpractice** by members of the trade.
- ✓ According to the Government, it is a secure system **and poses no risk to data privacy and security**.

**Potential of the move**

- The HUID concept is “innovative, out-of-the-box thinking and more than makes up for stepping in late with mandatory hallmarking.
- It is the sort of global leadership India has and needs to show in gold-related reforms. Trade support is yet lacking as traceability of hallmarking integrity [a consumer benefit] and financial tracking of purchases [a trade concern] have been combined, coupled with teething infrastructural issues and these need to be addressed urgently.
- The **World Gold Council** is of the view that the HUID system has the **potential to be rolled out globally** to enhance trust in gold at the retail end and remove a strong barrier to gold-buying.

**PEPPER IT WITH**  
All certification marks like –  
TRADEMARK, ECOMARK,  
AGMARK, BIS MARK, ISI MARK.  
Etc.

**Coal stock norms for power units**

**News Excerpt**

The Central Electricity Authority (CEA) has revised coal stocking norms at thermal power generation plants with an aim to prevent a repeat of the low coal stock situation at various plants.

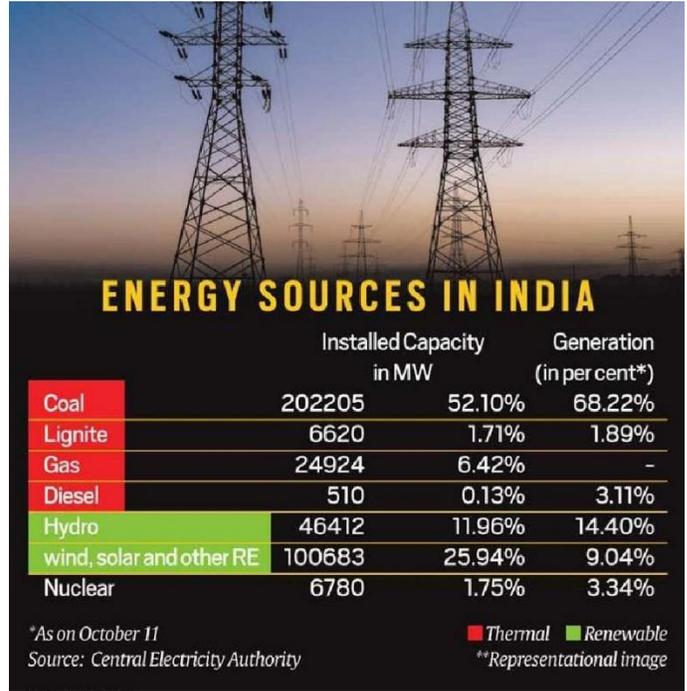
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**More about the news**

Revised coal stocking norms have been mandated by CEA mandating the coal stock of 17 days at pit head stations and 26 days at non-pit head stations to be maintained by power plants from February to June every year.

**Analytica/Background**

- Many states including Punjab, Rajasthan and Uttar Pradesh were forced to impose **load shedding in October** as some thermal power plants **ran out of coal leading to inadequate power supply**. A sharp uptick in demand, a rise in the price of imported coal, and low coal procurement by power stations prior to the monsoon contributed to the low stock situation.
- The CEA had **previously** required thermal power generators to hold 15-30 days of coal stock based on the distance of the plant from the source of coal.
- However, coal stocks at 164 thermal power plants monitored daily **fell to an average of 4 days' worth of coal stock in October** with about 11 giga watt (GW) of thermal power capacity facing outages due to low coal stocks.



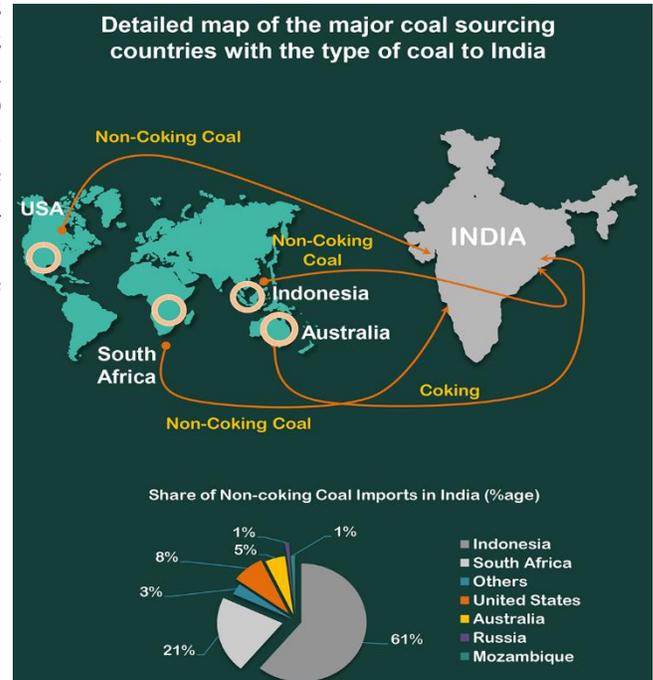
States	Coal Reserves (in billion metric tonnes)	Types of Coalfield
Jharkhand	85.602	Gondwana
Odisha	84.652	Gondwana
Chhattisgarh	69.432	Gondwana
West Bengal	32.937	Gondwana
Madhya Pradesh	29.285	Gondwana
Others	-	-

**The low coal stock situation had forced a number of states to purchase power on the energy exchange.**

**Coal reserve and import in India**

- India is the **second largest producer and consumer** of coal after China.

- Despite India being **world's second largest coal producer and being the 5th largest country in terms of coal deposits**, with coal reserves which may last at least 100 years more, the country is unable to produce adequate quantity of coal to meet the requirement of domestic industry and development.
- India **imports coking coal** to meet the requirements of its steel plants.
- Coal is also classified into **four ranks**: anthracite, bituminous, subbituminous, and lignite.



**Green initiatives in coal sector**

- ✓ Coal Bed Methane
- ✓ Surface coal gasification
- ✓ Setting up of Coking Coal Washeries
- ✓ Sustainable Development Cell
  - ✓ Flue-gas Desulphurization (FGD). Etc.

**Way forward**

- Rationing the supply
- Calculate daily coal requirement on plant load factor.
- Embracing renewable sources

**PEPPER IT WITH**  
 Central Electricity Authority (CEA), Coal bed methane, Surface coal gasification, FGD

**Bank-NBFC co-lending**

**News Excerpt-**

Several banks have entered into **co-lending 'master agreements' with NBFCs**, and more are in the pipeline. Earlier, in 2020, the RBI allowed the co-lending model based on a prior agreement.

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**The 'Co-Lending Model'**

**Co-lending or co-origination** is a set-up where banks and non-banks enter into an arrangement for the **joint contribution of credit for priority sector lending**. To put it simply, under this arrangement, both banks and NBFCs share the risk in a **ratio of 80:20** (80 percent of the loan with the bank and a minimum of 20 percent with the non-banks).

In recent times, banks and NBFCs embarked on increasing the co-lending tie-ups. IIFL Home Finance recently tied up with Punjab National Bank.

**How does a co-lending model work?**

- The Reserve Bank of India (RBI) had come out with the co-origination framework **in 2018** allowing banks and NBFCs to co-originate loans.
- The **primary aim of CLM** is to improve the **flow of credit to the unserved and underserved segment of the economy at an affordable cost**. This happens as banks have lower cost of funds and NBFCs have greater reach beyond tier-2 centres.
- As per RBI norms, a **minimum 20 percent** of the credit risk by way of direct exposure shall be on NBFC's books till maturity and the balance will be on the bank's books. Upon maturity, the

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repayment or recovery of interest is shared by the bank and NBFC in proportion to their share of credit and interest.

- This joint origination allows banks to claim priority sector status in respect of their share of credit. NBFCs act as the single point of interface for the customers and a tripartite agreement is done between the customers, banks and NBFCs.

### What took so long for co-lending to take off?

Some of the main hurdles were IT integration of systems as both banks and NBFCs would operate on different systems, different underwriting processes and parameters. All of these took a lot of time to solve for the marriage to happen. The co-lending model is still in the nascent stages and one may enter into an agreement but over a period of time the relationship should sustain.

### Risk in co-lending

- Under the CLM, NBFCs are required to retain at least a 20 per cent share of individual loans on their books. This means **80 per cent of the risk will be with the banks** — who will take the big hit in case of a default.
- The terms of the master agreement may provide for the banks to either mandatorily take their share of the individual loans originated by the NBFCs on their books, or to retain the discretion to reject certain loans after due diligence prior to taking them on their books.
- The NBFCs to be the single point of interface for customers, and to enter into loan agreements with borrowers, which should lay down the features of the arrangement and the roles and responsibilities of the NBFCs and banks. In effect, **while the banks fund the major chunk of the loan, the NBFC decides the borrower.**
- This may create complexity and may lead to further default and NPAs problem.
- While the RBI hasn't officially allowed the entry of big corporate houses into the banking space, NBFCs, mostly floated by corporate houses — were already accepting public deposits. This may lead to **corporatism in banking.**

### Opportunities through co-lending

- ✓ The co-lending model if it takes off and is executed rightly will ensure delivery of credit to the unserved and underserved. The real gap of credit exists with the segments such as small and medium businesses, credit to lower and middle-income groups, rural areas.
- ✓ The opportunity can be taken up by digital lending start-ups and mid-size NBFCs, and they can actually marry their strength of distribution with bank's funds.
- ✓ As banks are flushed with funds, they can cater to vast customers as NBFCs have reach in tier-3 and tier-4 cities.

<p><b>PEPPER IT WITH</b> NBFCs, Priority sector lending (PSL), NPA issue</p>
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### Way forward

To address the huge credit gap the co-lending model is **one of the right ways** to go forward, but challenges around tech integrations and ground-level executions should be addressed. However, **concern raised** as Co-lending is unlikely to work in a big way since credit is a function of demand and joint-lending is not really a new idea. But according to experts, as the economy recovers coupled with pent-up demand, these kinds of models will evolve and grow to fulfil the credit requirements of the priority sector segments.

## Privatisation of public sector banks (PSB)

### News Excerpt-

The All India Bank Officers' Confederation (AIBOC) said privatisation of public sector banks (PSB) would result in job losses, branch closures and financial exclusion.

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### More about the news-

It comes in the backdrop of the government listing the Banking Laws (Amendment) Bill, 2021 in the ongoing winter session of parliament. The bill seeks to amend the Banking Companies (Acquisition and Transfer of Undertakings) Acts, 1970 and 1980 and the Banking Regulation Act, 1949 to facilitate the privatisation of public sector banks.

- PSB mergers have **brought down the number of public sector banks from 27 to 12**, setting in motion the process of employee retrenchment and bank branch closures;
- Total **employee strength** of PSBs has **fallen** from 8.57 lakh in March 2017 to around 7.7 lakh in March 2021;
- The **total number of PSB branches declined** by 3,321 between March 2017 and September 2021

### About privatisation of banks

#### Background-

The privatisation of PSBs has been a topic of debate for a long time due to the gradual decline of the economy and the increasing debt of the PSBs.

- The idea of bank mergers **first came in 1998**, when **2nd M. Narasimham Committee** recommended the government to merge banks **into three-tiered structure** —
  - Three large banks with an international presence at top,
  - Eight to ten national banks and
  - A large number of regional and local banks.
- The **PJ Nayak Committee in 2014**, suggested in order to maintain steady growth of the economy, sound health of the banking sector, and solvency issues of the PSBs, has to either privatize PSBs or allow their future solvency subject to market competition or to provide a structure or scheme that provides for the ability of PSBs to compete successfully in the market.

#### Impacts of privatisation

##### Positive impacts

- Mitigation of the NPA problem
- Macroeconomic stability post-COVID
- Administrative efficiency and quality of customer service
- Competition
- Capital infusion and foreign investment
- Job creation

##### Negative impacts

- Outside the purview of RTI, CVC, etc
- Issue of accessibility
- Inclination towards profit-making
- Private players are prone to failure.

### Reason for privatisation

- ✓ There are numerous reasons behind the privatisation rationale with the **declining economy** being the primary and the most important reason.
- ✓ The **rising NPA problem** has also become a driving factor for the privatisation drive. The biggest contributors of NPA are the PSBs due to their welfare state schemes and loan waivers etc.
- ✓ There is **an issue of dual control**, i.e. the dual control of PSBs by the Ministry of Finance through the Banking Regulation Act, 1949 and the RBI Act, 1934. The RBI, unlike private banks, does not have autonomy in the governance of PSBs as there is a constant intervention of the government that tends to politicise the normal functioning of the PSBs.

### Why privatisation is being criticised?

- Driven by the profit motive, private sector banks concentrate on the more affluent sections of the population and the metropolitan/urban areas; privatisation of PSBs will therefore **lead to the financial exclusion** of the weaker sections of the society, particularly in the rural areas.
- A **significant number of private banks and financial institutions have failed in recent times**, like the Yes Bank, Lakshmi Vilas Bank, IL&FS and DHFL; in contrast, there is not even a single instance of bank failure in the case of PSBs. Privatisation of PSBs will remove the sovereign guarantee behind the PSB deposits and **make household savings less secure**.
- Non-performing assets (NPAs), as can be seen from the Economic Survey 2020-21, are **not exclusively generated in PSBs**. The NPAs of private banks up to March 2020 amounted to ₹2, 05,848 crore against ₹6, 87,317 crore in PSBs.
- The losses were **largely caused by wilful defaulters** -that is, those who had the capacity to repay but chose to evade.
- Despite wielding higher social responsibility, PSBs’ operating profits during the five years 2015-16 to 2019-20 aggregated to ₹7,77,043 crore.

**PEPPER IT WITH**  
Banking reforms in India,  
Twin balance sheet  
problem

### Way forward

The right solution for correcting the functioning of PSBs would be **putting in place better regulations and control mechanisms**. If the government finds flaws in the functioning of PSBs, it has every reason to correct them, but it should not throw the baby out with the bathwater. On the contrary, there is every reason and scope for the nationalisation of private banks, and not the other way round, if public and government interests converge. Therefore due focus on ensuring strong foundation of PSBs is important.

## Extension of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

### News Excerpt-

The Union government approved the **extension of** the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) **till 2026** - a move expected to help fund irrigation projects that will increase water supply across northern India. The decision was taken at the meeting of **Cabinet Committee on Economic Affairs (CCEA)**.

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### About Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

Launched in 2015, a Centrally Sponsored Scheme, the overarching vision of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) is to ensure access to some means of protective irrigation to all agricultural farms in the country, to produce ‘per drop more crop’, thus bringing much desired rural prosperity.

**Objectives** -The broad objectives of PMKSY include

- Achieve **convergence of investments in irrigation at the field level** (preparation of district level and, if required, sub district level water use plans).
- Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (**Har Khet ko pani**).
- Improve on - **farm water use efficiency** to reduce wastage and increase availability both in duration and extent.

- Enhance the adoption of precision - irrigation and other water saving technologies (**More crop per drop**).
- Enhance **recharge of aquifers and introduce sustainable water conservation practices**.
- Ensure the **integrated development of rainfed areas** using the watershed approach towards soil and water conservation, regeneration of ground water.
- Promote extension activities relating to **water harvesting, water management and crop alignment** for farmers and grass root level field functionaries.
- Explore the feasibility of **reusing treated municipal waste water** for peri - urban agriculture.
- Attract greater **private investments in irrigation**.

**Cabinet Committee on Economic Affairs (CCEA).**

- One of the eight Cabinet committees present at the time.
- It is headed by the Prime Minister.
- All these committees are **extra-constitutional** but the Rules of Business provide for their establishment.
- These Rules emerge from Article 77(3) of the Constitution.

**Scheme components-**PMKSY consists of three major components implemented by various ministries. They are as follows.

- Department of Water Resources, River Development and Ganga Rejuvenation, **Ministry of Jal Shakti**
  - Component: **Accelerated Irrigation Benefits Programme (AIBP)**
  - Component: Har Khet Ko Pani (HKKP)
- Department of Land Resources, **Ministry of Rural Development**
  - Component: Watershed Development
- Department of Agriculture and Farmers Welfare, **Ministry of Agriculture & Farmers Welfare**
  - Component: Per Drop More Crop

Programme architecture of PMKSY will be to adopt a **‘decentralized State level planning and projectised execution’ structure** that will allow States to draw up their own irrigation development plans based on **District Irrigation Plan (DIP) and State Irrigation Plan (SIP)**.

**Vernacular Innovation Program (VIP)**

**News Excerpt-**

With an ambition to empower innovators and entrepreneurs across the country, **Atal Innovation Mission (AIM), NITI Aayog** has come up with a **first of its kind Vernacular Innovation Program (VIP)**.

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**What is this new program?**

- This will enable innovators and entrepreneurs in India to have **access to the innovation ecosystem in 22 scheduled languages** by the Government of India.
- To build the necessary capacity for the VIP, AIM has identified and will be training a **Vernacular Task Force (VTF)** in each of the 22 scheduled languages.
- Each task force comprises of vernacular language teachers, subject experts, technical writers, and the leadership of regional **Atal Incubation Centers (AICs)**.



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- To get the program rolling, AIM NITI Aayog is launching a **train-the-trainer program** where it will collaborate with the **Design Department of IIT Delhi** to coach the VTF in design thinking and entrepreneurship and the adaptation of these subjects in the 22 languages and cultures.
- Furthermore, industry mentors have joined hands to lend design thinking expertise, and CSR sponsors have agreed to generously support the program. Upon training the task force over the period of December 2021 to April 2022, the ecosystem will be opened to vernacular innovators.

**Atal Innovation Mission (AIM)**

- The Atal Innovation Mission (AIM) is a flagship initiative set up by the NITI Aayog to promote innovation and entrepreneurship across the length and breadth of the country.
- **AIM's objectives** are to create and promote an ecosystem of innovation and entrepreneurship across the country at school, university, research institutions, and MSME and industry levels.

The Atal Innovation Mission has following **two core functions**:

- **Entrepreneurship promotion** through Self-Employment and Talent Utilization, wherein innovators would be supported and mentored to become successful entrepreneurs.
- **Innovation promotion:** to provide a platform where innovative ideas are generated.

**Analytica**

- Vernacular Innovation Program **strengthens the design and innovation capabilities** of our communities, thereby assisting local entrepreneurs, artisans and innovators to **seamlessly assimilate the knowledge cum technical materials** that AIM will develop. This would assist India in building a strong local network of design experts and innovation practitioners
- This one of its kind initiative by Atal Innovation Mission, will help in **overcoming the barriers of language and empower innovators** in the farthest areas of the country.
- It will systematically decouple creative expressions and languages of transaction.
- India **may be the first nation in the world to launch such an initiative** where an innovation ecosystem catering to 22 languages plus English is being built. By providing access to learning in one’s language and culture, AIM looks forward to enriching the local, regional, national and global innovation pipelines.

**Other key initiatives of NITI AAYOG to promote innovation and entrepreneurship**

- AIM-PRIME (Program for Researchers on Innovations, Market-Readiness & Entrepreneurship)
  - AIM-iCREST

**PEPPER IT WITH** AIM-PRIME, AIM-iCREST, other schemes like- ASPIRE, IMPRINT etc.

## Spices Statistics and Spices production at a Glance 2021

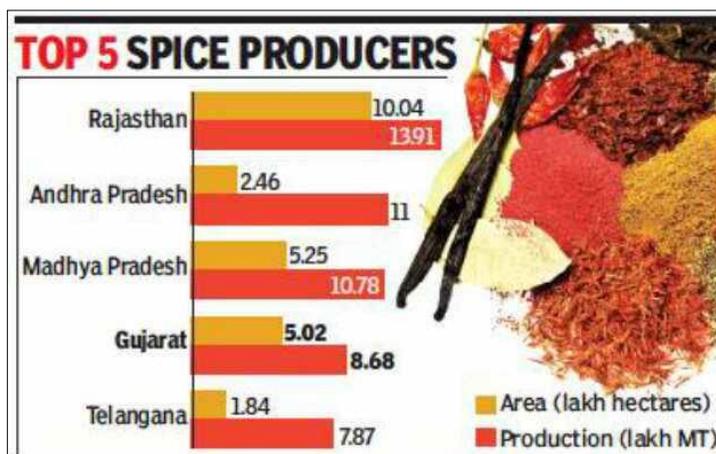
### News Excerpt-

Union Minister for Agriculture and Farmers Welfare, released the book '**Spices Statistics at a Glance 2021**'. The book is a compendium of all the spices statistics like, area, production, productivity, export, import, price and value of output of various spices produced in the country.

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### Statistics

- India is the world's **largest producer, consumer and exporter** of spices.
- Spices production** in the Country **grew** from 67.64 lakh tonnes in 2014-15 to 106.79 lakh tonnes in 2020-21 with an annual growth rate 7.9%, **following an increase in area from 32.24 lakh hectare to 45.28 lakh hectare**.
- Among the major spices, Cumin (14.8%), Garlic (14.7%), Ginger (7.5%), Fennel (6.8%), Coriander (6.2%), fenugreek (5.8%), Red chilli (4.2%) and Turmeric (1.3 %), show significant growth rate in production.
- The **rapid stride in production has made available quality spices for export**. This is reflected in the growth of spices export which grew from 8.94 lakh tonnes worth Rs 14900 crores to 16 lakh tonnes valued at Rs 29535 crores (US\$ 3.98 billion) during the above period, logging an annual growth rate of 9.8% in terms of volume and 10.5% in terms of value.



