



DIKSHANT TODAY

APRIL 2023



What's special

- ⇒ Understanding the Windsor framework
- ⇒ The India- Australia relationship
- ⇒ China's role in Saudi Arabia-Iran deal
- ⇒ National Youth Conclave 2023
- ⇒ Seven PM MITRA Park sites announced
- ⇒ World TB Summit 2023
- ⇒ FRINJEX 23
- ⇒ TROPEX - 23
- ⇒ Exercise Bold Kurukshetra
- ⇒ Horseshoe crabs
- ⇒ IPCC report
- ⇒ Practice Question For Upsc Pre. & Mains Exam



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APRIL 2023

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CONTENTS

CURRENT AFFAIRS

POLITY & GOVERNANCE

⇒ On regulating online sale of drugs in India	6
⇒ Constitution of Greater Panna Landscape Council	6
⇒ Supreme Court verdict on ECI appointments	7
⇒ SC lowers criterion for appointment as president, member of consumer forums	8
⇒ On Women's Day eve, Nagaland's first woman Minister assumes office	9
⇒ Centre to reconsider 'safe harbour' clause in IT law	10
⇒ Uttar Pradesh cabinet approves New Sports Policy 2023	10
⇒ House panel pulls up Labour Ministry for underutilisation of allocations for its schemes	11
⇒ Atal Innovation Mission launches ATL Sarthi	12
⇒ Foreign lawyers, firms can operate in India, says BCI	13

INTERNATIONAL RELATION

⇒ Understanding the Windsor framework	14
⇒ IBSA can play vital role in reforming digital governance	15
⇒ The India-Australia relationship	15
⇒ India, US sign MoU to build resilient supply chain in semiconductor sector	17
⇒ India's silence on China's role in Saudi Arabia-Iran deal is disquieting	18
⇒ Australia to buy U.S. nuclear submarines under AUKUS	18
⇒ ICC issues arrest warrant for Vladimir Putin for war crimes in Ukraine	19
⇒ Why have plastic rocks been found on the remote Brazilian island of Trindade?	20

ECONOMY

⇒ Combining social welfare and capital markets through SSE	21
⇒ Q3 GDP growth slows to 4.4%, past data upgraded	22
⇒ Samarth Scheme operational till March 2024	23
⇒ Centre issues guidelines to Ensure Safety in Transportation of Dangerous Goods	24
⇒ National Youth Conclave 2023	24
⇒ Silicon Valley Bank 'contagion' may leave India unscathed	25
⇒ Release of 'Basic Animal Husbandry Statistics 2022'	26
⇒ Exports fall 8.8%, trade deficit shrinks over 7%	26
⇒ Seven PM MITRA Park sites announced	27
⇒ APEDA organizes Global Millets (Shree Anna) Conference	28
⇒ Initiatives taken by MoCA to promote sustainable development in the aviation sector	29
⇒ India aims at becoming 'Global Hub for Green Ship' building by 2030	30
⇒ DigiClaim for claim disbursement through National Crop Insurance Portal (NCIP) launched	31

INTERNAL SECURITY

⇒ India holds conference of global intelligence chiefs	32
⇒ Govt putting in place protocols to tackle threat of spy balloons after Andamans incident	32
⇒ India remains world's largest importer of arms: SIPRI report	33

SOCIAL ISSUE

⇒ National Policy on Senior Citizen	34
⇒ What is India's stand on same-sex marriage?	35
⇒ Why transgender female athletes can't compete in female events	36

ENVIRONMENT

⇒ Antarctic glaciers flow faster in summers, show seasonal behaviour: Study	37
⇒ The case for open, verifiable forest cover data	37