### Major Spice/state wise production of spices

Major spices	Leading state
Pepper	Karnataka
Cardamom (small)	Kerala
Cardamom (large)	Sikkim
Chilli	Andhra pradesh
Ginger	Madhya pradesh
Turmeric	Telangana
Coriander seed	Madhya pradesh
Cumin	Punjab
Cloves	Tamil nadu
Garlic	Madhya pradesh

- The **export of spices contributes 41% of the total export earnings from all horticulture crops** in the country and **it ranks fourth among agricultural commodities**, falling behind only the marine products, non-basmati rice and basmati rice.
- The spectacular growth of spices witnessed in the country is **due to the various development programmes** implemented by the Ministry of Agriculture & Farmers Welfare like **MIDH, RKVY, PKVY, PMKSY**, etc.
- The demand of spices has tremendously increased due to the recognition of spices as a **health supplement** especially during the pandemic period, which can be clearly seen from the growing export of spices like turmeric, ginger, cumin, chilli etc.

### Spices Board of India

- Spices Board is a statutory body constituted with **effect from 26.02.1987 under the Spices Board Act, 1986** by **merging** the erstwhile **Cardamom Board and the Spices Export Promotion Council** under the administrative control of the Department of Commerce.
- Spices Board is responsible for the **overall development of cardamom industry and export promotion of 52 spices** listed in the schedule of the Spices Board Act, 1986.
- The **primary function** of the Board includes **development of small and large cardamom, promotion, development, regulation of export of spices and control on quality of spices for export**. The Spices Board also undertakes research activities on cardamom (small & large) under Indian Cardamom Research Institute.



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## INTERNATIONAL RELATIONS

### Russia-Ukraine Conflict

#### News Excerpt

In the wake of tensions on the Russia-Ukraine border, a wider conflict could unfold. Ukraine says that Russia has tallied around 90,000 troops on the border; the US Intelligence reports say that a Russian invasion of Ukraine is imminent as early as next month.

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#### Pre-Connect:

- **MINSK I-** In September 2014, the Ukrainian government and Russian-backed separatists signed a 12-point ceasefire agreement in the capital of Belarus. It included prisoner exchanges, humanitarian aid, and the withdrawal of heavy weapons.
- The agreement quickly broke down, with violations by both sides.
- **MINSK II-** A 13-point agreement was signed in February 2015 in Minsk by representatives of Russia, Ukraine, the OSCE and the leaders of two pro-Russian separatist regions.
- In a joint declaration, French, German, Russian, and Ukrainian leaders pledged to support the accord.
- The deal set out a series of military and political steps that remain unimplemented. A major blockage has been Russia’s insistence that it is not a party to the conflict and therefore is not bound by its terms.

#### Key Points

- Russia and Ukraine have been linked for centuries through language, culture, and familial connections. During the Soviet era, Ukraine was the second-most powerful Soviet republic after Russia, and it had crucial strategic, economic, and cultural ties.
- In the years since Ukraine split from the Soviet Union, both Russia and the West have sought to increase their political influence there, in order to maintain a favorable power balance throughout the region.

#### Highlights:

- ✓ Ukrainian territory plays a crucial role for the United States and the European Union as a buffer between Russia and the West. As tensions with Russia rise, the US and the EU are under increasing pressure to keep Ukraine free of Russian influence.
- ✓ For many in Russia and in the ethnically Russian parts of Ukraine, the shared heritage of the countries is an emotional issue that has been exploited for electoral and military purposes.
- ✓ Efforts to induct Ukraine into NATO have been ongoing for many years and seem to have picked up pace recently. Russia has declared such a move a “red line”, with Moscow worried about the consequences of the US-led military alliances expanding right up to its doorstep.



**Crimea's Invasion:**

- The annexation of Crimea by Russia marked the first time a European nation has annexed territory from another since World War II.
- After the 2014 Ukrainian revolution, Russia militarily intervened in Crimea in response to a broader unrest that swept all of Ukraine's south and east.

**India's stand on the issue:**

- ✚ The Indian government kept a low profile on Russia's intervention in Crimea and did not join the Western nations in condemning it.
- ✚ The Indian government voted against a Ukrainian-sponsored resolution during the UN General Assembly in November 2020, thus supporting old ally Russia on this matter.

**PEPPER IT WITH**  
NATO agreement, Warsaw pact, G8/G7, New START Treaty

**India-Maldives**

**News Excerpt**

There has been an 'India Out' campaign [#IndiaOut] within Maldives, the Indian Ocean island nation. An anti-government campaign is launched by critics who believe the current administration has "let Indian boots on the ground", thereby "compromising the sovereignty of the island nation."

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**Key Points**

- India and Maldives have signed an agreement to develop and maintain a coastguard harbour and dockyard at Uthuru Thilafalhu – a strategically located atoll near the Maldivian capital of Malé.
- Uthuru Thilafalhu, a lagoon island located near the capital of the Maldives, has a highly strategic setting. It is well positioned to observe the incoming and outgoing traffic at the main port in Male, and it has the closest landing strip to the capital.

**Highlights**

- The recent 'India Out' campaign in the Maldives is against the opposition to the UTF harbour development deal which is being seen as a way of allowing Indian military presence on native soil.
- The current Maldivian government has rejected the 'India Out' campaign and has expressed concern at attempts to spread "misguided and unsubstantiated information to propagate hatred towards India".
- The ruling administration has denied there is any Indian military presence in the country, or a threat to Maldives's sovereignty.
- The ruling administration has opted for an 'India first' foreign policy. It makes no secret of its preference for India as its first choice, be it on security partnership, development assistance or COVID response, including vaccines.
- India, on its part, has committed \$1.4 billion towards the Maldives's "socio-economic development needs", engaged through high-level visits, and lobbied extensively to help the Maldives clinch Presidency at the United Nations General Assembly.

**Regional Anti-Terrorist Structure**

**News Excerpt**

India assumed the Chairmanship of Council of Regional Anti- terrorist structure of Shanghai Cooperation Organisation (SCO) RATS-SCO from October 2021 for a period of one year.

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### Key Points

- The Agreement on the Regional Anti-Terrorist Structure as a permanent SCO body was signed during a meeting of the Council of Heads of SCO Member States in 2002, in St. Petersburg.
- RATS-SCO is a coordinating center for combating terrorism, separatism and extremism at the regional and global levels.
- RATS platform provides a mechanism for interaction between the border services of the competent authorities of the SCO member states to address a separate area of ensuring the security of the SCO member states from transnational crimes associated with terrorism, such as illegal migration and trafficking of drugs, weapons, explosives, etc.

### India's Role:

- India's role is essential in maintaining peace and stability in the Central Asian region which translates into a peaceful SCO region.
- India has an important role to play in countering terrorism in the region, most importantly due to evolving situation in Afghanistan.
- India has an important contribution in maintaining peace and stability in Afghanistan and in humanitarian support to the war-torn country post-US withdrawal.
- RATS SCO member states also participated in a two-day seminar on cyberspace security, which was organized by India as chairman to enhance collaboration to counter the misuse of the internet by terrorists, separatists, and extremists.

**PEPPER IT WITH**

Shanghai Cooperation Organisation (SCO), RIC

### India-Poland

#### News Excerpt

Indian cabinet has approved an agreement that mutually assists India and Poland in criminal matters with a view to enhancing their capabilities and abilities to investigate and prosecute crimes, including crimes related to terrorism.

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### Key Points

- The Treaty will provide a legal framework for cross-border cooperation in investigating and prosecuting crime, as well as in tracing, restraining and confiscating illegal proceeds and instruments of crime as well as the funds meant to finance terrorist acts, in the context of transnational crime and its links to terrorism.
- The Treaty aims to enhance effectiveness of both the countries in investigation and prosecution of crime, through cooperation and mutual legal assistance in criminal matters.
- The treaty will be instrumental in gaining better inputs and insights in the modus operandi of organized criminals and terrorists. These in turn can be used to fine tune policy decisions in the field of internal security.

### Relation in various sectors

- Poland is India's largest trade partner and export destination in the Central European region, with bilateral trade growing almost seven-fold over the last ten years.
- Indian investments in Poland are valued at over US\$3 billion which comprises companies such as ArcelorMittal, Videocon, Ranbaxy, Tata Consultancy Services, HCL Technologies Ltd, Infosys and Wipro, Jindal Stainless, Berger Paints India and CRISIL.

- A Memorandum of Understanding on Agriculture for technical and institutional cooperation was signed between both countries. Poland possesses world class food processing including preservation/storage technologies while India is one of the largest producers for many fruits, dairy and Agro products.
- Poland possesses reputed clean coal technologies and Polish public sector companies have played a substantial role in development of mining and power sectors in India.

**India-Vietnam**

**News Excerpt**

India held a bilateral meeting with the delegation from Viet Nam in October, 2021. In line with the comprehensive strategic and economic partnership and growing relations between India and Viet Nam, the Ministers of the two countries signed a “Letter of Intent” for enhanced cooperation in the Postal Sector.

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**Key Points:**

- By signing a Letter of Intent, both nations acknowledge that they have common interests in enhancing cooperation in the field of Posts and Telecom, promoting information exchange, as well as working together to implement projects in Human Resource Development.
- India and Viet Nam also sought to promote enhanced cooperation of postal designated operators and service providers of both the countries.
- Viet Nam appreciated the efforts of India for developing indigenous 5G network under “Atma Nirbhar Bharat”.
- Viet Nam suggested that India should collaborate in the field of 5G to produce world class technology that has been indigenously designed and developed 5G telecom equipment.

**PEPPER IT WITH**  
 Mekong Ganga Cooperation,  
 Look East Policy, UNSC  
 Membership

**The India-Central Asia Dialogue**

**News Excerpt**

As part of the third India-Central Asia dialogue hosted by India, a joint statement was issued calling for "immediate" humanitarian aid for Afghans. India and Central Asian nations share a “broad regional consensus” on Afghanistan that proposed the use of the India-run terminal at the Chabahar port in Iran as a route for trade.

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**Key Points**

- In their joint statement, they said there is a broad ‘regional consensus’ on the issues related to Afghanistan, including the formation of a truly representative and inclusive government, as well as combating terror and drug trafficking.
- It also focused on central role of the UN, providing immediate humanitarian assistance for the



Afghan people and preserving the rights of women, children and other national ethnic groups.

- The dialogue discussed about the “4 C’s” of Commerce, Capacity enhancement, Connectivity and Contacts to increase links.
- The dialogue also decided to explore establishing joint working groups to address issues of free movements of goods and services between India and Central Asian countries.

**India’s Role:**

- India has sent a shipment of medical aid by air to Afghanistan earlier this month, but the bulk of its planned aid including 50,000 tones of wheat is being discussed with Pakistan
- India-Central Asia trade is quite small at present, accounting for less than \$2 billion, most of which comes from Kazakh oil exports to India.
- Considering Pakistan's blockade of land trade with India, the countries decided to take advantage of the sea route via Chabahar, which is connected to Central Asia by road and rail through Iran, as well as the International North South Transit Corridor (INSTC) that goes via the Iranian port of Bandar Abbas.

**PEPPER IT WITH**

INSTC, SILK ROUTE, ASHGABAT AGREEMENT, Eurasian Economic Union (EAEU)

**Bhutan’s Highest Civilian Award**

**News Excerpt**

India's Prime Minister has been awarded the highest civilian award of Bhutan, the Order of the Druk Gyalpo, commonly known as "Ngadag Pel gi Khorlo".

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**Key Points:**

- Bhutan's highest decoration is presented for a lifetime of service to the Bhutanese people and the Kingdom of Bhutan.
- On 7th November 2008, the Order of the Dragon King was founded for those who have dedicated a lifetime of service to the nation and people of Bhutan.
- As part of the 114th Bhutan National Day celebration, the award was announced.

**India-Bhutan relations:**

- Diplomatic relations between India and Bhutan were established in 1968 with the establishment of a special office of India in Thimphu. The basic framework of India-Bhutan bilateral relations is the Treaty of Friendship and Cooperation signed in 1949 between the two countries and revised in February 2007
- India has been extending economic assistance to Bhutan’s socio-economic development since the early 1960s when Bhutan launched its Five Year Plans. India continues to be the principal development partner of Bhutan.
- For the 12th Five Year Plan, India’s contribution of Rs. 4500 cr. will constitute 73% of Bhutan’s total external grant component. The key areas of focus of GOI’s assistance include agriculture and irrigation development, ICT, health, industrial development, road transport, energy, civil aviation, urban development.
- Mutually beneficial hydro-power cooperation with Bhutan forms the core of bilateral economic cooperation. For Bhutan, hydro-power development continues to be a vital catalyst for socio-economic development.

- Four hydro-electric projects (HEPs) totaling 2136 MW are already operational in Bhutan and are supplying electricity to India. The 720 MW Mangdechhu was commissioned in August 2019.
- Two HEPs namely, 1200 MW Punatsangchhu-I, 1020 MW Punatsangchhu-II in Inter-Governmental mode and Kholongchhu HEP (600 MWs) under the joint venture mode are under various stages of implementation.

**PEPPER IT WITH  
SAARC, BBIN, BIMSTEC**

**Fisherman Issue with Sri-Lanka**

**News Excerpt**

Thirteen Indian fishermen belonging to Tamil Nadu were arrested by the Sri Lankan Navy on Monday evening on the charge of crossing the International Maritime Boundary Line (IMBL). A Sri Lankan naval vessel detained and confiscated two trawlers when fishing in the periphery of the IMBL.

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**Key Points:**

- Until 1974 and 1976, Indian boats had free access to the Gulf of Mannar, Palk Bay and the Bay of Bengal until the two countries signed treaties demarcating the International Maritime Boundary Line (IMBL).
- Designed to facilitate law enforcement and resource management, these agreements aimed to make Palk Strait a safer place.
- There have been no fishing privileges for Indian fishermen since then, and they are only allowed access for resting, drying nets, and the annual St. Anthony's festival, not for fishing.
- The boundaries between the two countries are not well defined, causing Indian fishermen to trespass into Sri Lankan waters in search of better catches. Fishermen from India often cross the Palk Strait into Sri Lanka, resulting in naval assaults by the Sri Lankan navy.

**Issues Involved:**

- Sri Lankan fishermen are concerned that trawlers, which are already under stress, are harming the marine ecosystem in Palk Bay. The impact of this damage to the marine ecosystem is detrimental to their livelihoods.
- On the Indian side, fisheries are diminishing, so Indian fishermen cross into Sri Lankan waters, depriving their counterparts of a livelihood.
- In Sri Lanka, bottom-trawling was banned and trespassing by foreign vessels was punishable with heavy fines.

**Katchatheevu Island:**

- ✓ Katchatheevu Island is an uninhabited off-shore island in the Palk Strait.
- ✓ In 1974, India ceded Sri Lanka the island via a joint agreement when Sri Lanka claimed territorial ownership of the island in the early 20th century.
- ✓ The Indian government further relinquished its fishing rights in the region through another agreement two years later.



**Way Forward:**

- There is a pressing need for Indian government institutions to institutionalize fishing in Indian waters so that alternative means of livelihood can be made available.

- A comprehensive plan must be developed by the government to reduce Indian fishermen's dependence on catch from Palk Bay.
- In order to avoid a crisis in bilateral relations, the underlying issues of the fisheries dispute need to be addressed. To improve relations with Sri Lanka, India must emphasize its traditional and cultural ties.

**PEPPER IT WITH**  
Neighborhood First Policy,  
SAGAR, SAARC



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## ENVIRONMENT

### Cold Waves in India

#### News Excerpt

In December, the India Meteorological Department (IMD) has prophesied a cold wave in parts of Uttar Pradesh, Punjab, Haryana, Delhi, Gujarat and Rajasthan.

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#### Pre-Connect

- A cold wave is referred to an extreme weather event that occurs in the winter season.
- Cold Wave is recorded when the minimum temperature is equal to or less than 10 degrees Celsius at a particular weather station in the plains, and is 4.5 degrees to 6.4 degrees below the normal temperature for that period.
- Cold wave and the severe cold wave is considered a negative departure from normal i.e. 4.5°C to 6.4°C and more than 6.4°C in hill stations respectively.
- In India, IMD issues colour-coded Alerts.

Colour coded alerts issued by IMD		
Green(No action)	Normal night	Minimum temperatures are near normal
Yellow Alert (Be updated)	Cold Alert	Cold wave conditions at isolated pockets persist on 2 nights
Orange Alert (Be prepared)	Severe Cold Alert for the night	(i) Severe cold wave conditions persist for 2 days (ii) Though not severe, but cold wave persists for 4 nights or more
Red Alert (Take Action)	Extreme cold Alert for the night	(i) Severe cold wave persists for more than 2 nights (ii) Total number of cold/severe cold wave nights exceeding 6 nights.

#### Cold Wave in India

- Cold waves are seasonal events, observed from November to March. During the last week of December and in January, extreme events like the cold wave persists.
- The minimum temperatures drop below 8°C over many parts of northern India.
- According to India Meteorological Department Punjab, Haryana, Chandigarh, Saurashtra and Kutch could witness a cold wave or a severe cold wave.
- In recent years, occurrences of extremely low temperatures in association with the incursion of dry cold winds from the north into the sub-continent area have been substantial in creating cold wave spells.
- The cold waves depend on weather systems and wind patterns formed in the middle latitudes, it is formed due to the western disturbances weather phenomenon (that is from Europe or

#### Cold Wave & Winter Pollution in India

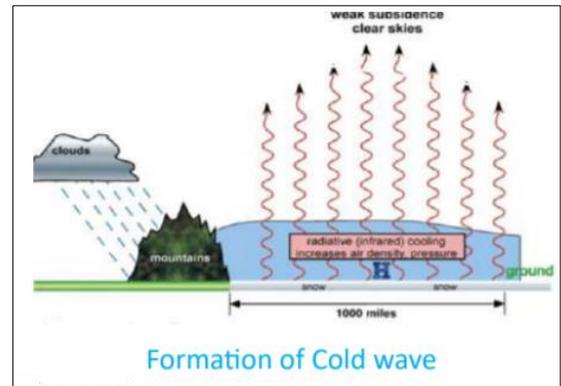
- ❖ Pollutants are trapped due to atmospheric changes in Delhi.
- ❖ According to the study by the Centre for Science and Environment (CSE), a New Delhi-based non-profit, Atmospheric changes during winter that lead to inversion, calm conditions, change in wind direction, and seasonal drop in ambient temperature entraps pollution across north India.
- ❖ This scenerio is further tripped into severe category by smoke from farm fires during November.
- ❖ The source of pollution across the region were common:
  - Stubble burning,
  - industrial and vehicular emissions,
  - bursting of firecrackers during Diwali.
- ❖ Cities like Vrindavan, Agra and Firozabad (all in UP), for instance, have comparatively lower annual average particulate matter 2.5 (PM2.5) levels than Delhi. But during the early winter of 2021, their weekly average PM2.5 levels exceeded that of Delhi.

West Asia since the winds from these regions bring cold weather).

- The factors that bring cold waves to India include the movement of cold air masses brought about by upper-level winds.
- They can be triggered by strong westerly winds approaching northwest India and transporting cold air towards the southeast direction. A build-up of an extended area of relatively high pressure over northwest Asia can also bring cold waves.

**Factors responsible for Cold Wave:**

- ✓ The formation of a cold wave is characterized by an influx of unusually cold air into middle or lower latitudes.
- ✓ The center of this formation is characterized by a strong high-pressure center that develops over the winter season in high latitudes.
- ✓ The cold polar or Arctic air masses are relatively shallow, extending one to several km above the surface.
- ✓ The formation of cold waves can be understood from the upper-level flow pattern and equator-ward motion of cold air masses. The surface high-pressure center of the cold air is accompanied by an upper-level convergence.
- ✓ The following are the weather situations for cold outbreaks over India—
  - The buildup of a ridge in the jet stream over NW Asia.
  - Formation of a surface high-pressure center over north and central India.
  - Movement of cold air masses in response to steering by upper-level winds.
  - Triggering mechanism like a strong westerly wave approaching NW India to enhance transport of cold air southeastward.
  - Extensive snow covers the north of India and the Northwest Himalayas.



**Impact of cold wave**

- The impact of the cold wave on human beings can lead to death or injury.
- The mortality rates show a marked increase in populations exposed to cold wave.
- During a cold wave, the animals require a higher intake of nutrition.
- Cold waves bring unexpected freeze and frost during the Rabi cropping season affecting crops, horticultural plantations, orchards, and other agricultural allied services.
- At times cold waves can leave the land in danger of forest fires that consume dead biomass.

**COVID-19 can amplify cold weather-related health risks**

The potential interactions between cold weather and COVID-19 include:

 <p><b>shared risk factors</b> amongst population sub-groups affected by both cold temperatures and COVID-19</p>	 <p><b>clinical impacts</b> arising due to concurrence of cold weather and COVID-19</p>	 <p><b>social isolation</b> and reduced access to support networks and resources</p>
 <p><b>increased exposure to cold temperatures</b> due to changes in patterns of energy use at home, fuel poverty and reduced access to warm public spaces</p>	 <p><b>system level risks</b> related to concurrency of impacts, change in patterns of health and social care use, access and delivery and health seeking behaviour</p>	

**Way Forward:**

- ✚ There is a gap in technology and capability. The scientific gaps in understanding meteorological phenomenon in the Indian region especially due to the lack of data in West Asia needs to be addressed through better international collaboration.
- ✚ Impact-based forecasting and risk-based warning for cold waves have to be adopted for the dissemination of information.
- ✚ The mechanism for early warnings and dissemination of proper information to the public by various means (like e-mail, WhatsApp, radio) should be used to disseminate the cold wave warnings.
- ✚ A clear policy at the various level of administration needs to be developed to address urban poor needs during the cold wave. Institutional mapping with a clear role and responsibility at all levels needs to be formalized.

**PEPPER IT WITH**  
 Western Disturbances, Mediterranean climate, El Nino and La nina, temperature Inversion, VOCs, PM 2.5

**Earth’s Black Box**

**News Excerpt**

In the remote part of Australia, a steel vault will be established. This seed vault will record the Earth’s warming weather patterns.

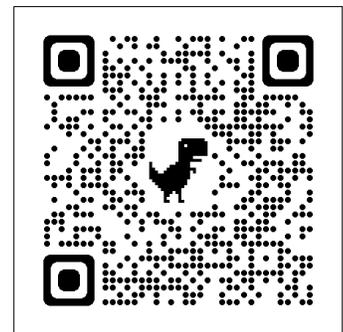
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**Background**

- Recently, at the COP-26 climate summit in Glasgow, leaders arrive at a consensus that all countries have to act more swiftly to prevent a catastrophic temperature rise.
- Scientists had already warned that if the temperature would rise beyond a threshold of 1.5 degrees Celsius, the risk of disasters like water scarcities, fatal heatwaves and ecosystem flop will grow immeasurably.
- Although, the world has already warmed by 1.1 degrees Celsius.

**About Earth’s Black Box**

- The project is a collaboration between Clemenger BBDO, creative agency The Glue Society, and researchers at the University of Tasmania. Its construction will be completed in its undisclosed location in early 2022, but the box's systems are already partially active, in that they are 'live recording' environmental updates in a beta test.
- This Black box (vault) is a 33-foot-long box made of 3-inch-thick steel. In this Steel Structure, Information will be gathered from the internet, data will be stored on a giant, automated, solar-powered hard drive with a capacity to collect information for about 50 years.
- Tasmania was chosen for its relative geopolitical and environmental safety, and the monolith will be designed to be resilient against threats including cyclones, earthquakes and, with its sloped walls.
- It will record leaders’ actions (or inaction) by scraping the internet for keywords relating to climate change from newspapers, social media and peer-reviewed journals.
- It will collect daily metrics, including average oceanic and land temperatures, atmospheric carbon dioxide concentration and biodiversity loss.
- Earth's Black Box is considered as an ongoing record of the world's trajectory towards a dire predicament. The idea is if the Earth does crash as a result of climate change, this indestructible recording device will be there for whoever's left to learn from that.



### Outcomes

- ✓ It will create an archive that could be critical to piecing together the missteps responsible for the destruction of humanity due to inaction towards climate change.
- ✓ Information related to climate change, species extinction, environmental pollution, and impacts on health will all be chronicled in the monolithic structure – so that if some future society might one day discover the archive, they'll be able to piece together what happened to our planet.
- ✓ The steel encasement is meant to hold a record of every step taken toward climate change. Therefore, provide an unbiased account of how humans caused the climate crisis.

**PEPPER IT WITH**  
 Doomsday Vault: Seed Bank, IPCC, INDC, Paris Agreement, Net Zero, CoP-26

### Conclusion

Apart from recording data, a Data-driven climate response system has to be included in the action. Earth Black Box will nudge humanity away from doomsday-like scenarios, with the mere existence of the installation hopefully encouraging today's society to act more progressively and responsibly in terms of climate action and environmental stewardship.

## Issue of Radioactive Pollution

### News Excerpt

Recently, radioactive contamination and related health issues have been reported in many parts of the globe including India. At least ten districts of Bihar have reported high levels of uranium in groundwater.

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### Pre-Connect

- Radioactivity is the phenomenon of impulsive emission of particles from the unstable. There are three types of radioactive emissions--Alpha, Beta and Gamma.
- Alpha particles are positively charged 'He' atoms, beta particles are negatively charged electrons and gamma rays are neutral electromagnetic radiations.
- Radioactive elements are naturally found in the earth's crust.
- Radioactivity is measured in Becquerel (SI unit) or Curie. Energy captivated per unit mass is measured by Gray, while the unit Sievert measures the quantity of radiation absorbed by human tissues.

- ❖ WHO have set drinking water standards for Uranium concentration in drinking water at 30 µg/L.
- ❖ The Atomic Energy Regulatory Board, India has prescribed the maximum limit of U in drinking water at 60 µg/L (ppb).
- ❖ However, the Bureau of Indian Standards (BIS) has not yet specified the norm for uranium level in drinking water.

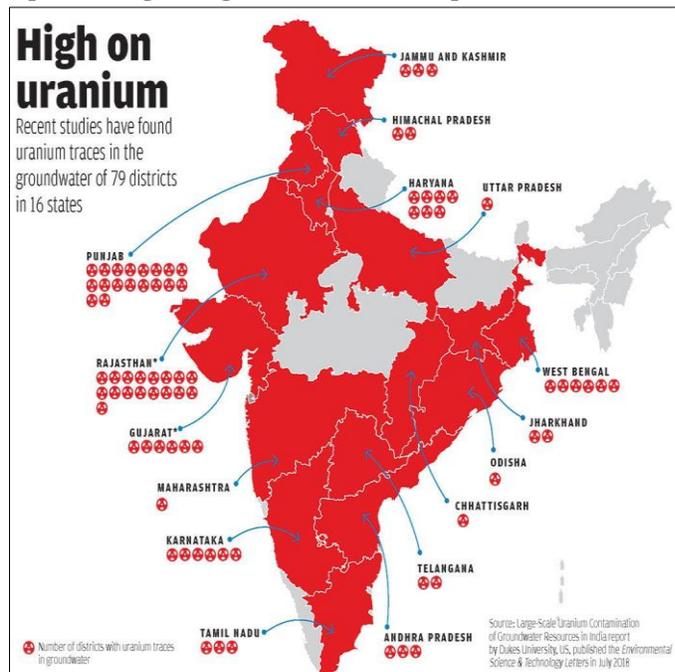
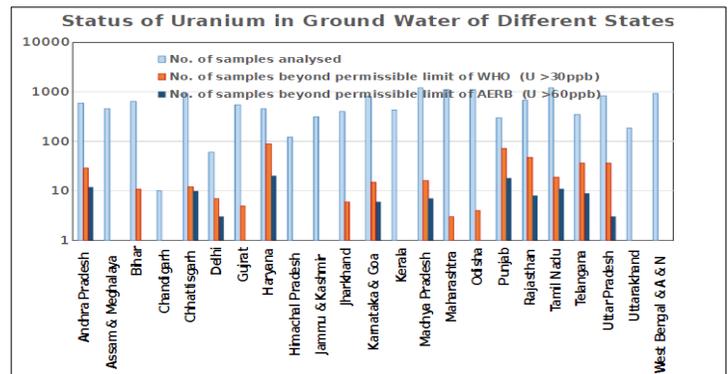
### Radioactive Water Contamination

- Many of the radionuclides are found in surface and subsurface waters, among which 3H, 14C, 40K, 210Pb, 210Po, 222Rn, 226Ra, 228Ra, 232Th and 234, 235, 238U are common.
- Uranium, thorium and actinium are three NORM series that contaminate water resources. Penetration of naturally occurring radioactive materials (NORM) from the soil sediments to the aquifer causes groundwater contamination.

- Radioactive contamination is more prevalent in groundwater as compared to surface water. Groundwater has more proximity to the radioactive elements.
- Sometimes, magma releases radioactive gases into the environment.
- Radium, a descendant of the NORM series, is one of the decidedly radiotoxic elements found in aquatic systems and can be penetrated into groundwater by aquifer rock dissolution, decaying of <sup>238</sup>U and <sup>232</sup>Th and desorption processes.
- Oceans and seas are the natural repositories of naturally occurring uranium, which is found in the form of a uranyl carbonate ion.
- A significant concentration of uranium is supposed to be found in the greater salinity of marine water. 40K is also found in considerable concentration in the marine environment.

### Radioactive Water Pollution in India

- ✓ As per the report of the Central Ground Water Board (CGWB), uranium contamination of groundwater is on the rise with Punjab and Haryana being the most affected.
- ✓ Bihar is also suffering from the issue of uranium-contaminated groundwater.
- ✓ A total of 14377 groundwater samples were collected from groundwater monitoring stations (GWMS) established by CGWB for the study.
- ✓ The study found that uranium concentrations in groundwater in shallow aquifers in the country varied from 0.0 to 2876 µg/L.
- ✓ The most affected states in terms of percentage of groundwater samples found to have uranium concentration more than 30 µg/L (ppb) prescribed by World Health Organisation (WHO) included Punjab at 24.2 percent followed by Haryana at 19.6 percent, and other states such as Telangana, Delhi, Rajasthan, Andhra Pradesh and Uttar Pradesh.
- ✓ Some states such as Karnataka, Madhya Pradesh, Tamil Nadu, Jharkhand, Chattisgarh, Gujarat, Himachal Pradesh, Maharashtra, Odisha, West Bengal and Bihar also showed uranium concentration above the threshold level of 30 µg/L in localised pockets.



### Impacts

- Distressing skin, lungs, genitals, and causing hair fall.

- Long-standing, permanent outcomes such as various infections like radiation damage, bone marrow fatality, cataract initiation, cancer stimulation, cholera, dysentery, tuberculosis and pneumonia. Sometimes, these outcomes may be fatal also.
- Genetic effects ionizing radiation induces mutations in germ cells (male sperm cells and female egg cells) or germ cells, resulting in structural alteration in germ cell DNA that are passed on to offsprings.
- Hereditary disorders can lead to premature death and severe mental illness.

**Key Concern**

Water pollution is a severe concern for the current generation. Radioactive pollution of water is newly emerging but is of grave concern for water pollution and human health.

**PEPPER IT WITH**  
 Bio-remediation, Nuclear fission,  
 Nuclear fusion, Half-life in  
 radioactivity, Radioactive decay

**Way Forward**

- ✚ Nowadays, proper analysis and monitoring of radioactive pollutants are required for a safe water supply.
- ✚ Prevention and precaution measures can check the anthropogenic sources of radioactive contamination in water resources. Various treatment methods like aeration, reverse osmosis, ion exchange and granule carbon adsorption are effective remedial measures for treating radioactively contaminated water.
- ✚ There is a dire need to include uranium monitoring in the current water quality monitoring program in India.

**Wildlife Crime Control Bureau**

**News Excerpt**

The Wildlife Crime Control Bureau (WCCB) has conducted species-specific enforcement operations with coordination of State Enforcement Agencies.

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**Pre-Connect**

- WCCB is a statutory multi-disciplinary body established by the Government of India under the Ministry of Environment and Forests, to combat organized wildlife crime in the country.
- Under Section 38 of the Wild Life (Protection) Act, 1972, it is mandated to collect and collate intelligence related to organized wildlife crime activities in the country.

**Instances of killing and Trafficking in India**

**Data**

- Between 2018 and 2020 about 2054 cases were registered for killing or illegal trafficking of wild animals in India.
- The number of cases registered in the year 2018 was 648 and 1099 persons were arrested, followed by 805 cases and 1506 arrests in 2019 and 601 cases and 1231 arrests in 2020.
- The data was made available based on cases registered by the Wildlife Crime Control Bureau and State Forest and Police Authorities in the past three years.

**Steps Taken by WCCD**

- ✓ The WCCB had launched operation “Save Kurma” to focus on the poaching, transportation and illegal trade of live turtles and tortoises. The operation resulted in seizure of more than 15,912 live turtles and the arrest of 55 suspects.

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- ✓ Operation Turtshield- I & II were taken up to tackle the illegal trade of live turtles from resulting in the seizure of 4,601 live/dead turtles.
- ✓ WCCB’s “Operation Clean Art” in October 2019 aimed to drag the attention of enforcement agencies towards illegal wildlife trade in Mongoose hair brushes resulted in the arrest of 43 wildlife offenders and seizure of 54,352 Mongoose hair brushes and 113 Kgs of raw Mongoose hair.
- ✓ The “Operation Freelyfly” on the illegal trade of live birds and “Operation Wetmark” is intended to ensure the prohibition of the sale of meat of wild animals in wet markets across the country.
- ✓ WCCD also conducted “Operation Birbil” to curb illegal trade in wild cat and wild bird species resulting in 23 cases being detected during the operation out of which 9 cases involved seizure of different bird species.

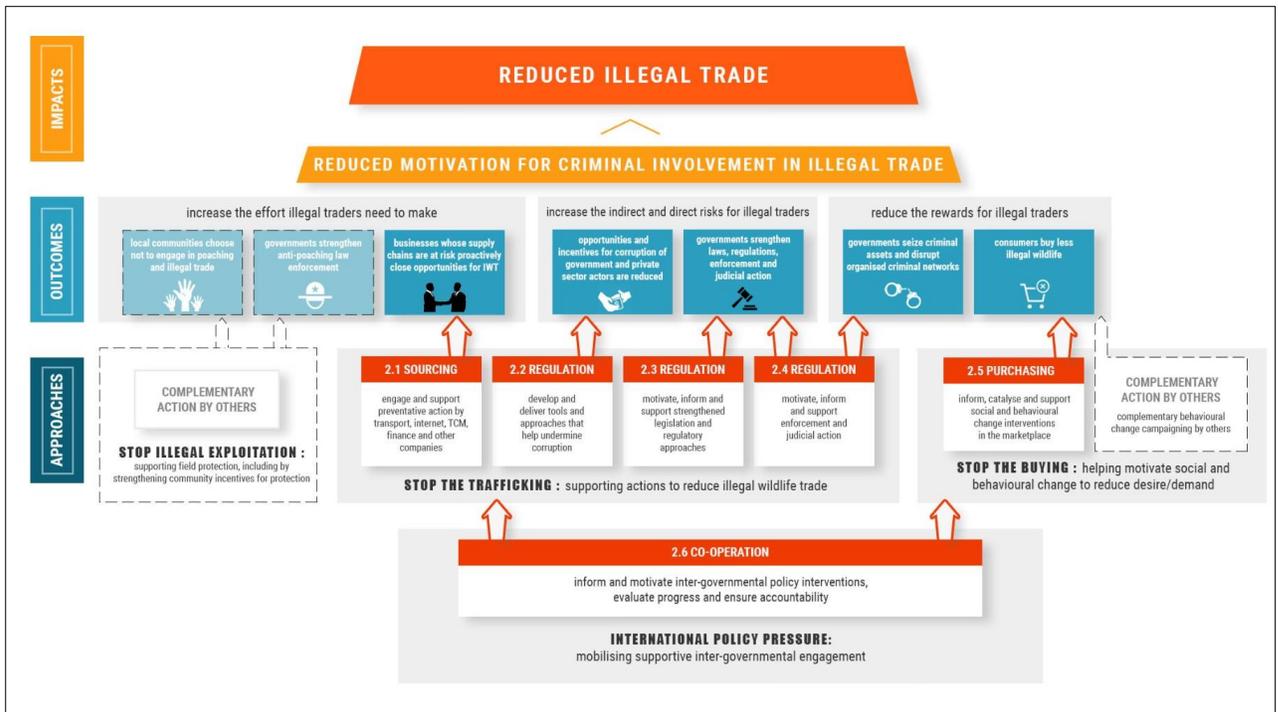
**Olive Ridley Sea turtles**

- ❖ More than 1500 Olive Ridley turtle tagged in exercise that commenced in Odisha after nearly 25 years.
- ❖ This exercise would help scientist to identify the migration path and places visited by the marine reptiles after congregation and nesting.
- ❖ Famous three mass nesting sites are Gahirmatha, Devi River mouth and Rushikulya.
- ❖ The metal tags affixed to turtles are non-corrosive and they do not harm their body. The metal can be removed later.
- ❖ The olive ridley sea turtle has been listed on Schedule – I of the Indian Wildlife (Protection) Act, 1972.
- ❖ It is listed as ‘vulnerable’ under IUCN.

**Menace of illegal wildlife trade**

- TRAFFIC has calculated that wildlife products worth about 160 US billion dollars were imported around the globe each year in the early 1990s.
- FATF released ‘Money Laundering and the Illegal Wildlife Trade report’ and according to the report, an estimated 7 billion to 23 billion dollars of illegal wildlife trade takes place annually.
- Habitat destruction and poaching to supply the international illegal wildlife trade (IWT) are two key drivers of this grave problem.
- Due to illegal wildlife trade, populations of species on earth declined by an average 40% between 1970 and 2000 - and the second-biggest direct threat to species survival, after habitat destruction, is wildlife trade.
- Wildlife trade can cause indirect harm by introducing invasive species. These species can compete with native species. Invasive species are as big a threat to the balance of nature as the direct overexploitation by humans of some species.

- Illegal wildlife trade is also often unsustainable, harming wild populations of animals and plants and pushing endangered species toward extinction. Endangered animals and plants are often the target of wildlife crime because of their rarity and increased economic value.



**Way Forward**

Governments must protect threatened animal populations by way of effective legislation and implementation. By increasing law enforcement, imposing strict deterrents, reducing demand for endangered species products would result in lowering the instances of illegal wildlife trade.

**PEPPER IT WITH**  
Edge Effect, Key Stone Species, Alpha and beta Biodiversity, CITES, Kunming Declaration

**Climate Change and Infectious Diseases**

**News Excerpt**

A study was conducted for the first time over the Indo-Gangetic Plain region. The study explored the association between climate parameters and infectious diseases.

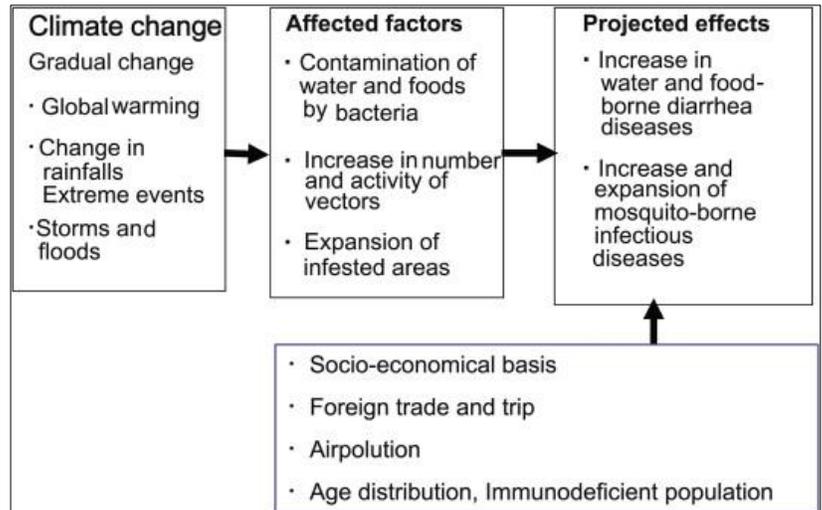
**Key Points of Study**

- Scientists concluded that climate parameters accounted for 9-18% of the total infectious disease cases. This study was focused on climate parameters and infectious diseases in children under 16-years-of-age in the central Indo-Gangetic Plain.
- The researchers established that climate parameters like temperature, humidity, rainfall, solar radiation, and wind speed were significantly associated with infectious diseases like gastrointestinal diseases, respiratory diseases, vector-borne diseases, and skin diseases.
- Maximum temperature and humidity (absolute/relative) are important climate drivers.

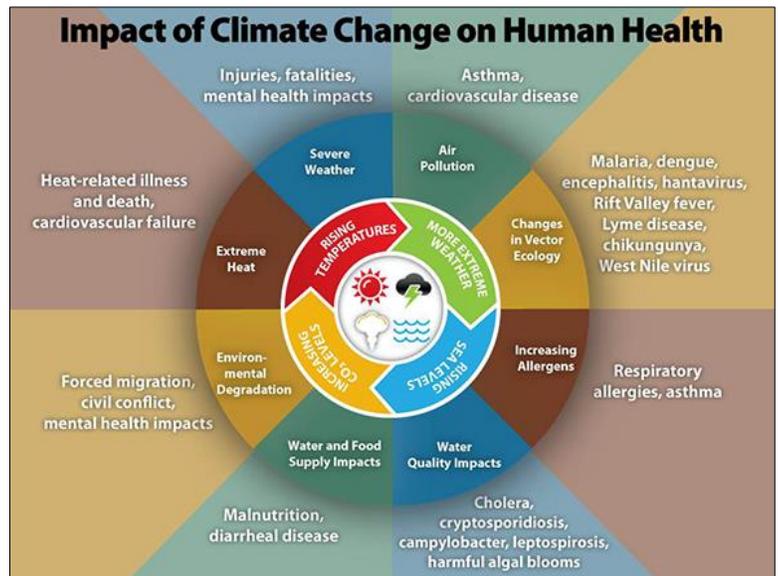
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## Climate Change and Human Infectious Diseases

- Climate change includes alternations in one or more climate variables including temperature, precipitation, wind, and sunshine.
- These changes may impact the survival, reproduction, or distribution of disease pathogens and hosts, as well as the availability and means of their transmission environment.
- The health effects of such impacts tend to reveal as shifts in the geographic and seasonal patterns of human infectious diseases, and as changes in their outbreak frequency and severity.
- The factorial and potential impacts of climate change on many types of infectious diseases, including vector-borne, water-borne, air-borne, and food-borne diseases.
- The temperature may affect disease by impacting the life cycle of pathogens.
- Pathogen refers to a wide range of disease agents, including viruses, bacterium, parasite germ, and fungi.