⇒ Union Minister launched Star-rated appliances program	39
⇒ Salt flats around the world are covered in a similar pattern of ridges	40
⇒ Forest Certification	41
⇒ With overfishing, great seahorses bolt from Coromandel	42
⇒ Nations secure pact to protect marine life in the high seas	42
⇒ Muggers of Rapti: Anthropogenic threats pose risk to saurians in Nepal's Chitwan National Park, says study	43
⇒ How did the treaty on the high seas come through?	44
⇒ Landslide Atlas of India	44
⇒ The evil effects of deforestation	46
⇒ Why do landfills catch fire during summers?	46
⇒ 40 lions to be moved to Barda from overflowing Gir	47
⇒ The great rift: Africa's splitting plates	48
⇒ Climate Crisis 6 key messages from IPCC Synthesis Report	49
⇒ Wind energy generation can surge 4-5 times on policy tailwinds, add 6-8 GW annually: Report	51
⇒ House panel suggests prepaid cards for power to save groundwater	51
⇒ Guidelines for Human-Wildlife Conflict Mitigation promoting harmonious coexistence between humans and wildlife	52
⇒ Understanding waste-to-energy plants	53
⇒ Why is India CAMPA at odds with new IPCC report?	54
⇒ Aravalli Green Wall Project	55

SCIENCE & TECHNOLOGY

⇒ Bio computers	56
⇒ Low-cost paper microscope's wider application in research	57
⇒ Megha Tropiques 1	57
⇒ ISRO receives satellite NISAR, jointly developed by India and US	58
⇒ Scientists devise 'glowscope' to bring fluorescent microscopy to schools	59
⇒ Scientists make the first complete map of insect brain	60
⇒ Why is WhatsApp threatening to leave U.K.?	60
⇒ Activity deep in Earth affects the global magnetic field: Research	61
⇒ Background radiation higher in Kerala, but no risk: study	62
⇒ India push for semiconductors	63

HEALTH

⇒ Sickle cell screening meets only 1% of target	64
⇒ 26% of world lacks clean drinking water, 46% sanitation, says UN report	64
⇒ FSSAI reconstitutes its Scientific Panels (SP) and Scientific Committee	65
⇒ Novel bi-metallic joining process can create a composite from copper and steel for engineering applications	66
⇒ One World TB Summit 2023 in Varanasi	66
⇒ Why did India reject J&J's patent on TB drug?	67

PRELIMS FACT

POLITY & GOVERNANCE

⇒ Portal opened for complaints against decisions of social media platforms	69
⇒ Scheduled Tribes panel requisitions FRA action reports from SC	69
⇒ Committee to oversee transfer and import of captive wild animals: SC	70
⇒ Centre releases guidelines for celebrities, influencers, and virtual influencers on social media platform	70
⇒ 5-judge Constitution Bench to decide legal validation of same-sex marriage	71
⇒ Chhattisgarh cabinet approves anti-naxal policy changes, journalists safety bill	72
⇒ SC Bench seeks data on alternatives to hanging	72
⇒ Disqualification of Rahul Gandhi	73
⇒ Membership of banned outfit is crime under UAPA, says SC	73

INTERNATIONAL RELATION

⇒ India, Italy elevate ties, sign MoU on defence cooperation	74
⇒ South Korea pushes to end disputes with Japan over wartime forced labour	75
⇒ French Senate approves raising retirement age to 64	75
⇒ India and Australia join forces to drive innovation in areas of national challenges and shared priorities	76
⇒ International Criminal Court issues arrest warrant against Putin over Ukraine	76
⇒ Joint Statement of 18th India-Australia Joint Ministerial Commission (JMC)	77
⇒ Seoul moves to 'normalise' military pact with Tokyo	78
⇒ Finland's installation of the world's 1st sand battery	78
⇒ IMF approves \$3 billion in financial assistance for debt-ridden Sri Lanka	79
⇒ Russia, China vow to deepen relations, take aim at West	80

ECONOMY

⇒ Government e-Marketplace (GeM) commemorates the success of "SWAYATT"	81
⇒ Ornamental fish aquaculture to help women in Lakshadweep islands	81
⇒ India scores 74.4 in World Bank index	81
⇒ World first 200-meter-long Bamboo Crash Barrier	82
⇒ MSME Competitive (LEAN) Scheme under MSME Champions Scheme launched	83
⇒ NITI Aayog Releases Task Force Report on Gaushalas	83
⇒ MoU signed for skilling of rural youth and empowering women	84
⇒ Jindal Steel gets India's first BIS licence to make fire-resistant steel	84
⇒ Second Indo-Pacific Economic Framework (IPEF) Negotiating Round	85
⇒ India's first cable-stayed railway bridge nearing completion	85