- The impact of climate change on pathogens can be direct, through influencing the survival, reproduction, and life cycle of pathogens, or indirect, through influencing the habitat, environment, or competitors of pathogens.
- Climate change may cause shifts in precipitation, which affects the dissemination of water-borne pathogens.
- Humidity change also impacts the pathogens of infectious diseases. The pathogens of air-borne infectious diseases such as influenza tend to be responsive to humidity conditions.
- Sunshine is one more important climate variable that may affect the pathogens of infectious diseases.
- The wind is a key factor affecting the pathogens of air-borne diseases.



**PEPPER IT WITH**  
 Neglected tropical diseases,  
 Sickle Cell, Vector borne  
 diseases

### Conclusion

Findings from this study will draw the attention of government and policymakers to prioritize effective

measures for child health as the present association may increase disease burden in the future under climate-change scenarios in already malnourished pediatric populations through multiple pathways. Hence, Concerted action is needed to address public health issues raised by climate change.

## Green Hydrogen Microgrid Projects

### News Excerpt

India's first and one of world's largest Green Hydrogen Microgrid Projects to be set up at Simhadri (near Visakhapatnam).

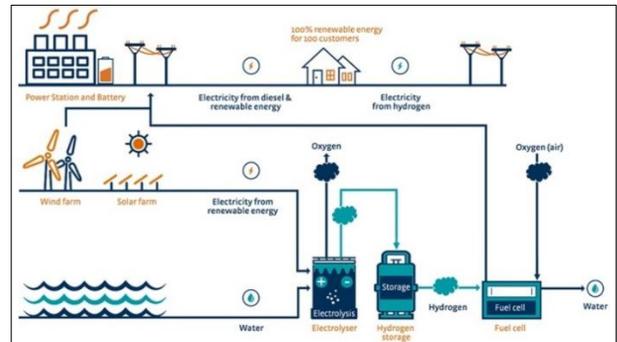
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### Pre-Connect

- With a view to accelerate development of hydrogen energy sector in India, a National Hydrogen Energy Road Map (NHERM) was prepared and adopted by the National Hydrogen Energy Board in January, 2006 for implementation.
- The main objective of NHERM was to identify the pathways, which will lead to gradual introduction of hydrogen energy, accelerate commercialization efforts and facilitate the creation of hydrogen energy infrastructure in the country.

### About

- It is India's first Green Hydrogen based Energy Storage Project.
- It would be a precursor to large scale hydrogen energy storage projects and would be useful for studying and deploying multiple microgrids in various off grid and strategic locations of the country.
- The hydrogen would be produced using the advanced 240 kW Solid Oxide Electrolyser by taking input power from the nearby Floating Solar array.
- The hydrogen produced during sunshine hours would be stored at high pressure and would be electrified using a 50 kW Solid Oxide Fuel Cell.
- It is a unique project for India and would open doors for decarbonising the far-off regions of the country like Ladakh, J&K etc., hitherto dependent on diesel generators.



### Outcomes

- ✓ It is a unique project for India and would open doors for **decarbonising** the far-off regions of the country like Ladakh, Jammu and Kashmir etc., hitherto dependent on diesel generator.
- ✓ Adoption of Cleaner technologies like green hydrogen project is in-line with the vision for becoming carbon neutral by 2070.

**PEPPER IT WITH**

Blue Hydrogen, Green Hydrogen, Grey Hydrogen, Hydrogen Fuel Cell

## Reintroduced Gharials in Beas

### News Excerpt

The gharial has been reintroduced in the Beas Conservation Reserve. This is an ambitious programme of the Punjab government.

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### Pre-Connect

- The reptiles were commonly sighted in the Beas River till the 1960s but later became extinct.
- The gharial can be found in north Indian rivers like the Ganga, Yamuna, Chambal and their tributaries.
- The gharial is listed in Schedule I of Wildlife (Protection) Act, 1972 and as Critically Endangered on IUCN Red List.
- Gharials are the topmost predators in a river. Gharial balance the riverine food chain. Gharial keeps in check their prey (i.e. fish). The presence of gharials indicates a healthy riverine ecosystem.

### Gharial in Beas Conservation Reserve

- Since 2017, more than 90 gharials were released in the Beas Conservation Reserve.
- Gharials have been dispersed in upstream and downstream sites in the reserve and they can be spotted any time depending on the water levels and season, indicating that the first step of their rehabilitation has been successfully taken place.
- The next big challenge is breeding. The change in the hydrology due to construction of dams and barrages, significantly reduced water flow, rapid land-use change of floodplains and rampant overfishing led slowly into the extinction of the gharial from the Beas.
- In the first phase of the re-introduction project, 47 gharials were released in 2017-2018 in the river in Amritsar and Tarn Taran districts.
- Later, 23 gharials were released in February 2021 on an island near Saleempur and Tahli Forest in district Hoshiarpur. Most recently, in December, another set of 24 gharials was released near the Kulla Fatta forests in the reserve in Hoshiarpur district.

### About Gharial

#### Habitat And Distribution:

- ✓ Gharial prefers deep fast flowing rivers, however adult gharial have also been observed in still water branches (jheel) of rivers and in comparatively velocity-free aquatic environments of deepholes (kunds) at river bends and confluences.
- ✓ Sand and rock outcrops are preferred basking sites and these animals show considerable site fidelity.
- ✓ Historically, gharial were found in the river system of India, Pakistan, Bangladesh and southern part of Bhutan and Nepal. Gharial survive only in the waters of India and Nepal.
- ✓ The surviving population can be found within the tributaries of the Ganges river system: Girwa (Uttar Pradesh), Son (Madhya Pradesh), Ramganga (Uttarakhand), Gandak (Bihar), Chambal (Uttar Pradesh, Madhya Pradesh and Rajasthan) and Mahanadi (Orissa).

#### Conservation Issues

- Dam, barrages, and water abstraction adversely affects gharial by turning suitable river habitats into marginal/ unsuitable lakes, and by altering the quantity and quality of water available to downstream river sections.
- Gharial, with its long, toothy rostrum is particularly vulnerable to entanglement in fishing nets, where it is frequently trapped underwater and drowns. Entangled gharial are also

commonly killed or have their rostrums chopped off to disentangle nets and perhaps, in retaliation for damaging nets.

- River bed cultivation threatens gharial survival by alienating them from the terrestrial component of its habitat leading to desertion and migration.
- Removal of sand from riverbanks disrupts gharial behaviour and may even force local populations to desert the area. Mining activity may destroy vital basking and nesting sites and may also result in direct mortality of eggs during the nesting season.
- Egg harvesting for subsistence food use by riparian residents at some gharial locations directly increases egg mortality, reduces recruitment, and may also facilitate additional predation by natural nest predators.

**Way Forward**

- ✚ Regular patrolling and monitoring of the reserve by forming a gharial task force, rapid rescue unit and anti-poaching group have to be formed. So that rehabilitation and breeding can be ensured.
- ✚ The monitoring teams should work for raising awareness of the farmers and riparian communities working in the close vicinity of the Beas River.

**PEPPER IT WITH**  
National Park, Wildlife Sanctuary, Conservation reserve, Man and Biosphere Programme

**Star Rating Protocol of Garbage Free Cities**

**News Excerpt**

On the eve of Good Governance Day, the Ministry of Housing and Urban Affairs (MoHUA) launched the Star Rating Protocol of Garbage Free Cities- Toolkit 2022.

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**Pre-Connect**

- Swachh Bharat Mission-Urban 2.0 was launched with the overall vision of creating “Garbage Free Cities” (GFC), thereby placing India on a new trajectory of growth towards an ecosystem of holistic sanitation and waste management.
- For achieving this vision, a key objective under SBM-U 2.0 is to make every urban local body at least 3-star Garbage Free as per the Star Rating protocol.

## GARBAGE FREE CITY



**1** No garbage or litter is found in any public, commercial or residential locations



**2** 100% waste generated is scientifically managed including plastic and C&D waste



**3** No garbage or litter is found in any storm drains and water bodies in the city



**4** All legacy waste has been remediated



**5** Steady reduction in the waste generated by the city



**6** Visible beautification of the city

### Star Rating of Garbage Free Cities (GFC)

- The star rating conditions have been designed in a way to enable cities to gradually evolve into a model (7-star) city, with progressive improvements in their overall cleanliness.
- The protocol, with increasing levels of stringency with an increasing star rating, will also be aspirational, feeding cities ambitions and dreams of becoming an ideal city for its residents, and a role model for other cities to follow.

Methods of engaging with key citizen categories	
<b>Resident Welfare Associations</b>	<ul style="list-style-type: none"> <li>• Door to door campaigns in residential areas to create awareness about source segregation and showcase on-site composting techniques &amp; its benefits</li> <li>• Door to door or other campaigns on the need for and ways of keeping a litter free environment</li> <li>• Awards for cleanest RWAs to generate a healthy spirit of competitiveness</li> <li>• Encourage to adopt nearby areas and take ownership to ensure these become 'garbage-free'</li> </ul>
<b>School Children &amp; Staff</b>	<ul style="list-style-type: none"> <li>• Invite students and staff to experience the complete waste management chain, from collection to disposal, and sensitize them about their role in making this chain more effective</li> <li>• Make students the youth ambassadors of the message of 'Garbage-Free Cities'</li> </ul>
<b>Self-Help Groups</b>	<ul style="list-style-type: none"> <li>• Awareness and sensitization sessions/workshops on importance of segregation and its long-term impact on public health through diversion of waste from landfills</li> <li>• Involvement of SHGs in the waste management value chain, as formalized contributors</li> </ul>
<b>NGOs</b>	<ul style="list-style-type: none"> <li>• Partner with NGOs to conduct community mobilization drives on various SWM interventions</li> <li>• Identify avenues for NGOs to contribute to door-to-door campaigns, sensitisation drives, cleanliness drives, etc. envisioned by the ULB</li> </ul>
<b>Hotel Association</b>	<ul style="list-style-type: none"> <li>• Award for most "Swachh" hotel, that segregates waste and has minimal waste output, along with user fee discount</li> </ul>
<b>Prominent Persons</b>	<ul style="list-style-type: none"> <li>• Make them "Swachh Champions" for their neighborhoods, promote the message of segregation and decentralized processing.</li> </ul>

### Conclusion

India's tryst with garbage, the waste from the use of materials in homes, institutions and factories in its cities is evolving sharply in policy and practice. This change needs to be recognised and disseminated, so that waste does not add to contamination and become a public health menace. Instead, waste should become a resource, to be reworked, reused and upcycled. This will minimise the use of materials in our world, as well as mitigate environmental damage. It is a win-win scenario.

### Finance required to meet COP-26 commitments

#### News Excerpt

India will need nearly US \$1 trillion in additional financing over the next ten years to meet the commitments made at the recently-concluded COP26 climate summit.

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#### About Commitments

- During the global event, Prime Minister had announced that India's non-fossil capacity will reach 500 GW, will meet 50 percent of its energy requirements with renewables, reduce its total projected carbon emissions by one billion tonnes and reduce carbon intensity by 45 percent till 2030.
- The PM also declared that India will attain net-zero emissions by 2070.

### India's Finances for climatic action

- India's climate actions have so far been largely financed by domestic resources

- The government has undertaken the Perform Achieve and Trade (PAT) scheme, targeting carbon emission reduction in 13 energy-intensive sectors, has permitted Foreign Direct Investment (FDI) up to 100 percent under the automatic route in the renewable energy sector, waived inter-state Transmission System (ISTS) charges for inter-State sale of solar and wind power for projects, has made a declaration of trajectory for Renewable Purchase Obligation (RPO) and set up Renewable Energy parks, apart from announcing the National Hydrogen Mission.
- The IEA estimates India needs \$1.4 trillion in cumulative new energy investments by 2040, but this estimate doesn't account for the cost of 'just transition'.
- To break away from the 'technological transfer' paradigm, India also needs climate-responsible investment in research and development.
- Overall, India must recognise that it needs a long-term 'climate investment framework' that combines different sources of finance.
- So far, India has argued that unless finance is available on these principles, few decarbonisation commitments are possible. This principled collective position has yielded some benefits – such as the commitment to set a new long-term collective finance goal through negotiations of the UN Framework Convention on Climate Change (UNFCCC).

**Issue of Global Climate finance**

- ✓ Developed countries had committed to a mobilisation goal of US \$100 billion per year, by 2020.
- ✓ The Glasgow Climate Pact noted with deep regret that the goal of developed country parties has not yet been met.
- ✓ The continued failure of the developed countries to fulfill their long-standing commitments on finance and technology is expected to make even the current transitions a lot more difficult.

**PEPPER IT WITH**  
 Green Climate Fund, Network for Greening the Financial System, United Nations Carbon offset platform, Carbon Fund

- ✓ In this regard, the COP26 has requested the Standing Committee on Finance to the UNFCCC to prepare a report in 2022 on progress towards achieving the goal of mobilising the US \$ 100 billion per year to address the needs of developing countries.
- ✓ According to India's Third Biennial Update Report (BUR) to the UNFCCC in February 2021, between 2014 and 2019, while the

Annual finance needed (by 2030)	Sources of finance
Low-carbon energy (> \$93 billion)	UNFCCC institutions – Green Climate Fund, Adaptation Fund
Just transition (~\$2 billion)	Bretton Woods institutions – World Bank, IMF
Adaptation & resilience (> \$67 billion)	New climate-responsible monetary and fiscal norms – G20
Research & development	Favourable climate-responsible trade and investment rules – WTO, plurilateral free trade agreements
	Plurilateral/mini-multilateral research framework

Global Environment Facility and Green Climate Fund have provided grants to a total of only US \$165.25 million, the corresponding domestic mobilisation amounts to US\$1.374 billion.

## India's Achievement in NDCs

### News Excerpt

India has achieved its Nationally Determined Contribution (NDC) target.

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### Pre-Connect

- Under the Paris Agreement which was adopted by signatory countries in 2015, India committed NDC with quantified targets to reduce the emissions intensity of its Gross Domestic Product (GDP) by 33-35 per cent till 2030 from the levels at 2005.
- Under INDC, India pledged to achieve about 40 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030, and to create an additional carbon sink of 2.5-3 billion tonnes of carbon dioxide equivalent through additional forest and tree cover by 2030.
- **As per article 4 of the Paris Agreement**, Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, to achieve the objectives of such contributions.

### India's Renewable Energy (RE) and NDCs

- At the recently concluded CoP-26, the Government is committed to achieving 500 GW of installed electricity capacity from non-fossil fuel sources by the year 2030.
- During the last 7 years, India has witnessed the fastest rate of growth in renewable energy capacity addition among all large economies, with renewable energy capacity (including large hydro) growing 1.97 times and solar energy expanding over 18 times.
- The country's installed Renewable Energy (RE) capacity stands at 150.54 GW (solar: 48.55 GW, wind: 40.03 GW, Small hydro Power: 4.83, Bio-power: 10.62, Large Hydro: 46.51 GW) as of November 2021.
- India's nuclear energy-based installed electricity capacity stands at 6.78 GW. This brings the total non-fossil-based installed energy capacity to 157.32 GW which is 40.1% of the total installed electricity capacity of 392.01 GW.
- India's renewable energy programme is driven by private sector investment. As per the REN-21 Renewables 2020 Global status Report, during the period 2014 -2019 renewable energy programmes and projects in India attracted an investment of US\$ 64.4 billion.
- In the year 2019 alone, US\$ 11.2 billion were invested. New opportunities have emerged, and altogether new business space has been created.
- Indian companies have begun to explore foreign stock exchanges as a source of funds. India is progressively becoming a favored destination for investment in renewables.

#### India and the US announce new programme

- ❖ A programme to support India-US S&T-based entrepreneurial initiatives that address the development and implementation of next-generation clean and renewable energy, energy storage, and carbon sequestration has been announced to tackle climate and clean energy challenges.
- ❖ The U.S.-India Science and Technology Endowment Fund, in partnership with Social Alpha, announces a Call for Ignition Grants titled "Technology-based Energy Solutions: Innovations for Net Zero.
- ❖ Focus areas:
  - Next generation Clean and Renewable Energy
  - Energy Storage
  - Carbon Sequestration

- India's wind power potential at hub height of 120 meters is 695 GW. The wind power installed capacity has grown 1.9 times during past 7.5 years to about 40 GW and 9.67 GW of projects are at various stages of commissioning.
- India has the 4th largest wind power capacity in the world.

### Steps taken by Government

- ✓ The government of India has notified the offshore Wind Energy Policy to harness the potential of offshore wind energy along India's coastline. Ministry is developing a strategy and roadmap for the installation of offshore wind projects off the coast of Gujarat and Tamil Nadu.
- ✓ To facilitate renewable power evacuation and reshape the grid for future requirements, the Green Energy Corridor (GEC) projects have been initiated.
- ✓ Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) is intended to provide energy and water security, de-dieselise the farm sector and also generate additional income for farmers by producing solar power, Government launched PM-KUSUM Scheme for farmers.
- ✓ The Government introduced, Production Linked Incentive Scheme "National Programme on High Efficiency Solar PV Modules" with an outlay of Rs. 4500 crores to support and promote manufacturing of high efficiency solar PV modules, including the upstage vertical components like cells, wafers, ingots and polysilicon in India and thus reduce the import dependence in Solar Photo Voltaic (PV) sector.
- ✓ To facilitate large-scale grid-connected solar power projects Solar Parks scheme has been introduced, a scheme for "Development of Solar Parks and Ultra Mega Solar Power Projects" is under implementation with a target capacity of 40 GW capacity by March 2022. Solar parks provide solar power developers with a plug and play model, by facilitating necessary infrastructure like land, power evacuation facilities, road connectivity, water facility etc. along with all statutory clearances.

#### **Home Energy Audit Initiative**

- ❖ The Bureau of Energy Efficiency (BEE) Launches Certification Course on Home Energy Audit Initiative (HEA).
- ❖ HEA enables appropriate accounting, quantification, verification, monitoring, and analysis of energy use of various energy-consuming equipment and appliances in a house.
- ❖ The certification program will create awareness on importance and benefits of energy audit and energy efficiency and conservation among students.

### Challenges

- Mobilization of the essential finance and investment on competitive terms.
- Gearing up the banking sector for arranging finances for larger deployment goals, exploring low-interest rate, long-term international funding, and developing a suitable mechanism for risk mitigation or sharing by addressing both technical and financial bottlenecks are major challenges.
- There is need for mobilization of funds on attractive terms has further increased with launch of PM-KUSUM, which provides farmers an opportunity to become entrepreneurs and participate in India's growth story.
- The ongoing efforts for mitigating investment risks, and easing approval processes would also need to be strengthened.

- Land acquisition is one of the major challenges in renewable power development. Identification of land with Renewable Energy potential, its conversion (if needed), clearance from land ceiling Act, decision on land lease rent, clearance from revenue department, and other such clearances take time. State governments have to play a major role in the acquisition of land for RE projects.

### Way Forward

There is a need to create an innovation and manufacturing eco-system in the country for the further development of renewable energy. Moreover, the integration of a larger share of renewables with the grid has to be carried out to build demand-side factors for the growth of renewables.

**PEPPER IT WITH**  
 Net Zero Emission, 30 by 30 initiative, Alliance for Nature, High Ambition Coalition for Nature and People



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## SCIENCE & TECHNOLOGY

### James Webb Space Telescope

#### News Excerpt

The James Webb Space Telescope (JWST), hurled into space by the Ariane 5 rocket from the European Space Agency's Spaceport in French Guiana, South America, in December. The spacecraft will arrive at a point in space called 'Lagrange point 2', also known as L2.

#### Pre-Connect

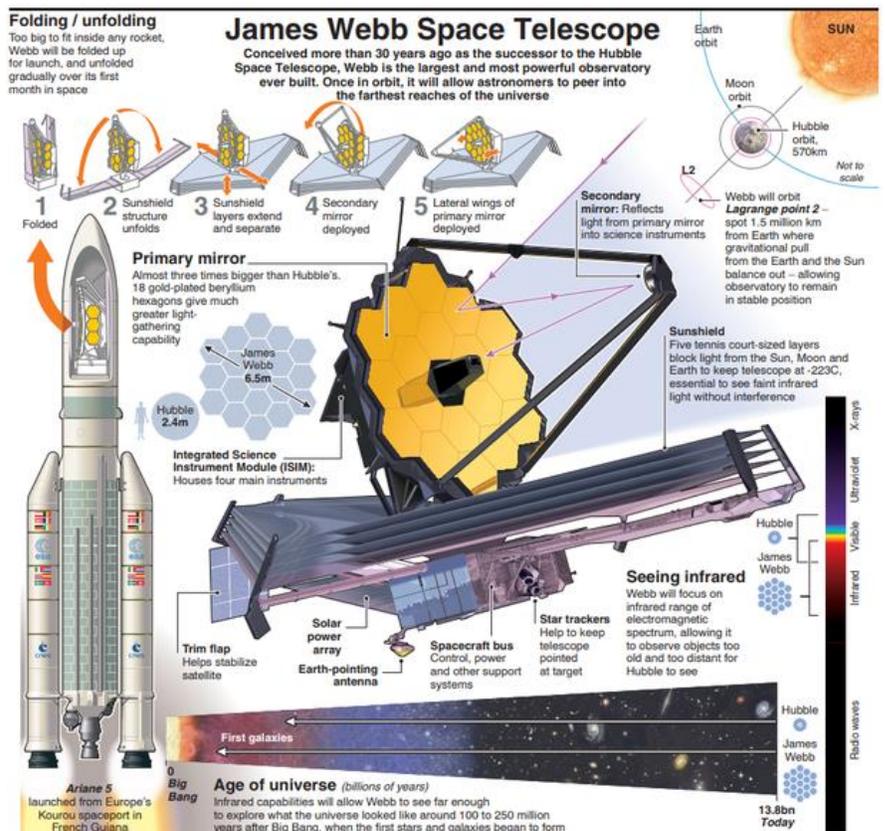
#### Lagrange Points:

- Lagrange points are positions in space where objects sent there tend to stay put.
- At Lagrange points, the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. These points in space can be used by spacecraft to reduce the fuel consumption needed to remain in position.
- There are five special points where a small mass can orbit in a constant pattern with two larger masses.
- The L1 point of the Earth-Sun system affords an uninterrupted view of the sun and is currently home to the Solar and Heliospheric Observatory Satellite SOHO.
- At the L2 point in space, the second Lagrange point (L2), the Earth-Sun system's gravitational forces, and the spacecraft's orbital motion would balance each other. Therefore, the spacecraft positioned at L2 will orbit the Sun, tagging along with the Earth in 365 days.