DEFENCE

⇒ IAF's 1st supersonic squadron completes 60 years	86
⇒ China increases defence spending by 7.2%	87
⇒ FRINJEX 23	87
⇒ Shaliza Dhama is first woman to be appointed to an IAF command post	88
⇒ INS Trikand in International Maritime Exercise/Cutlass Express 23 (IMX/CE-23)	88
⇒ TROPEX - 23	88
⇒ Exercise La Perouse – 2023	89
⇒ Exercise Bold Kurukshetra	89
⇒ Defence acquisition proposals valued at ₹70,500 cr. cleared	90

ENVIRONMENT

⇒ Fossil fuels firms failed to curb methane emission	90
⇒ Influenza virus might have marine origin with fish as early host	91
⇒ New wildlife corridor to come up after reintroduction of tigers in MNP	91
⇒ Smoke particles from wildfires can cause erosion in ozone layer: Research	92
⇒ NIRDPR, ICRISAT sign MoU to promote dryland crops, climate-smart farming	92
⇒ Eurasian otter raises hope for J&K stream	93
⇒ NIOT to set up green, self-powered desalination plant in Lakshadweep	93
⇒ Horseshoe crabs disappearing off Odisha's coast	94
⇒ Indian Army promoting the National Green Hydrogen Mission	94
⇒ IPCC synthesis report	95

SCIENCE & TECHNOLOGY

⇒ Proton beam therapy out of reach for many with cancer	96
⇒ Japanese scientists create mice with two fathers	96
⇒ World's fastest camera confirms how flames form soot	97
⇒ Maiden successful flight-test of DRDO's indigenous Power Take off Shaft conducted	97
⇒ Spain's race to space about to blast off with reusable rocket launch	98
⇒ Scientists find volcanoes erupting on Venus	98
⇒ Firefly to deliver two missions to the far side of the Moon	99

⇒ Research, Education and Training Outreach (REACHOUT)	99
⇒ At a high dose, sucralose impairs mouse immune responses	100
⇒ A boost to the zoonoses theory	100
⇒ Asia's largest 4-metre International Liquid Mirror Telescope at Devasthal in Uttarakhand	101
⇒ India Pixxel bags 5 year deal to provide Hyperspectral imagery to US Reconnaissance Office	102
⇒ Relativity Space said 3D printed metal parts made up 85 percent of the rocket	102
⇒ New technique can tell apart spent nuclear fuel from six reactor types	103

HEALTH

⇒ World Bank to lend \$1 billion to support India's health sector	103
⇒ Rajasthan's Right to Health Bill	104
⇒ Tamil Nadu's novel initiative results in reduced TB deaths	105
⇒ ICMR releases ethical guidelines for AI usage in healthcare	105
⇒ Should India worry about rising COVID-19 cases?	106

CULTURE

⇒ First of its kind SCO International Conference on "Shared Buddhist Heritage"	107
--	-----

MISCELLANEOUS

⇒ Abel Prize 2023	107
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PRACTICE SET

⇒ Practice Question For Upsc Prelims Exam	109
⇒ Practice Question For Upsc Mains Exam	122



POLITY & GOVERNANCE

ON REGULATING ONLINE SALE OF DRUGS IN INDIA



Why in news?

- In early February, the Ministry of Health pulled up at least twenty companies including Tata-1mg, Flipkart, Apollo, PharmEasy, Amazon and Reliance Netmeds, by issuing them a showcause notice, for selling medicines online.
- This happened after the All India Organisation of Chemists and Druggists (AIOCD), a powerful lobby of over 12 lakh pharmacists, threatened to launch a country-wide agitation if the government didn't act.

Is banning e-pharmacies a viable option?