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#### About the JSW Telescope

- James Webb Telescope is the joint project of NASA, ESA (European Space Agency) and the Canadian Space Agency. It is often cited as the next-generation telescope.
- James Webb Space Telescope is fully deployed with a 21-foot, gold-coated primary mirror.
- It is slated to unveil unseen distant parts of the universe and help fathom the mysteries of the cosmos.
- Webb's four instruments to capture images and spectra of astronomical objects will provide wavelength coverage from



0.6 to 28 microns (the infrared part of the electromagnetic spectrum is from about 0.75 microns to a few hundred microns).

- The James Webb Space Telescope is an unprecedented mission that is on the precipice of seeing the light from the first galaxies and discovering the mysteries of our universe.
- Each feat already achieved and future accomplishment is a testament to the thousands of innovators who poured their life's passion into this mission.
- The telescope mounted on the JWST is an infrared telescope. The JWST is designed to detect faint signals from distant stellar objects in the infrared region of electromagnetic radiation.
- They are like the visible light and radio waves, part of the electromagnetic spectrum, but of different wavelengths.
- An infrared telescope is apt to observe the ancient, early universe, which is the primary goal of the JWST.

**JSWT and Hubble Telescope**

- ✓ The JWST telescope's 6.5 metres in diameter will collect more photons than Hubble's 2.4 metres mirror. JWST will have about seven times as much light-gathering capability as Hubble.
- ✓ Webb will primarily study the universe in the infrared, while Hubble looks at it mainly at optical and ultraviolet wavelengths.
- ✓ JWST would observe fainter stellar objects that Hubble cannot detect. Farther a thing is, fainter it is. The JWST would see objects much farther in the universe with a bigger collecting area than Hubble. With its sharp eye, JWST can see details on a twenty-five paise coin (penny) held at a distance of 40 kilometres.
- ✓ The instruments on Hubble can observe mainly in the ultraviolet and visible parts of the spectrum from 0.1 to 0.8 microns. Infrared observations are important because light at this wavelength can penetrate the dust that shrouds newly formed stars and planets, and make them visible.
- ✓ Hubble orbits the Earth at an altitude of ~570 km. Webb will not orbit the Earth, instead, it will sit at the Earth-Sun L2 Lagrange point, 1.5 million km away. Webb will orbit the Sun along with the Earth, but it will stay fixed at the same spot in relation to the Earth and the Sun.
- ✓ At the L2 point, Webb's solar shield will block the light from the Sun, Earth, and Moon, which will help it stay cool — important for an infrared telescope.

**PEPPER IT WITH**  
 Geo-Stationary Orbit, Sun synchronous orbit, polar synchronous orbit, escape velocity

**Science during colonial India**

**News Excerpt**

Recently, the Union Minister of State (Independent Charge) Science & Technology, Minister of State (Independent Charge) Earth Sciences has applauded the role of Indian scientists during the freedom movement.

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**About**

- India's subjugation was designed through colonial scientific plans, and the country gained its freedom through Indian scientific plans.
- Indian scientists played an important role in obtaining freedom for the country and played a crucial role in the country's development.

- The biggest and the oldest was the Indian Medical Service which was raised and maintained basically to serve the army.
- The charter of 1813 called for the introduction and promotion of knowledge of science among the inhabitants of British India.
- In 1857, the Universities of Calcutta, Bombay and Madras were set up on the pattern of London University.
- In 1864, Syed Ahmed Khan founded the Ahgarh Scientific Society and called for the introduction of technology in industrial and agricultural production. Four years later, Syed Imdad Ali founded the Bihar Scientific Society.
- In 1906, an Indian Agricultural Service was organised. The greatest scientist warrior was none other than Mahatma Gandhi and his non-violence and satyagraha was scientific resistance to British rule.

**Noted Scientist**

<b>SCIENTIST</b>	<b>SCIENTIFIC WORK &amp; CONTRIBUTION</b>
<b>NOBEL LAUREATE C.V. RAMAN</b>	<ul style="list-style-type: none"> <li>○ His work was based on the scattering of light and the discovery of the ‘Raman effect.</li> <li>○ CV Raman was awarded Nobel Prize in Physics in 1930.</li> <li>○ He contributed to the building up of nearly every Indian research institution in his time, founded the Indian Journal of Physics and the Indian Academy of Sciences, and trained hundreds of students who found important posts in universities and government in India and Myanmar (Burma).</li> <li>○ He was the uncle of Subrahmanyam Chandrasekhar, who won the 1983 Nobel Prize for Physics, with William Fowler.</li> <li>○ He significantly influenced the growth of science in India through his teaching, his support of nearly every Indian research institution of his time, and his founding of the Indian Academy of Sciences.</li> </ul>
<b>SIR JC BOSE</b>	<ul style="list-style-type: none"> <li>○ Sir Jagadish Chandra Bose was an Indian plant physiologist and physicist whose invention of highly sensitive instruments for the detection of minute responses by living organisms to external stimuli enabled him to anticipate the parallelism between animal and plant tissues noted by later biophysicists. Bose’s experiments on the quasi-optical.</li> <li>○ Bose’s experiments on the quasi-optical properties of very short radio waves (1895) led him to make improvements on the coherer, an early form of radio detector, which has contributed to the development of solid-state physics.</li> </ul>
<b>S. RAMANUJAN</b>	<ul style="list-style-type: none"> <li>○ At age 15 Srinivasa Ramanujan obtained a mathematics book containing thousands of theorems, which he verified and from which he developed his ideas.</li> <li>○ In 1903 he briefly attended the University of Madras.</li> <li>○ Indian mathematician Srinivasa Ramanujan made contributions to the theory of numbers, including pioneering discoveries of the properties of the partition function.</li> </ul>

<b>S.N. BOSE</b>	<ul style="list-style-type: none"> <li>○ His papers were published in English and European journals, and in 1918 he was elected to the Royal Society of London.</li> <li>○ Indian mathematician and physicist noted for his collaboration with Albert Einstein in developing a theory regarding the gaslike qualities of electromagnetic radiation (Bose-Einstein statistics).</li> <li>○ Bose’s numerous scientific papers (published from 1918 to 1956) contributed to statistical mechanics, the electromagnetic properties of the ionosphere, the theories of X-ray crystallography and thermoluminescence, and unified field theory.</li> <li>○ Bose’s Planck’s Law and the Hypothesis of Light Quanta (1924) led Einstein to seek him out for collaboration.</li> </ul>
<b>BIRBAL SAHNI</b>	<ul style="list-style-type: none"> <li>○ Professor Birbal Sahni was one of the greatest Indian scientists.</li> <li>○ He was famous and well acclaimed in the field of science all over the world.</li> <li>○ His contributions to geology and pale botany have been very significant and original.</li> <li>○ He worked hard to promote scientific research and make science popular.</li> <li>○ He had also worked with Sir Rutherford at Cambridge, England.</li> </ul>
<b>M.N. SAHA</b>	<ul style="list-style-type: none"> <li>○ Indian Astro-physicist noted for his development in 1920 of the thermal ionization equation, which, in the form perfected by the British astrophysicist Edward A. Milne, has remained fundamental in all work on stellar atmospheres.</li> </ul>

### Analytica

- Science was an instrument for development, awakening and freedom during the independence movement. the colonial period with limited resources and our scientists have created many institutions during such adverse times.
- The colonisers were interested only in exploiting India's natural resources. Thus, developments took place in a few areas like botany, geology, geography etc. However, the long standing Indian tradition of science was destroyed. All creative thought was sought to be stifled by the colonial masters to keep the Indians backward.

**PEPPER IT WITH**  
Raman Effect, Crescograph

### 5G Rollout in India

#### News Excerpt

As per the Department of Telecommunications (DoT), Delhi, Gurgaon, Mumbai, Bengaluru, Kolkata, Ahmedabad, Hyderabad, and Pune will be the first places to get 5G services next year.

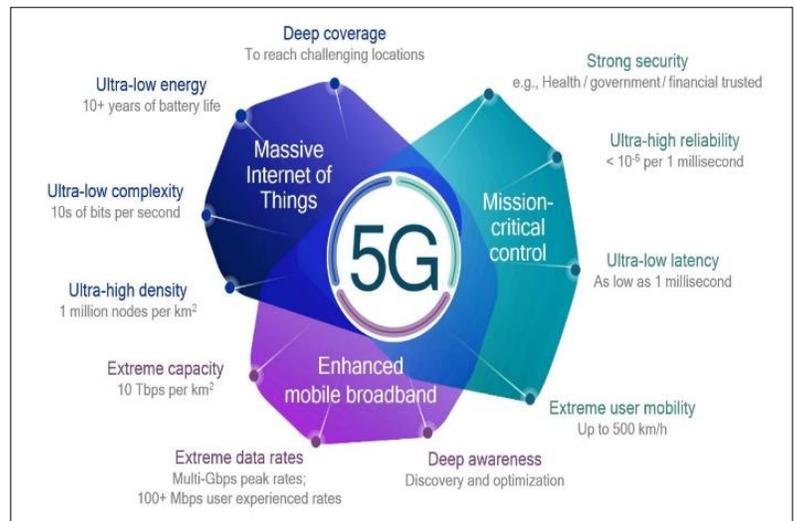
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#### About 5G

- At the beginning of this year, DoT had sought inputs from telcos and industry experts on the sale and use of radiofrequency spectrum over the next 10 years, including the 5G bands.

**DELHI: VIJAY NAGAR** 9717380832 & **OLDRAJENDER NAGAR** 9811293743 | **JAIPUR:** 8290800441  
**BENGALURU: KORMANGALA** 7619166663 & **CHANDRA LAYOUT** 7619136662 | **BHOPAL:** 7509975361  
**PATNA:** 7463950774 | **INDORE:** 7314977441 | **RANCHI:** 9939982007 | [www.ksgindia.com](http://www.ksgindia.com)

- 5G or fifth generation is the latest upgrade in the long-term evolution (LTE) mobile broadband networks. 5G mainly works in 3 bands, namely low, mid and high-frequency spectrum.
- The low band spectrum has shown great promise in terms of coverage and speed of Internet and data exchange, the maximum speed is limited to 100 Mbps (Megabits per second).
- The mid-band spectrum, on the other hand, offers higher speeds compared to the low band, but has limitations in terms of coverage area and penetration of signals.
- The high-band spectrum offers the highest speed of all the three bands, but has extremely limited coverage and signal penetration strength. Internet speeds in the high-band spectrum of 5G has been tested to be as high as 20 Gbps (giga bits per second), while, in most cases, the maximum internet data speed in 4G has been recorded at 1 Gbps.



**Where does India stand in the 5G technology race?**

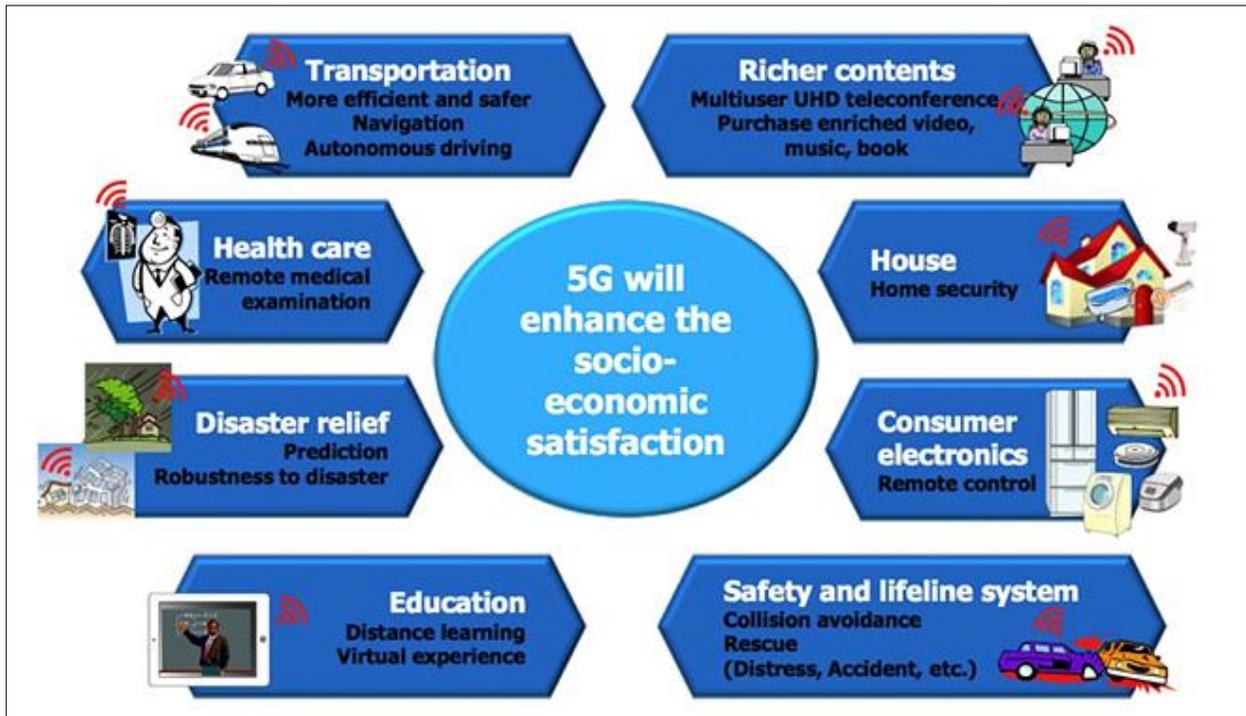
- Like other global players, India had, in 2018, planned to start 5G services as soon as possible, with an aim to capitalise on the better network speeds and strength that the technology promised.
- Telecom players, Reliance Jio Infocomm, Bharti Airtel and Vi, have been urging the DoT to lay out a clear road map of spectrum allocation and 5G frequency bands, so that they are able to plan the rollout of their services accordingly.

**Waiting for smoother services**

India is projected to retain the second rank in the global smartphone market. Launch of 5G network would benefit consumers looking for smoother services.

Rank (2025)	Country	Smartphone connections in 2025 (in mn)	Change in rank since 2018
1	China	1,458	◀ No change
2	<b>India</b>	983	◀ No change
3	Indonesia	410	▲ +1
4	US	346	▼ -1
5	Brazil	204	◀ No change
6	Russia	190	◀ No change
7	Japan	176	◀ No change
8	Pakistan	146	▲ +14
9	Nigeria	143	▲ +11
10	Bangladesh	133	▲ +11

### Socio-Economic Impacts of 5G



### Limitations of 5G technology

- ✓ The transition to the 5G network will require devices that can support it; current 4G devices do not have this capability and will become immediately obsolete.
- ✓ The implementation of the 5G network also implies a lack of immediate accessibility for average pockets, combined with a delay in its implementation due to a lack of means for its use.
- ✓ For the 5G network to function properly will require a whole ambitious **investment in infrastructure** to increase bandwidth and expand coverage, and this is not cheap. This situation will necessarily lead to delays in its implementation due to the high costs that governments will have to cover for 5G to function properly

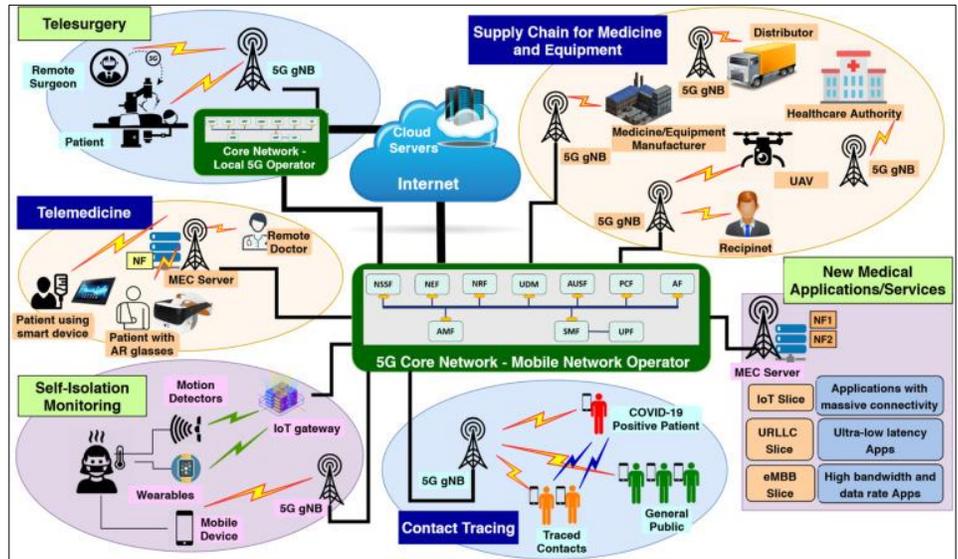
### COVID-19 and 5G

- COVID-19 pandemic caused a massive impact on healthcare, social life, and economies on a global scale.

**Cyberdrill 2021**

- ❖ Department of Telecommunications (DoT) and International Telecommunication Union (ITU) have commenced India-ITU Joint Cyberdrill 2021. It is a four days virtual event.
- ❖ This Cyberdrill is intended for Indian entities especially Critical Network Infrastructure operators.
- ❖ More than 400 participants participated from critical sectors, namely, power, insurance, finance, CERT-In and CSIRT, industry, academia, telecom service providers and field units of DoT.

- Technology has a vital role to enable ubiquitous and accessible digital health services in pandemic conditions as well as against “re-emergence” of COVID-19 disease in a post-pandemic era.
- Countries have been facing a number of healthcare, financial, and societal challenges due to the COVID-19 pandemic.
- Technological advancement is one of the key strengths in the current era to overcome the challenging circumstances of COVID-19 outbreak. The timely application of relevant technologies will be imperative not only to safeguard but also to manage the post-COVID-19 world.



**PEPPER IT WITH**  
Spectrum, EM Waves,  
Frequency Modulation,  
Wavelength, Amplitude

## The Log4j

### News Excerpt

A new vulnerability named Log4Shell is being touted as one of the worst cybersecurity flaws that have been discovered.

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### About Log4j

- Log4j is a widely used software logging library for Java software which was recently exposed by the Apache foundation for having serious security vulnerabilities.
- An attacker exploiting the vulnerability could potentially execute arbitrary, malicious code on an affected system.

### Log4Shell vulnerability

- The vulnerability is dubbed Log4Shell and is officially CVE-2021-44228 (CVE number is the unique number given to each vulnerability discovered across the world).
- The problem impacts Log4j 2 versions which is a very common logging library used by applications across the world. Logging lets developers see all the activity of an application.
- The vulnerability affects a component of the library meant to allow for the insertion of arbitrary system and Java environment variables within software logs. However, it has been noted that the possibility of remote code execution on live systems is circumstantially limited, and that it varies from one environment to another.
- The vulnerability presents a large attack surface particularly due to the ubiquitous use of the Log4j library in Java software.

- At the same time, it is not just open-source software that is affected. Many proprietary applications developed and used by large companies rely on the Log4j library for logging purposes and are similarly vulnerable.

**Likely Impacts**

- ✓ The log4j security vulnerability allows attackers to execute malicious code remotely on a target computer. Hackers can easily steal data, install malware, or simply take control of a system via the Internet.
- ✓ Many applications and services written in Java are potentially vulnerable to unauthenticated users.
- ✓ Tech companies such as Apple, Microsoft, Google all rely on this open-source library, as do enterprise applications from CISCO, Netapp, CloudFare, Amazon and others. The vulnerability is serious because exploiting it could allow hackers to control java-based web servers and launch what are called ‘remote code execution’ (RCE) attacks. In simple words, the vulnerability could allow a hacker to take control of a system.

**PEPPER IT WITH**  
Trojan Horse Virus,  
Multipartite Virus, Malware,  
CERT-In, C-DAC, NIC

**Zoonotic Disease: Parvovirus**

**News Excerpt**

Nearly 2,000 pet and stray dogs in Amravati city were affected by canine parvovirus virus.

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**About Parvovirus**

- It is a highly contagious viral disease that is life-threatening in puppies and dogs.
- Parvovirus affects the intestinal tract of canines with puppies being more susceptible.
- Bloody diarrhoea, vomiting, drastic weight loss, dehydration and lethargy are some of the symptoms. The virus has reported a 90 per cent mortality rate.
- The recent rise in cases of Parvovirus in pets is due to the Covid-19 pandemic that compelled many pet owners to avoid timely vaccination of their dogs.

**Spreading of Virus in Dogs**

- The highly contagious virus spreads through direct contact with an infected dog or by indirect contact with a contaminated object, including the hands and clothing of people who handle infected dogs.
- The dogs can get exposed to the parvovirus every time it sniffs, licks, or consume infected faeces.
- Indirect transmission occurs when a person who has recently been exposed to an infected dog touches the puppy, or when a puppy encounters a contaminated object, like food or water bowl, collars and leashes.
- Parvovirus has no cure and inoculating a puppy or a dog gives them a fighting chance against the infection.
- The first dose is given at 45 days old and the second 21 days after the first dose. To properly protect canines, it is necessary to administer the vaccine to them while they are puppies and then continue to do the same every year.
- While due to the non-implementation of the animal birth control programme, which helps control the stray dog population, dog vaccination and rabies in the last three years has led to rising parvovirus cases in street dogs in the city.

### What Human should do

- ✓ In opinion of doctors, It is being asked to pet owners to not to take their puppies out if they are not fully vaccinated.
- ✓ They have also been advised to avoid letting the dog touch the ground. Parvo, being a resistant virus, easily survives in the environment, and anything can be contaminated with it, including leaves and grass.
- ✓ Doctors have also cautioned pet owners to pet or touch other dogs on the road, as the parvovirus can be transmitted through the touch and clothing of people who have touched infected dogs.

**PEPPER IT WITH**  
SARS, COVID-19, Epidemic,  
Pandemic

### High abundance of Lithium in Stars

#### News Excerpt

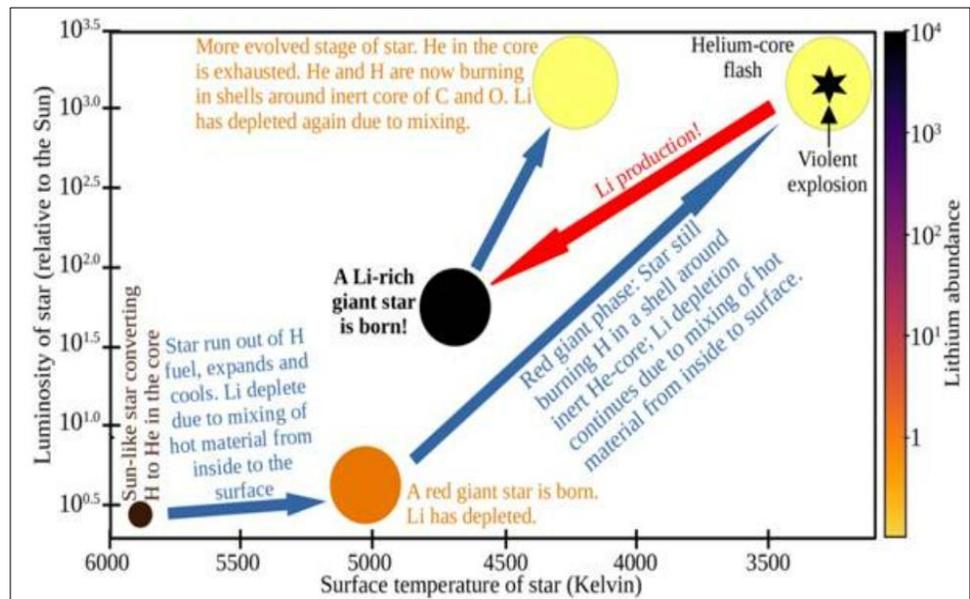
Scientists from the Indian Institute of Astrophysics (IIA) have revealed clues to the mystery behind the high abundance of Lithium in evolved stars. The element is found in trace amounts on Earth.

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#### Core points of the study

- For more than four decades, Astronomers have known that a class of stars have an anomalous amount of Lithium on their surface.

- The reason and processes behind the high abundance of Lithium in about one percent red giants has remained a puzzle since the models of how stars evolve predict the Lithium must have been destroyed in the hot plasma of the star.



- Scientist have for the first time confirmed that all the lithium-rich stars are burning helium in their core.
- About four decades ago, a red giant with extraordinarily high lithium abundance at its surface was discovered. In all other respects, this red giant was of normal composition.
- Early follow-up investigation of lithium among red giants showed that just about one percent of sun-like red giants had a lithium-enriched surface.

## NASA's IXPE mission

### News Excerpt

NASA launched a new mission named Imaging X-ray Polarimetry Explorer or IXPE.

### Key Points

- This new mission will complement other X-ray telescopes such as the Chandra X-ray Observatory and the European Space Agency's X-ray observatory.
- IXPE is going to open a new window on the X-ray sky.
- IXPE observatory is a joint effort of NASA and the Italian Space Agency.
- The mission will study the most extreme and mysterious objects in the universe – supernova remnants, supermassive black holes, and dozens of other high-energy objects.
- The mission's primary length is two years and the observatory will be at 600 kilometers altitude, orbiting around Earth's equator.
- IXPE is expected to study about 40 celestial objects in its first year in space.
- IXPE carries three state-of-the-art space telescopes. Each of the three identical telescopes hosts one light-weight X-ray mirror and one detector unit.
- These will help observe polarized X-rays from neutron stars and supermassive black holes. By measuring the polarization of these X-rays, we can study where the light came from and understand the geometry and inner workings of the light source.

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### NASA's new communications system LCRD

- ❖ NASA launched its new Laser Communications Relay Demonstration (LCRD) — the agency's first-ever laser communications system.
- ❖ The LCRD will help the agency test optical communication in space.
- ❖ Currently, most NASA spacecraft use radio frequency communications to send data. Optical communications will help increase the bandwidth 10 to 100 times more than radio frequency systems.
- ❖ LCRD will demonstrate all of the advantages of using laser systems and allows best operationality as far as missions are concerned.
- ❖ LCRD has two optical terminals – one to receive data from a user spacecraft, and the other to transmit data to ground stations. The modems will translate the digital data into laser signals. This will then be transmitted via encoded beams of light. These capabilities make LCRD NASA's first two-way, end-to-end optical relay.

### Laser & Radio:

- ❖ Laser communications and radio waves use different wavelengths of light.
- ❖ Laser uses infrared light and has a shorter wavelength than radio waves. This will help the transmission of more data in a short time.
- ❖ For instance- According to a release from NASA, It would take roughly nine weeks to transmit a completed map of Mars back to Earth with current radio frequency systems. With lasers, we can accelerate that to about nine days.

### Advantages of Laser Communication

- ❖ Optical communications systems are smaller in size, weight, and require less power compared with radio instruments.
- ❖ A smaller size means more room for science instruments. Less weight means a less expensive launch. Less power means less drain on the spacecraft's batteries.
- ❖ With optical communications supplementing radio, missions will have unparalleled communications capability.

### Importance of the Mission

- According to NASA, IXPE’s polarization measurements will help scientists to find that how black holes spin, Center of the Milky way, how pulsars shine so brightly in X-rays and the energy behind the jets of energetic particles that are ejected from the region around the supermassive black holes at the centers of galaxies.

### Flex Fuel Vehicles (FFV)

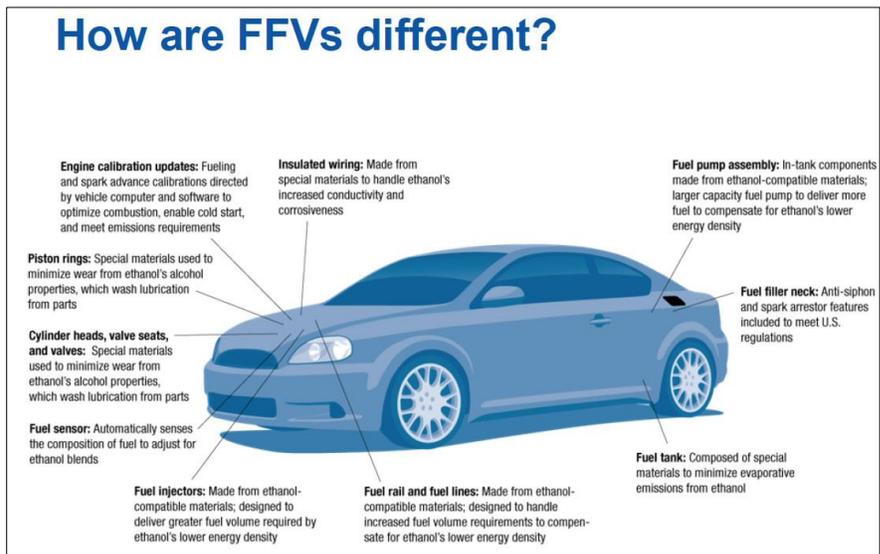
#### News Excerpt

Union Minister for Road Transport and Highways has said that Automobile Manufacturers in India have now been advised to start manufacturing Flex Fuel Vehicles (FFV) and Flex Fuel Strong Hybrid Electric Vehicles (FFV-SHEV) complying with BS-6 Norms in a time bound manner.

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#### About Flex Fuel Vehicles

- Flexible fuel vehicles (FFVs) have an internal combustion engine and are capable of operating on gasoline and any blend of gasoline and ethanol up to 83%.
- FFV are capable of running on 100 per cent petrol or 100 per cent bio-ethanol or a combination of both.
- Bio-ethanol contains less energy per litre than petrol but the calorific value (energy contained in the fuel) of bio-ethanol will become on par with petrol with use of advanced technology.
- Such a vehicle, though yet to be made widely available



- in world markets, essentially houses an electric motor which powers the vehicle alongside the traditional petrol engine.
- It will be the first of its kind 100 per cent dual fuel vehicle to be running on Indian roads. To be sure, a litre of petrol sold in India has an average of 8 percent ethanol content even though oil marketing companies have clearance to do even 10 percent (E10) blending.
- All vehicles manufactured in India are tuned for E10. All existing vehicles on Indian roads will not be able to run on higher ethanol content beyond 10 percent.

#### Reasons for pushing FFVs

- Last year (FY21), India’s oil import bill stood at \$62.7 billion which was matched in just the first seven months (April-October) of this year.
- To make matters worse, the rupee is at its weakest level in last three financial years. The government is desperate to bring down the oil import bill by creating fuel substitutes like ethanol, hydrogen and electricity.

- Even a push till the E20 level can result in savings of \$4 billion per annum, as per estimates. This is possible only if flex-fuel vehicles are made available in the market. Also, FFVs will also help the government meet its commitments when it comes to reducing emission.

### Key Benefits

- ✓ This move will drastically reduce Greenhouse Gas emissions from vehicles on a Well-to-Wheel basis, helping India to comply with its commitment made at COP26 to reduce the total projected carbon emissions by One Billion Tonnes by 2030.
- ✓ According to a report by the expert committee formed by the Ministry of Petroleum and Natural Gas, by just hitting E20, carbon monoxide emissions were observed to be 50 per cent lower in two-wheelers and 30 per cent lower in four-wheelers compared to petrol. Hydrocarbons were lower by 20 per cent. The report also mentioned that E20 blending will result in drop in fuel efficiency by nearly 6-7 per cent in 4 wheelers designed for E0 and calibrated to E10.

### Challenges

Higher blending of ethanol will mean higher manufacturing costs which translates to pricier vehicles. Certain auto parts, especially those that come in contact with higher ethanol content, will have to be replaced with a compatible product to avoid corrosion.

### Way Forward

Government is enabling the use of various alternate fuels in an effort to shift from fossil fuels. In order to accelerate the introduction of Flex Fuel vehicles, the Production Linked Incentive (PLI) scheme

has included automobile & auto components and auto components of flex fuel engines. NITI Aayog, after acknowledging the strong foundation for the Ethanol blending programme (EBP), has formulated the road map for Ethanol blending for the period, 2020-2025.

**ABOUT ETHANOL AND FLEX FUEL**

- 1 Flex fuel vehicles can run on both petrol and ethanol
- 2 India is aiming to achieve E10 by 2022 and E20 (which would involve a 20% ethanol blend) by 2025
- 3 At present there are no flex-fuel-powered engines or vehicles with the exception of a limited-edition TVS Apache RTR motorcycle
- 4 Ethanol is hygroscopic, and has a tendency to absorb moisture making it difficult to store in pure form. Its affinity to attract moisture can also lead to impurities settling at the base of the fuel tank and contaminating the engine
- 5 At present E10 isn't available across the country, and will be made so by 2022
- 6 According to the government, all vehicles manufactured since 2008 are E10 compatible (but not optimised). E100 ethanol will be sold at a lower price from ethanol pumps

## Security

### India's Defence Exports

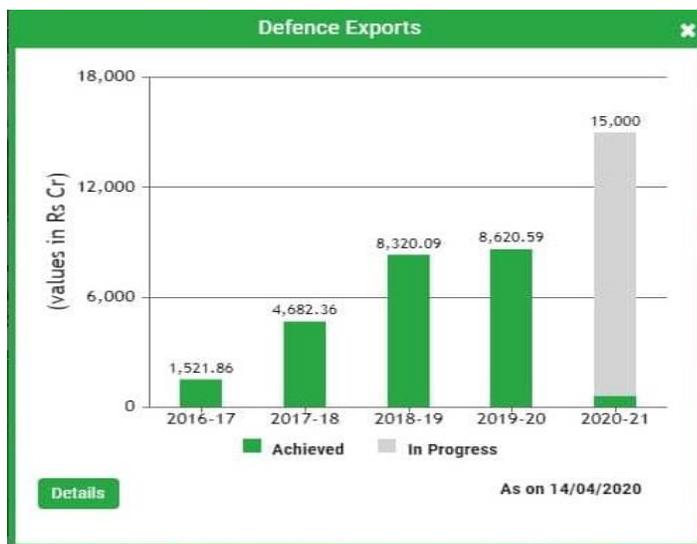
#### News Excerpt

India's defence exports have increased from ₹1,521 crore in 2016-17 to ₹8,434.84 crore in 2020-21. The figure stood at ₹10,745 crore in 2018-19.

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#### Highlights

- According to the latest report of the Swedish think tank Stockholm International Peace Research Institute (SIPRI), three Indian companies figure among the top 100 defence companies in the 2020 rankings — Hindustan Aeronautics Limited (HAL), Ordnance Factory Board and Bharat Electronics Ltd (BEL).
- “Their aggregated arms sales of \$6.5 billion were 1.7% higher in 2020 than in 2019 and accounted for 1.2% of the top 100 total,” the report, released earlier this month, said.
- There was an overall drop in India's arms imports between 2011-15 and 2016-20, according to another SIPRI report of 2020 and while India remained among the top importers, it was also included in the Top 25 defence exporters.



#### Analytica

- Measures announced to boost exports since 2014 include simplified defence industrial licensing, relaxation of export controls and grant of no-objection certificates.
- Specific incentives were introduced under the foreign trade policy and the Ministry of External Affairs has facilitated Lines of Credit for countries to import defence product. In addition, defence attaches in Indian missions abroad have been empowered to promote defence exports.
- The Defence Ministry has also issued a draft Defence Production & Export Promotion Policy 2020.
- On the domestic front, to boost indigenous manufacturing, the Government had issued two “positive indigenisation lists” consisting of 209 items that cannot be imported and can only be procured from domestic industry. In addition, a percentage of the capital outlay of the defence budget has been reserved for procurement from domestic industry.
- For the year 2021-22, about 63% of the capital outlay or about ₹70,221 crore will be done from domestic defence industry, the Defence Minister has said.
- Addressing the Indian Ocean Region Defence Ministers conclave at Aero India 2021, Defence Minister announced that India was ready to supply different types of missile systems, LCA/helicopters, multi-purpose light transport aircraft, warships and patrol vessels, artillery gun systems, tanks, radars, military vehicles, electronic warfare systems and other weapons systems to IOR nations.

### Significance

- ✓ In February, talking of the neighbourhood, Prime Minister said the changing geopolitical reality was that many smaller nations were now worried about security and would look towards India as it had the strength of low-cost, high-quality production. “We are exporting to over 40 nations now. We now have to emerge as a global exporter,” he had stated.
- ✓ Assistance in capacity building and capability enhancement has emerged as a major theme in discussions with Indian Ocean littoral states with the Navy taking the lead in this area.
- ✓ Vietnam is procuring 12 Fast Attack Craft under a \$100 million credit line announced by India and discussions are continuing to identify systems under the second line of credit of \$500 million. Vietnam is also interested in Advanced Light Helicopters and Akash surface-to-air missiles.
- ✓ The Defence Research and Development Organisation, Hindustan Aeronautics Limited (HAL) and Bharat Electronics Limited have also lined up several platforms for export. HAL has pitched its helicopters and the Tejas LCA to several Southeast Asian and West Asian nations and is in the race to supply the LCA to Malaysia.
- ✓ Discussions on the sale of BrahMos supersonic cruise missiles, jointly developed by India and Russia, are at an advanced stage with some Southeast Asian nations.

### Hypersonic Weapons

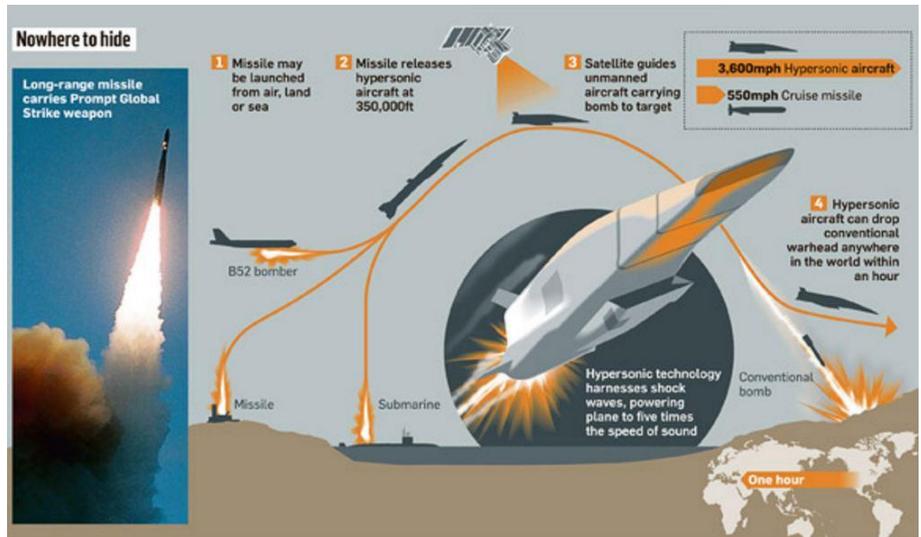
#### News Excerpt

Recently, it was reported that China tested a nuclear-capable hypersonic missile in August that circled the globe before speeding towards its target, demonstrating an advanced space capability that caught U.S. intelligence by surprise.

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#### Pre-Connect

- Hypersonic weapons are manoeuvrable weapons that can fly at speeds in excess of Mach 5, five times the speed of sound.
- Ballistic missiles, though much faster, follow a fixed trajectory and travel outside the atmosphere to re-enter only near impact. On the contrary, hypersonic weapons travel within the atmosphere and can manoeuvre midway which combined with their high speeds makes their detection and interception extremely difficult.
- This and other recent developments have put the spotlight on hypersonic weapons development, especially the advancements made by China and Russia



#### Background and features

- The speed of sound is Mach 1, and speeds up to Mach 5 are supersonic and speeds above Mach 5 are hypersonic.

- This means that radars and air defences cannot detect them till they are very close and little time to react.
- According to the latest memo of the Congressional Research Service (CRS), there are two classes of hypersonic weapons, hypersonic glide vehicles (HGV) and hypersonic cruise missiles (HCM).
- HGVs are launched from a rocket before gliding to a target while HCMs are powered by high-speed, air-breathing engines, or scramjets, after acquiring their target.
- Hypersonic missiles are a new class of threat because they are capable both of manoeuvring and of flying faster than 5,000 kms per hour.
- It would enable such missiles to penetrate most missile defences and to further compress the timelines for response by a nation under attack.

## **Analytica**

### **China, Russia and US- The Race**

- ✓ In addition to the Chinese test, early October, Russia announced that it had successfully test launched a Tsirkon hypersonic cruise missile from a Severodvinsk submarine deployed in the Barents Sea which hit a target 350 kms away.
- ✓ Talking of the test in November, Russian declared that the tests were almost complete and the Russian Navy would start receiving them in 2022.
- ✓ While the U.S. has active hypersonic development programmes, the CRS memo said it was lagging behind China and Russia because “most U.S. hypersonic weapons, in contrast to those in Russia and China, are not being designed for use with a nuclear warhead.”
- ✓ “As a result, U.S. hypersonic weapons will likely require greater accuracy and will be more technically challenging to develop than nuclear-armed Chinese and Russian systems”.

### **Power or Hype?**

- Debunking some of the claims surrounding hypersonic weapons, Physicists David Wright and Cameron Tracy wrote in the Scientific American dated August 1, 2021 that their studies indicate that hypersonic weapons “may have advantages in certain scenarios, but by no means do they constitute a revolution.”
- “Many of the claims about them are exaggerated or simply false. And yet the widespread perception that hypersonic weapons are a game-changer has increased tensions among the U.S., Russia and China, driving a new arms race and escalating the chances of conflict,” they wrote in the article ‘The Physics and Hype of Hypersonic Weapons’.

### **India’s Stand**

- ✚ India operates approximately 12 hypersonic wind tunnels and is capable of testing speeds of up to Mach 13, according to CRS.
- ✚ “Reportedly, India is also developing an indigenous, dual-capable hypersonic cruise missile as part of its Hypersonic Technology Demonstrator Vehicle (HSTDV) program and successfully tested a Mach 6 scramjet in June 2019 and September 2020,” the memo stated.
- ✚ This test was carried out by the Defence Research and Development Organisation (DRDO) and demonstrated the scramjet engine technology, a major breakthrough.
- ✚ In a scramjet engine, air goes inside the engine at supersonic speed and comes out at hypersonic speeds.
- ✚ DRDO had said after the test in 2020, many critical technologies such as aerodynamic configuration for hypersonic manoeuvres, use of scramjet propulsion for ignition and sustained combustion at hypersonic flow, thermo-structural characterisation of high temperature materials, separation mechanism at hypersonic velocities have been validated.