- The Ministry of Health has adopted a 'blow hot blow cold' approach towards online pharmacies. The acute need for door step delivery of drugs was felt during COVID-19.
- The year of 2020 marked a watershed moment for the growth of e-pharmacies as the Ministry of Home Affairs issued orders for them to continue to operate. It saw nearly 8.8 million households using home delivery services during lockdown.
- The draft e-pharmacy rules, which were originally intended to whip e-pharmacy businesses into shape were floated by the Ministry of Health in 2018. The rules were finalised, public comments were taken into consideration and they were almost on the brink of being notified. But the proposal was abruptly shoved into cold storage.
- Since then, multiple court orders including those from Bombay, Madras, Delhi and Patna High Court have called for regulating e-pharmacies.

- The latest in the line is the 172nd Parliamentary Standing Committee report released in June 2022, which found it 'appalling,' that e-pharmacy rules had not been notified even after four years of the draft being introduced.

How are e-pharmacies competing with mom-and-pop chemist shops?

- Flush with billions of dollars of private equity money to infuse, e-pharmacies made a bang in the market in 2015 and started offering hefty discounts on medicines in a bid to garner more market share. But they didn't just stop at the discounts.
- E-pharmacies call themselves facilitators of doorstep delivery. They claim tie-ups with retail chemists for vending medicines. However, since profit margins in the drug retail industry are very thin, just about 15% to 16%, every player in the supply chain is struggling to make money.

What's next?

- Both e-pharmacies and offline retail pharmacists have realised that in a climate where drug delivery is driven by consumer sentiments, it is futile to stick to any one way of doing business.
- For acute care and emergency, patients still rely on their neighbourhood pharmacy stores.
- This has led e-pharmacy players to now open capital-intensive brick and mortar stores. Until March 2021, Reliance had opened 114 pharmacies inside their Smartpoint grocery stores. It plans to open 2,000 more outlets. Apollo Pharmacy which has nearly 4,000 physical stores also caters to online sales.
- Stiff competition has forced mom and pop pharmacists to also offer home delivery options to their customers by introducing their own store apps.
- In an eco-system that is moving towards a hybrid mode, all eyes are on the Ministry of Health which will have to effectively regulate the new way of doing e-commerce in the drug space.

CONSTITUTION OF GREATER PANNA LANDSCAPE COUNCIL

Why in news?

- As part of the Ken-Betwa Link Project (KBLP), which is game-changer for the socio-economic prosperity of the drought prone Bundelkhand region, a comprehensive Integrated Landscape Management Plan (ILMP) has been prepared for the conservation

of wildlife and biodiversity in Panna Tiger Reserve (PTR) & surrounding areas.

- To ensure systematic and time bound implementation of the Greater Panna Landscape Management plan, the Greater Panna Landscape Council (GPLC) has been constituted under the chairmanship of Chief Secretary, Govt. of Madhya Pradesh with members from all the stakeholders.



Objective:

- The goal of the GPL and the council is to ensure a “win-win” situation for conservation through integration with the development process based on a balanced approach and considering the diverse stakes.
- The broad objectives are
 - a) to enable betterment of habitat, protection, and management for flagship species viz. tiger, vulture, and gharial in the landscape;
 - b) to consolidate the landscape for overall biodiversity conservation through spatial prioritization and well-being of the forest dependent communities; and
 - c) to provide species-specific and site-specific monitoring strategies under the integrated landscape management in context with feedback loop and adaptive management options.

Conservation efforts under Ken-Betwa Link Project (KBLP):

- Ken-Betwa Link Project (KBLP), the first interlinking of rivers project under National Perspective Plan (NPP) taken for implementation.
- The project is aimed at not only providing water security in the Bundelkhand but also ensuring the overall conservation of the region and specially for landscape dependent species such as tiger, vulture and gharial.
- Apart from taking mitigation measures as per approved Environmental Management Plan, the Wildlife Institute of India (WII) has prepared a comprehensive Integrated Landscape Management Plan (ILMP) for the conservation of wildlife and biodiversity not only in Panna Tiger Reserve (PTR) but also in surrounding areas.