## Supersonic Missile assisted Torpedo System

### News Excerpt

India successfully launched and tested the indigenously developed supersonic missile-assisted torpedo system from Wheeler Island off the Odisha coast.

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### Pre-Connect

- The Defence Research and Development Organisation (DRDO)-developed torpedo system is a next generation system that has been designed to enhance anti-submarine warfare capability by enhancing the conventional range of the torpedo.

### Key Highlights

- The missile carried a torpedo and parachute delivery system and release mechanisms. The entire trajectory of the torpedo, which was fired from the launching complex IV of the Abdul Kalam Island, was monitored by the electro-optic telemetry system and various range radars.
- The canister-based missile system consists of advanced technologies, including two-stage solid propulsion, electro-mechanical actuators and precision inertial navigation.
- Launched from a ground mobile launcher, it can cover a range of distances. It incorporates the technologies of two different weapon systems, making it faster and stealthier.
- Long range torpedoes can destroy targets up to 50 km, rocket-assisted torpedoes can strike at ranges around 150 km. Supersonic missile-assisted torpedoes have a range well over 600 km.

**PEPPER IT WITH:** The Defence Research and Development Organisation (DRDO)

## Pinaka Extended Range Rocket

### News Excerpt

Pinaka-ER, an extended version of the indigenously designed and developed, all-weather, Pinaka multi-barrel rocket system, was successfully test-fired by the Defence Research and Development Organisation (DRDO) at Rajasthan’s Pokhran Range.

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### Pre-Connect

- The rocket launcher system has been jointly designed by two laboratories of the DRDO: the Armament Research & Development Establishment (ARDE) and High Energy Materials Research Laboratory (HEMRL), both located in Pune.
- The new Pinaka has a range of over 70 km, compared to the 45 km range of the Pinaka rocket system that has been deployed by the Indian Army for over a decade.
- It gives a deep strike option to the ground forces and is capable of hitting critical military installations.
- The system was deployed on India’s borders with China during the tensions that flared up in Ladakh last May.

### Highlights

- The DRDO said 24 rockets were fired for different ranges and warhead capabilities to meet the objectives of accuracy and consistency.

- With this, the initial phase of technology absorption of Pinaka-ER by the industry partner has successfully been completed making the industry partner ready for series production of the rocket system.
- The technology of the Pinaka ER rockets was transferred by the DRDO to the industry partner, which manufactured the enhanced Pinaka Mk-1 rockets with DRDO's handholding during the production and quality assurance.
- The hand holding during the production, quality assurance and launch coordination for bulk production is being provided by the DRDO design team and QA agencies nominated for the system.
- The Pinaka-ER is the upgraded version of earlier version which has been in service with the Army for the last decade.

**Analytica**

- ✓ The successful tests of the Pinaka-ER marks the completion of the initial phase of technology absorption and the start of the series production phase of the rocket system by the DRDO's industry partner.
- ✓ The industry partner has already begun manufacturing the rockets with DRDO's supervision during the production and quality assurance (QA) stages.
- ✓ In an official statement, the Ministry of Defence said: "The DRDO, along with the Army, conducted a series of performance evaluation trials. In these trials, enhanced range Pinaka rockets were test-fired at different ranges with various warhead capabilities. All the trial objectives were met satisfactorily. Twenty Four rockets were fired for different ranges and warhead capabilities to meet the objectives of accuracy and consistency."
- ✓ Along with the Pinaka-ER and ADM tests, DRDO also successfully conducted tests on proximity fuzes that have been indigenously developed for the Pinaka rockets.
- ✓ Developed by the ARDE in different sizes for different applications, the fuzes have been evaluated with flight-testing after design validation trials and dynamic performance evaluation.
- ✓ The consistency of performance of these fuzes has been established in consecutive flight trials. These indigenously developed fuzes will replace the currently used imported fuzes, contributing to a saving of foreign exchange.

**Pralay Missile**

**News Excerpt**

India has carried out first official trial of the Pralay Tactical Quasi Ballistic missile.

**Pre-Connect**

- Pralay (havoc, destruction) as its name is exactly what its role will be to strike fast and strike valuable targets inside the enemy camp while also having the ability to evade the air defence system due to its no parabolic transactions.
- Pralay with help of its jet vane control system (JVC) and its tandem fins can fly depressed trajectories and can change its flight in the terminal phase.
- A ballistic missile that flies like a sub-sonic cruise missile inside the atmosphere but at near hypersonic speeds will make it near to impossible for it to be intercepted by any modern dedicated anti-ballistic missile defense system and impossible to be intercepted by an air defense system.

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- Pralay carries a Preformed Fragment (PF) warhead of either 175kgs or 385kgs that will be used for targeting C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) installations, radars and comms infrastructure.
- Pralay has a range of 350km with a 1-ton payload and 500km with a 500 kg payload. It will play a crucial role in the upcoming Rocket force, the fourth arm of the Indian Armed Forces that will be raised soon.

**Analytica**

- The first test, which had seen the missile find its target with "high degree accuracy, validating the control, guidance and mission algorithms", involved a "quasi ballistic trajectory".
- It is a quasi-ballistic trajectory means the missile flew relatively lower than would a normal ballistic missile.
- Further, it was said that Pralay would also be manoeuvrable during flight, which would present a distinct advantage over ballistic missiles, making it hard to intercept by missile defence systems.
- Pralay is considered to be a "game-changer", giving India "two conventional missiles with long range"
- "The BrahMos will be a cruise option and this one will be the ballistic option," BrahMos, developed jointly by India and Russia, is a supersonic cruise missile. It has a range of 300-500 km.

**Cruise and Ballistic Missiles**

- ✓ According to the Centre for Arms Control and Non-Proliferation (CACNP), ballistic missiles are powered initially by a rocket or series of rocket stages “but then follow an unpowered trajectory that arches upwards before descending to reach its intended target”.
- ✓ Cruise missiles, on the other hand, “are unmanned vehicles that are propelled by jet engines, much like an airplane”.
- ✓ Ballistic missiles can carry larger payloads, both nuclear and conventional. They also travel faster than cruise missiles, but unlike these missiles, they do not have the advantage of manoeuvrability.
- ✓ At launch, a ballistic missile heads straight up into the higher layers of the Earth’s atmosphere borne by a rocket before the payload, or warhead, detaches to fall towards the target. The use of gravity for reaching its target is what gives a ballistic missile its name.
- ✓ Cruise missiles “remain within the atmosphere for the duration of their flight and can fly as low as a few meters off the ground”. While the disadvantage of that is higher fuel use, the low trajectory also makes a cruise missile “very difficult to detect”.

**Extreme Cold Clothing System**

**News Excerpt**

The Defence Research and Development Organisation (DRDO) has handed over the technology to produce extreme cold weather clothing system (ECWCS), used by troops of the Indian Armed Forces deployed atop icy Himalayan peaks, to five Indian companies.

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**Pre-Connect**

- The ECWCS is required by the Indian Army for its sustained operations atop the glacier and the Himalayan peaks. The Army has been importing until recently extreme cold weather

clothing and several special clothing and mountaineering equipment (SCME) items for the troops deployed at the high-altitude regions.

- The DRDO designed ECWCS ensemble is ergonomically designed with improved thermal insulation and physiological comfort and is based on the insulation requirements at various ambient climatic conditions in the Himalayan regions during different levels of physical activity.

### Description

- The ECWCS embodies physiological concepts related to reduction in respiratory heat and water loss, an unhindered range of motions and rapid absorption of sweat, even while providing water proof, wind proof features with adequate breathability and enhanced insulation as well as strength features required for high altitude operations.
- The three-layered ECWCS is designed to suitably provide thermal insulation over a temperature range from 15 to -50° Celsius with different combinations of the layers and intensity of physical work.”
- With considerations to the widely fluctuating weather conditions on Himalayan peaks, the clothing provides an advantage of fewer combinations to meet the required insulation, or IREQ, for the prevailing climatic conditions, thereby providing a viable import alternative for the Indian Army.
- Secretary, Department of Defence R&D, and Chairman, DRDO, emphasised the need for developing an indigenous industrial base for the manufacture of SCME items. This moreover will not only cater to the existing requirements of the Army but has the potential for export.



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## Art and Culture

### Durga Puja

#### News Excerpt

The Intergovernmental Committee of UNESCO's 2003 Convention on Safeguarding of the Intangible Cultural Heritage has inscribed 'Durga Puja in Kolkata' on the Representative List of Intangible Cultural Heritage of Humanity.

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#### Pre-Connect

- The Committee commended Durga Puja for its initiatives to involve marginalized groups, and individuals as well as women in their participation in safeguarding the element.
- With the inscription of Durga Puja in Kolkata, India now has 14 intangible cultural heritage elements on the prestigious UNESCO Representative List of ICH of Humanity.
- In recent years, the ICH elements that saw inscriptions are Kumbh Mela (inscribed 2017), Yoga (inscribed 2016) among others.
- India is a signatory of the 2003 UNESCO Convention which aims for the Safeguarding of the Intangible of the Intangible Heritage along with traditions and living expression.
- Intangible cultural heritage means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated with them that communities, groups and, in some cases, individuals recognize as a part of their cultural heritage.

#### Description about Durga Puja

- As a ten-day celebration, Durga Puja represents the collective worship of the Hindu Goddess Durga.
- During this time, masterfully designed clay models of the Goddess are worshipped in “pandals” or pavilions where communities get together and celebrate. Several folk music, culinary, craft, and performing arts traditions add to the dynamism of this celebration.
- While Durga Puja is one of the most important festivals of West Bengal, India, it is widely observed across the country and in major cities of the world by the Bengali diaspora.
- Over the years, the Indian city of Kolkata has emerged as the geographical and cultural heart of the national and global celebrations of the festival.
- Durga Puja not only is a celebration of the feminine divinity but is a consummate expression of dance, music, crafts, rituals, practices culinary and cultural aspects. The festival transcends the boundaries of caste, creed and economic classes and joins the people together in its celebration.

#### The Representative List of the Intangible Cultural Heritage of Humanity

- ✓ It has currently has 492 elements. It includes forms of expression that testify to the diversity of intangible heritage and raises awareness of its importance.
- ✓ By enhancing the visibility of communities' cultural practices and know-how, UNESCO aims to safeguard the intangible cultural heritage of communities globally.
- ✓ The 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage promotes the protection of knowledge and skills necessary for traditional artisanship and cultural practices transmitted from generation to generation, such as oral traditions, performing arts, social practices, rituals and festive events, and knowledge and practices concerning nature and the universe.

## Kashi Vishwanath Corridor

### News Excerpt

Prime Minister flags off new Kashi corridor as a bridge from past to future.

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### Key Highlights

- Rising from the banks of the Ganga, the Kashi Vishwanath corridor, the first phase of which was inaugurated by Prime Minister on December 13, will give pilgrims a smooth 400-metre walk, with escalators and ramps for accessibility, from the ghat to the centuries-old temple dedicated to Shiva, once completed.
- Instead of the narrow by lanes that greeted pilgrims arriving on the riverbank, the corridor around the temple is now spread over 5 lakh square feet, up from the earlier 3,000 sq.ft, including a civic square in front of the temple, amenities and offices for the trust that runs the temple.
- According to the architects of the project, Ahmedabad-based HCP Design, Planning and Management, the rectangular campus around the temple was built in Chunar stone from Mirzapur, without any steel and concrete, so it can last as long as the temple itself.
- The civic space or temple chowk has traditional arches, while the gateway to the space is inspired by the Ramnagar Fort’s gateway.
- A government release said 23 buildings – tourist facilitation centre, Vedic Kendra, Mumukshu Bhavan, Bhogshala, city museum, viewing gallery, and food court among others— will be inaugurated as part of the project.
- The project involved purchase and acquisitions of more than 300 properties around the temple, the release said, adding: “Mutual negotiations were done for these acquisitions. In this endeavour, the rehabilitation of around 1,400 shopkeepers, tenants and homeowners were done amicably.
- During the process of destruction of the old properties, more than 40 ancient temples were rediscovered. These temples have been restored and beautified, while ensuring that there is no change in the original structure.
- The project is now spread over about 5 lakh square feet, whereas earlier premises was limited to just around 3,000 square feet, the release stated.

## Chalcolithic Cultures of Central India

### News Excerpt

Archaeological Survey of India (ASI) carried out excavations at two prominent sites of Chalcolithic affiliations in Central India in the state of Madhya Pradesh. ASI has received proposals for sites of Chalcolithic affiliations at Eran, district Sagar and at Tewar, district Jabalpur of Madhya Pradesh.

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### Pre-Connect

### Background of Chalcolithic Cultures

- The Chalcolithic cultures of India are characterized by attributes of the agro-pastoral economy, trade, social-political and economic stratification, specialized crafts and highly developed technology.
- In generic way, the Chalcolithic period is defined as the one postdating Neolithic Age, and it has the pottery and copper: the technology-based definition. Subsistence-wise it comprised the sedentary farming communities: the adaptation-based definition.

- The Chalcolithic stage implies learning agriculture, making pottery and using copper, the early farming communities of Deccan and Central India have been referred to as the Chalcolithic.

### Status of Archaeological Investigations in Central India

#### **Excavation at Eran during 2020-21**

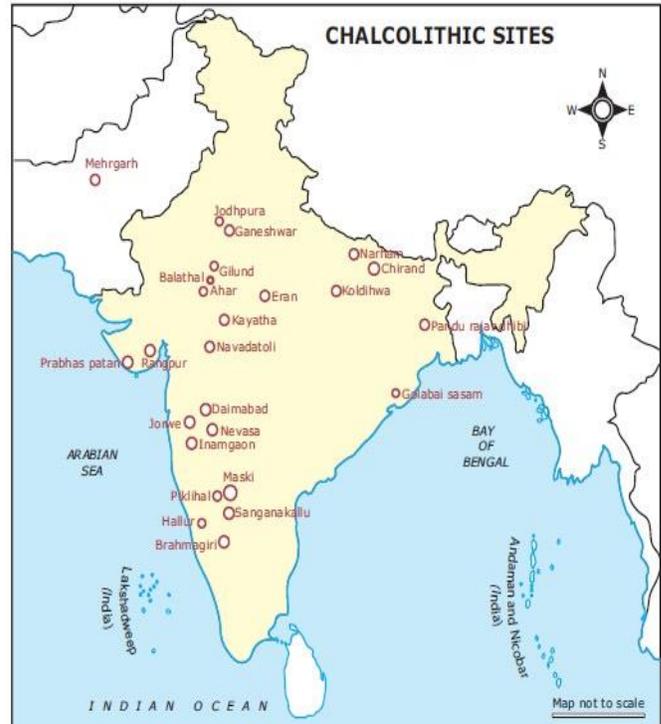
- Eran (ancient Airikina) is situated on the left bank of the Bina (ancient Venva) river and surrounded by it on three sides.
- Eran is located 75 km north-west from Sagar district headquarter. The recent excavation at this site, during 2020-21, has unearthed a variety of antiquities including a copper coin, an iron arrowhead, terracotta bead, stone beads along with a copper coins, stone celt, beads of steatite and jasper, glass, carnelian, terracotta wheel, animal figurines, miniature pots, iron objects, stone querns, pestles and a red slipped terracotta with inscription in Devnagari.
- The occurrence of few specimens of plain, thin grey ware is noteworthy.
- The use of iron was evidenced by few metallic objects at the site. This excavation at the site also revealed the remains of Chalcolithic culture with four major periods i.e. Period I: Chalcolithic (18th -7th BCE), Period II: Early historic (7th – 2nd century BCE), Period II B: 2nd century BCE – 1st century CE, Period III: 1st – 6th century CE and Period IV: late medieval (16th – 18th century CE).

#### **Excavation at Tewar during 2020-21**

- ✓ Tewar (Tripuri) village is located 12 km west of Jabalpur district on Jabalpur – Bhopal highway. The ancient site of Tripuri is situated nearly 2 km south west from Tewar village.
- ✓ During 2020-21 ASI conducted excavation of Tewar at two locations, TWR 1 and TWR 2. This excavation did not reach the natural soil and revealed four folds of cultural sequences i.e. Kushana, Shunga, Satvahana, and Kalachuri.
- ✓ Antiquarian remains in this excavation include viz remains of sculptures, hopscotch, terracotta balls, Iron nails, copper coins, terracotta beads, implements of Iron and terracotta figurine, in ceramics red ware, black ware, red slipped ware with shapes of handi, bowl, spouted pot, small pot, big jar, etc., structural remains consist of brick wall and structure of sandstone columns.

### Conclusion

- Early farming or Neolithic/Chalcolithic cultures flourished almost all over the Indian subcontinent mainly in the proximity of fertile arable land.
- This phase bridges the gap between the Stone Age and Early Historical age and provides an important clue to the missing link in the history of mankind in the subcontinent.



- Systematic research carried out in various parts of the subcontinent on the Chalcolithic phase has enabled reconstruction of social-economic and religious life of the people of that period.
- The presence of large-scale manufacturing activities within some of the settlements is a clear indicator of craft specialization and this is considered to be one of the characteristic features of a chiefdom society.
- The long distance hinterland trade for acquiring basic raw materials required for the craft manufacture and distribution of finished goods and chiefdom social organization are also important features of the Chalcolithic culture in India.
- Many traditions and technologies developed by the Neolithic/Chalcolithic communities continued through the ages and have survived in India even today.
- There is a major scope in such Ethnoarchaeological work which might help us in reconstructing these various technologies in more details.
- Besides, for the analyses of artefacts and ecofacts most of the important scientific methods such as Microware, X-Ray Diffraction, Chemical Trace Element (including Nitrogen and phosphate), metallurgical, botanical, zoological, physical anthropological, etc., should be brought in frequent use to understand the process more clearly.

**PEPPER IT WITH**  
 Harrapan Culture, Neolithic Culture- Locations, Features, artefacts

**Classical Tamil Literature**

**News Excerpt**

Minister of State for Education released the Hindi translation of Tolkāppiyam and the Kannada translations of 9 books Classical Tamil literature.

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**Pre-Connect**

- Tamil writing systems dates back to 250 BCE and Tamil sangam poetry contains 2381 poems in Tamil composed by 473 poets, some 102 anonymous.
- Most scholars suggest the historical cankam literature era spanned from c. 300 BCE to 600 CE to be among the finest of world literature.
- Though it is reasonable to believe that the ancient Tamil itself had a long poetic tradition and a large body of literature, only a grammatical treatise in verse called Tolkāppiyam, the eight anthologies (Ettuttokai) and Ten Songs (Pattuppattu) have survived the ravages of time.
- Ettuttokai consists of Natrinai, Kuruntokai, Aignkurunuru, Pathittrupattu, Paripādal, Kalittokai, Akananuru and Purananuru.
- Tolkāppiyam is the most ancient extant Tamil grammar text and the oldest extant long work of Tamil literature.
- Some in the Tamil tradition place the text in the mythical second sangam, variously in 1st millennium BCE or earlier.
- Tolkāppiyam, a unique work on grammar and poetics, in its three parts of nine sections each, deals with Ezhuttu(letter), Col (word) and Porul (subject matter).
- Almost all levels of the human language from the spoken to the most poetic lie within the purview of Tolkāppiyar’s analysis as he treats in exquisitely poetic and epigrammatic statements on phonology, morphology, syntax, rhetoric, prosody and poetics.

- The Tolkappiyam in Hindi translation in verse (Text, Transliteration, and Translations) was translated by Dr. H. Balasubramaniam and Prof. K. Nachimuthu and was published with hardbound with 1214 pages.

**Anaytica**

- Tamil language occupies a significant place in the history of Indian cultural traditions. The rich heritage of Tamil literature and culture have withstood the vagaries of time and thrived over centuries.
- The Sangam literature and Tolkāppiyam are part of this rich and glorious tradition and the country is extremely proud of this heritage.
- The translation of texts is important because it not only provides accessibility and wider readership but also enriches languages by introducing new words from various source languages.
- Efforts are being made to translate the *sangam* literature into Kannada by a team of well experienced Tamil and Kannada scholars and Bangalore Tamil Sangam. The translators are well-versed in both languages and had a great experience in completing the translation work.
- The Quick initiative had been taken to publish the Kannada translation of Classical Tamil text in nine volumes in hardbound with more than 8,000 pages and the CICT was successful by publishing the same.

**Miscellaneous**

**Raigad Fort**

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- Raigad is a hill fort situated about 25 km from Mahad in the Raigad district and stands 2,851 feet above the sea level.
- The British Gazette states the fort was known to early Europeans as the Gibraltar of the East.
- Its decisive feature is a mile and a half flat top which has adequate room for buildings.
- In its prime, the fort had 300 stone houses and a garrison of 2,000 men.
- The fort not only helped Shivaji challenge the supremacy of the Adilshahi dynasty but also opened up the routes towards Konkan for the extension of his power.
- In 1662, Shivaji formally changed the fort’s name to Raigad and added a number of structures to it.
- By 1664, the fort had emerged as the seat of Shivaji’s government.
- As the Marathas under the leadership of Shivaji gained strength in their struggle against the Mughals, the announcement of a sovereign, independent state was made.
- On June 6, 1674, Shivaji was coronated at Raigad by Gagabhatt where he took on the title of Chhatrapati. Six years later, Shivaji passed away in Raigad in 1680 and was cremated at the fort.
- Maharashtra government is also seeking the World Heritage Site tag for 14 forts, including Raigad, from the era of 17th century Maratha king Chhatrapati Shivaji Maharaj on the theme of Maratha Military Architecture in Maharashtra.

**C. Rajagopalachari**

- Chakravarti Rajagopalachari was an eminent Indian politician, freedom fighter, statesman and lawyer.

- He was the last Governor-General of India and the first Indian to occupy the post.
- During his illustrious career, Rajagopalachari headed the Indian National Congress and acted as Premier of the Madras Presidency, Governor of West Bengal, the Union Minister for Home Affairs, and the Chief Minister of the state of Madras.
- One of the first recipients of Bharat Ratna, the nation's highest civilian award, he also founded the Swatantra Party.
- Following the split of INC in 1923, Rajagopalachari became heavily involved in the 'Vaikom Satyagraha'— movement against untouchability—and also became Civil Disobedience Enquiry Committee member.
- He led the Salt Satyagraha Campaign in the South in 1930 and was imprisoned for 9 months.
- He also gave the resolution to end the deadlock between INC and Muslim League, popularly known as Rajaji Formula.
- Sardar Patel was an ardent well-wisher of Rajaji, as he was fondly known.
- He also translated 'The Tirukkural' from Tamil to English. 'Tirukkural' is an ancient piece of the Tamil literature and is often referred to as 'the flower of Tamilnad'.

### Ramanujan Prize

- Ramanujan Prize is given annually to an eminent Mathematician who is less than 45 years of age on 31 December of the year of the award and has conducted outstanding research in developing countries by International Centre for Theoretical Physics (ICTP), Trieste and is sponsored by the Department of Science & Technology (DST), Government of India.
- Srinivasa Ramanujan: He was born on December 22, 1887, Erode, India. An Indian mathematician whose contributions to the theory of numbers include pioneering discoveries of the properties of the partition function.
- He worked out the Riemann series, the elliptic integrals, hyper geometric series, the functional equations of the zeta function, and his own theory of divergent series, in which he found a value for the sum of such series using a technique he invented that came to be called Ramanujan summation.
- Professor Neena Gupta, a mathematician at the Indian Statistical Institute in Kolkata, has been awarded the 2021 DST-ICTP-IMU Ramanujan Prize for Young Mathematicians from developing countries for her outstanding work in affine algebraic geometry and commutative algebra.

### Hunar Haat

- Since the ancient times, India had been known as the 'Sone Ki Chidiya' (Golden Bird) due to its abundance of arts, craftsmanship, culture and tradition.
- The 34<sup>th</sup> edition of "HunarHaat" was organised at Vanita Vishram Parisar in Surat the artisans and craftsmen of the "HunarHaat" have revived the country's heritage of art and skill.
- The "HunarHaat" has strengthened the campaign of "Vocal for Local".
- More than 7 lakh artisans, craftsmen and people associated with them have been provided employment and employment opportunities through "HunarHaat" in the last about 6 years. About 40 per cent of them are women artisans.
- Union Minister for Minority Affairs said that the "HunarHaat" has proved a "powerful perfect platform" of "3Vs"- "Vishwakarma Virasat Ka Vikas".
- Exquisite and elegant indigenous handmade products from more than 30 States and UTs were available in this 34<sup>th</sup> "HunarHaat" where more than 600 artisans and craftsmen were participating with about 300 stalls.

- Besides rare handmade indigenous products and traditional dishes; various cultural and musical programmes of renowned artists and Vishwakarma Vatika are also a major attraction of this 10-day “HunarHaat”.

### Sardar Patel

- In 1947, the ideas of Chanakya came back in the form of the great son of the soil, Vallabhbhai Patel, a realist and pragmatic leader.
- The man who understood the ground realities and took this task of uniting the princely states into a modern nation-state. The iron man of India, he was the real architect of “Ek Bharat”.
- During the first three years of Indian independence after 1947, he served as deputy prime minister, minister of home affairs, minister of information, and minister of states.
- In 1928 Patel successfully led the landowners of Bardoli in their resistance against increased taxes. His efficient leadership of the Bardoli campaign earned him the title sardar (“leader”), and henceforth he was acknowledged as a nationalist leader throughout India.
- He emphasized the need to foster Indian self-reliance and self-confidence, but, unlike Gandhi, he did not regard Hindu-Muslim unity as a prerequisite for independence.
- During the first three years of independence, Patel was deputy prime minister, minister of home affairs, minister of information, and minister of states; above all, his enduring fame rests on his achievement of the peaceful integration of the princely Indian states into the Indian Union and the political unification of India.

### The Liberation of Goa

- An important port for trade and military operations, Goa was ruled by the Portuguese for more than 450 years.
- While historically, revolts against Portuguese rulers and their policies were recorded in the 18th and 19th century too, on June 18, 1946, the movement of Goa’s liberation gathered momentum after socialist leader Dr Ram Manohar Lohia plunged himself into the freedom movement with many young Goans. The day is now observed as Goa Revolution Day.
- However, even as India became independent on August 15, 1947, Goa continued to be under Portuguese rule 14 years after that.
- After India’s independence from the British in 1947, the calls for Goa’s Liberation again gathered steam. After multiple agitations by freedom fighters, India made peaceful attempts for Goa’s liberation through diplomatic channels.
- However, as a last resort, the Indian government then led by Prime Minister Jawaharlal Nehru, sent in its armed forces to the coastal state after which the Portuguese surrendered and Goa was liberated on December 19, 1961.
- This moment also marked the exit of the Portuguese, the last of the European colonisers to leave India.
- Perhaps the first tri-service operation of the Indian armed forces, Operation Vijay was about the liberation of the Portuguese territories of Goa, Daman and Diu.
- While the Indian government was prepared to take military action since the beginning of December 1, it culminated into the 36-hour military operation that started on December 18, 1961 and concluded on December 19, 1961.
- Goa became India’s 25th state even as Daman and Diu continue to be Union Territories.

### Sri Aurobindo

- Sri Aurobindo was born in Calcutta on 15 August 1872. At the age of seven he was taken to England for education.

- He was the first political leader in India to openly put forward, in his newspaper Bande Mataram, the idea of complete independence for the country.
- Lord Minto who was then Viceroy of India wrote the following about him: “He is the most dangerous man we have to deal with at present. I attribute the spread of seditious doctrines to him personally in a greater degree than to any other single individual...”
- Prosecuted twice for sedition and once for conspiracy, he was released each time for lack of evidence.
- In 1926, with the help of his spiritual collaborator, the Mother (Mirra Alfassa), he founded the Sri Aurobindo Ashram. Among his many writings are The Life Divine, The Synthesis of Yoga and Savitri.
- There are two aspects of Sri Aurobindo’s philosophy of ‘Revolution’ and ‘Evolution’,
- Sri Aurobindo propounded that the youth should be encouraged towards the concept of greatness as embodied in the philosophy of Nar to Narayan to create a MahaManav.

### **Chillai Kalan in Kashmir**

- It is the harshest 40-day winter spell sees most number of heart attacks in Valley
- Kashmir is in a deep freeze as the 40-day harshest spell of winter, locally called ‘chillai kalan’, with the minimum temperature already sub-zero in the entire Valley.
- The cold wave triggered by the sub-zero temperature has slowed down the pace of life in the Valley. People leave homes very late in the morning and return early in the evening.
- President of the Doctors Association Kashmir (DAK), has warned of increase in cases of heart attack or stroke due to the chilly weather. “The number of heart attack and stroke patients at Kashmir hospitals doubles in winter.
- Not only the elderly, but young and healthy people come to hospitals with heart problems, and some of them are even brought dead.

### **Pandit Madan Mohan Malviya**

- Known for his role in Indian independence movement, President of Indian National Congress, Founder of Banaras Hindu University (BHU).
- One of the founders of Scouting in India, Founders of English-newspaper ‘The Leader’  
Profession: Educationist, Journalist, Lawyer, Politician, Freedom Activist.
- Pandit Madan Mohan Malviya was born in the year 1861 and died in the 1946.
- He was a great Indian educationist and freedom fighter, distinguished from others for his significant role in the Indian independence and his support of Hindu nationalism.
- In his later life he was addressed as a Mahamana for his great workings.
- He became the Indian National Congress President four times.
- He is remembered in the world as the founder of Asia’s largest residential university at Varanasi, the Banaras Hindu University in 1916.
- The University has around 12,000 students all across the field such as the arts, sciences, engineering and technology.
- He was the Vice Chancellor of BHU from 1919 to 1938. He was also the founders of Scouting in India as well as a highly influential English newspaper, “The Leader” which was published from Allahabad in 1909.

### Concept Clearing Assignment

1. Discuss the benefits and challenges associated with Privatization of Public sector banks (PSBs). Do you think it can solve the NPA crisis of Indian banking system?
2. Irrigation system in India is outdated marred with many problems that impacts agriculture in a big way. Describe. Also, comment on the steps taken to improve the condition.
3. The SCO offers India numerous opportunities, but only if India understands the dynamics of the region and of individual nations within the SCO. Explain
4. Discuss the significance of Maldives for India from a geo-strategical standpoint.
5. Delineate the social, economic and cultural attributes of Chalcolithic age. In what ways it was different from the neolithic age?
6. Highlight the significance of Sangam age in literary, cultural and historical heritage of India.
7. Indian scientists played an important role in achieving freedom for the country and played a crucial role in the country's development. Substantiate with examples.
8. What is Flex fuel technology? Discuss its relevance in the context of India.
9. Radioactive contamination has been reported in many parts of the globe including India. What is its impact on human health and environment? Suggest measures to tackle the issue effectively.
10. Discuss the steps taken for accelerating commercialization of hydrogen energy and facilitate the creation of hydrogen energy infrastructure in the country.
11. To break away from the 'technological transfer' paradigm, India needs climate-responsible investment in research and development. Comment.
12. Smart City Mission aims to drive economic growth and improve quality of life through comprehensive work on social, economic, physical and institutional pillars of the city. Elaborate. What are the limitations of 'Smart solutions' applied in the mission?
13. What are the factors responsible for rapidly rising gender and wealth inequality? Are they both correlated?
14. Statutory mechanisms to resolve the inter-state border dispute have failed to address and solve the problems, discuss the statement in light of Inter-State border dispute between Karnataka and Maharashtra. Suggest measures.
15. To what extent the Inclusion of Ladakh under Sixth Schedule can safeguard distinct ethnicity, culture, custom of citizens of Ladakh. Briefly explain the issues related to sixth schedule.

**PT ORIENTED QUESTIONS**

1. Which of the following countries do not border Ukraine?

- 1. Belarus
- 2. Romania
- 3. Georgia
- 4. Serbia
- 5. Poland

Select the correct answer using the codes given below:

- (a) 1, 2 and 3 only
- (b) 1, 2 and 5 only
- (c) 2, 3 and 4 only
- (d) 1, 3, 4 and 5 only

2. Consider the following statements about spices production in India

- 1. India is the world's largest producer, consumer and exporter of spices.
- 2. Spices production in India has significantly declined in last five years.
- 3. Madhya Pradesh is the highest producer of Ginger, Coriander seed, Garlic in India.

Which of the following statement/s is/are correct?

- (a) 1 and 2 only      (b) 2 and 3 only
- (c) 1 and 3 only      (d) 1, 2 and 3

3. Consider the following statements regarding Shanghai Cooperation Organisation:

- 1. Shanghai Cooperation Organisation was formed in 2005
- 2. Russia and China were founding members of the organization
- 3. RATS is headquartered in Tashkent, Uzbekistan

Which of the Statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

4. With reference to Lagrange Points, which of the following statements is/are correct?

- 1. These points in space can be used by spacecraft to reduce the fuel consumption needed to remain in position.
- 2. The L1 point of the Earth-Sun system affords an uninterrupted view of the sun.

Select the correct answer using the code given below:

- (a) 1 only                      (b) 2 only
- (c) Both 1 and 2      (d) Neither 1 nor 2

5. Match the following:

<b>Name of Country</b>	<b>Capital City</b>
------------------------	---------------------

- |                 |               |
|-----------------|---------------|
| 1. Kazakhstan   | A. Ashgabat   |
| 2. Turkmenistan | B. Dushanbe   |
| 3. Kyrgyzstan   | C. Nur-Sultan |
| 4. Tajikistan   | D. Bishkek    |

Select the correct answer using the codes given below:

- (a) 1-A, 2-C, 3-B, 4-D
- (b) 1-C, 2-A, 3-D, 4-B
- (c) 1-A, 2-C, 3-D, 4-B
- (d) 1-C, 2-A, 3-B, 4-D

6. Consider the following statements regarding Flex Fuel Vehicles (FFVs):

- 1. These can run both on Petrol and ethanol.
- 2. These vehicles are low priced vehicles.

3. They do not undergo corrosion.  
Which of the statements given above is/are correct?
- (a) 1 only
  - (b) 1 and 2 only
  - (c) 2 and 3 only
  - (d) 1, 2 and 3

7. With reference to Spices Board of India, consider the following statements:
- 1. It is a statutory body constituted under the Spices Board Act, 1986.
  - 2. It comes under the Ministry of Consumer Affairs, Food and Public Distribution.

Which of the Statements given above is/are correct?

- (a) 1 only                      (b) 2 only
- (c) 1 and 2                    (d) Neither 1 nor 2

8. With reference to Cold waves, consider the following statements:
- 1. It is referred to an extreme weather event that occurs in the winter season.
  - 2. It depends on weather systems and wind patterns formed in the higher latitudes.
  - 3. The formation of a surface high-pressure center over north and central India brings a cold outbreak over India.

Which of the statements given above is/are correct?

- (a) 1 only                      (b) 2 only
- (c) 1 and 3 only              (d) 1, 2 and 3

9. With reference to Madan Mohan Malviya, consider the following statements:
- 1. He was the founder of Benaras Hindu University.
  - 2. He was associated with Indian National Congress but never became its president.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

10. 'Earth's Black Box' is often seen in the news in the context of –
- (a) Rare earth elements
  - (b) Satellite
  - (c) Oil Producing Areas
  - (d) Climate Change

11. With reference to Multi-State Cooperatives, consider the following statements:

- 1. Cooperative is a subject in the Union List of the 7th Schedule.
- 2. Their board of directors has representation from all states they operate in.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

12. Consider the following statements regarding Central Bureau of Investigation (CBI):

- 1. CBI derives power to investigate from the Delhi Special Police Establishment (DSPE) Act, 1946.
- 2. Section 2 of the DSPE Act enables the Centre to extend powers and jurisdiction to the DSPE members beyond union territories to a state.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

13. Consider the following statements about the gharial:

1. They are found in north Indian rivers like the Ganga, Yamuna, Chambal and their tributaries.
2. The gharial is listed in Schedule II of Wildlife (Protection) Act, 1972.
3. The presence of gharials indicates a healthy riverine ecosystem.

Which of the statements given above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) 1 and 3 only              (d) 1, 2 and 3

14. Consider the following statements:

1. The right to privacy has been recognised as a fundamental right in the KS Puttaswamy judgment.
2. Right to be Forgotten allows a person to seek deletion of private information from the Internet.

Which of the statements given above is/are correct?

- (a) 1 only  
(b) 2 only  
(c) Both 1 and 2  
(d) Neither 1 nor 2

15. Consider the following statements:

1. Radioactive contamination is more prevalent in groundwater as compared to surface water.
2. Oceans and seas are the natural repositories of naturally occurring uranium, which is found in the form of a uranyl carbonate ion.

Which of the statements given above is/are **incorrect**?

- (a) 1 only  
(b) 2 only  
(c) Both 1 and 2  
(d) Neither 1 nor 2

16. With reference to Hypersonic Weapons, which of the following statements is/are correct?

1. Hypersonic weapons travel outside the atmosphere.
2. Their high speeds makes their detection and interception extremely difficult.
3. Hypersonic glide vehicles (HGV) are launched from a rocket before gliding to a target.
4. India has not made any breakthrough in this technology.

Select the correct answer using the code given below:

- (a) 1 and 4 only              (b) 2 and 4 only  
(c) 2 and 3 only              (d) 1, 2, 3 and 4

17. With reference to Hallmark Unique Identification (HUID) number, consider the following statements:

1. HUID is an eight-digit alphanumeric code.
2. It will be rolled out throughout India from 1st of April 2020.

Which of the Statements given above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) 1 and 2                      (d) Neither 1 nor 2

18. Consider the following statements regarding Parvovirus:

1. It is a highly contagious viral disease that is life-threatening in swine.
2. It is a zoonotic disease.
3. It affects the intestinal tract of canines.

Which of the statements given above is/are correct?

- (a) 1 only  
(b) 2 only  
(c) 2 and 3 only  
(d) 1 and 3 only

19. Consider the following statements about the privatisation of banks mechanism in India:

1. The PJ Nayak Committee in 2014 for the first time suggested for privatisation of PSBs.
2. Merger of banks means where one business entity acquires one or more business entities.
3. Amalgamation of banks means where two or more business entities combine to create a new entity or company.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1, 2 and 3
- (d) None of the above

20. Which of the following has been inscribed on UNESCO's Representative List of Intangible Cultural Heritage of Humanity recently?

- (a) Navratri in Gujarat
- (b) Durga Puja in Kolkata
- (c) Gangaur in Rajasthan
- (d) Onam in Kerala

21. Consider the following statements regarding Chalcolithic Culture:

1. It flourished almost all over the Indian subcontinent in the proximity of fertile arable land.
2. This phase bridges the gap between the Stone Age and Early Historical age.
3. The early-farming communities of Deccan and Central India have been referred to as the Chalcolithic.

Which of the Statements given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 3 only
- (d) 1, 2 and 3

22. With reference to the Inter-State border dispute between Karnataka and Maharashtra, consider the following statements:

1. Belgaum was originally part of the erstwhile Mysore Presidency.
2. The Mahajan Commission was formed for giving recommendations regarding the Belgaum District dispute.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

23. Consider the following statements regarding Laser Communications Relay Demonstration (LCRD):

1. It is ISRO's first-ever laser communications system.
2. The LCRD will help India to test optical communication in space.
3. It has two optical terminals one to receive data from a user spacecraft and the other to transmit data to ground stations.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only

- (c) 3 only                      (d) 1, 2 and 3
24. With reference to the State Health Index, which of the following statements is/are correct?
1. The index is released by the Ministry of Health and Family Welfare.
  2. The index encourages healthy competition and cross-learning among States and UTs.
  3. It is a weighted composite index based on 24 indicators.
- Select the correct answer using the code given below:
- (a) 1 and 2 only
  - (b) 1 and 3 only
  - (c) 2 and 3 only
  - (d) 1, 2 and 3
25. Consider the following statements regarding Nationally Determined Contributions (NDC):
1. It was signed under the Paris Agreement and was adopted globally in 2015.
  2. India pledged to achieve about 40 per cent cumulative electric power installed capacity from non-fossil fuel-based energy.
  3. India has achieved its Nationally Determined Contribution (NDC) target.
- Which of the statements given above is/are correct?
- (a) 1 only
  - (b) 2 and 3 only

- (c) 1, 2 and 3  
(d) None of these
26. With reference to the religious practices in India, the “Sthanakvasi” sect belongs to- (UPSC-2018)
- (a) Buddhism
  - (b) Jainism
  - (c) Vaishnavism
  - (d) Shaivism
27. Consider the following statements: (UPSC-2019)
1. As per recent amendment to the India Forest Act, 1927, forest dwellers have the right to fell the bamboos grown on the forest areas.
  2. As per the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, bamboo is a minor forest produce.
  3. The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 allows ownership of minor forest produce to forest dwellers.
- Which of the following statements given above is/are correct?
- (a) 1 and 2 only
  - (b) 2 and 3 only
  - (c) 3 only
  - (d) 1, 2 and 3
28. Which of the following are the most likely places to find the musk deer in its natural habitat? (UPSC-2020)

1. Askot Wildlife Sanctuary
2. Gangotri National Park
3. Kishanpur Wildlife Sanctuary
4. Manas National Park

Select the correct answer using the code given below

- (a) 1 and 2 only    (b) 2 and 3 only  
(c) 3 and 4 only    (d) 1 and 4 only

29. Which of the following Protected Areas are located in Cauvery basin? (UPSC-2020)

1. Nagarhole National park
2. Papikonda National park
3. Sathyamangalam Tiger Reserve

4. Wayanad Wildlife sanctuary

Select the correct answer using the code given below:

- (a) 1 and 2 only  
(b) 3 and 4 only  
(c) 1, 3 and 4 only  
(d) 1, 2, 3 and 4

30. Which one of the following foreign travellers elaborately discussed about diamonds and diamond mines of India? (UPSC-2018)

- (a) Francois Bernier  
(b) Jean-Baptiste Tavernier  
(c) Jean de Thevenot  
(d) Abbe Barthelemy Carre

**ANSWERS**

- |       |       |       |
|-------|-------|-------|
| 1. B  | 11. B | 21. D |
| 2. C  | 12. A | 22. B |
| 3. B  | 13. C | 23. C |
| 4. C  | 14. C | 24. C |
| 5. B  | 15. D | 25. B |
| 6. A  | 16. C | 26. B |
| 7. A  | 17. D | 27. B |
| 8. C  | 18. C | 28. A |
| 9. C  | 19. D | 29. C |
| 10. D | 20. B | 30. B |