About KBLP:

- This project involves transfer of water from the Ken to the Betwa River through the construction of Daudhan Dam and a canal linking the two rivers, the Lower Orr Project, Kotha Barrage -and Bina Complex Multipurpose Project.
- The project will provide an annual irrigation of 10.62 lakh ha, drinking water supply to a population of about 62 lakhs and also generate 103 MW of hydropower and 27 MW solar power. The Project is proposed to be implemented in 8 years with state of the art technology.
- The Project will be of immense benefit to the water starved Bundelkhand region, spread across the states of MP and UP. This project will provide enormous benefits to the districts of Panna, Tikamgarh, Chhatarpur, Sagar, Damoh, Datia, Vidisha, Shivpuri and Raisen of Madhya Pradesh and Banda, Mahoba, Jhansi & Lalitpur of Uttar Pradesh.
- The project is expected to boost socio-economic prosperity in the backward Bundelkhand region on account of increased agricultural activities and employment generation. It would also help in arresting distress migration from this region.
- This project also comprehensively provides for environment management and safeguards. For this purpose a comprehensive landscape management plan is under finalization by Wildlife Institute of India.

SUPREME COURT VERDICT ON ECI APPOINTMENTS



Why in news?

- Recently, a five-judge bench of the Supreme Court unanimously ruled that a high-power committee consisting of the Prime Minister, Leader of Opposition in Lok Sabha, and the Chief Justice of India must pick the Chief Election Commissioner (CEC) and Election Commissioners (ECs).

Why did the SC debate the issue?

- In 2015, a public interest litigation was filed by Anoop Baranwal challenging the constitutional validity of the practice of the Centre appointing members of the Election Commission.

- In October 2018, a two-judge bench of the SC referred the case to a larger bench since it would require a close examination of Article 324 of the Constitution, which deals with the mandate of the Chief Election Commissioner.
- The SC had not debated this issue earlier. In September 2022, a five-judge Constitution bench headed by Justice KM Joseph began hearing the case and almost a month later, the verdict was reserved.

What is the challenge?

- Article 324(2) reads: "The Election Commission shall consist of the Chief Election Commissioner and such number of other Election Commissioners, if any, as the President may from time-to-time fix and the appointment of the Chief Election Commissioner and other Election Commissioners shall, subject to the provisions of any law made in that behalf by Parliament, be made by the President."
- The crux of the challenge is that since there is no law made by Parliament on this issue, the Court must step in to fill the "constitutional vacuum." This examination also leads to the larger question of separation of powers and if the judiciary is overstepping its role in filling this gap in the law.
- Two corollary issues that were also examined by the Court are whether the process of removal of the two Election Commissioners must be the same as the CEC; and regarding the funding of the EC.
- As per the current process, the Law Minister suggests a pool of suitable candidates to the Prime Minister for consideration. The President makes the appointment on the advice of the PM.

What did the court decide?

- Justice Joseph authored the majority opinion while Justice Rastogi authored a separate opinion agreeing with the majority view.
- The appointment of the Chief Election Commissioner and the Election Commissioners shall be made by the President on the advice of a Committee consisting of the Prime Minister, the Leader of the Opposition of the Lok Sabha, and in case no leader of Opposition is available, the leader of the largest opposition Party in the Lok Sabha in terms of numerical strength, and the Chief Justice of India.
- This means that Parliament can undo the effect of the SC verdict by bringing in a new law on the issue.

How did the court arrive at the verdict?

- The Court's verdict is based on a reading of the debates of the Constituent Assembly to ascertain what the founding members of the Constitution envisaged the process to be and an interpretation of similar provisions in the Constitution.
- The verdict states that a "golden thread runs through" the proceedings of the Constituent Assembly debates on the provision. All the Members were of the clear view that elections must be conducted by an

independent Commission. It was a radical departure from the regime prevailing under the Government of India Act, 1935.

- The deliberate addition of the words "subject to the provisions of any law made in that behalf by Parliament" after prolonged discussions, according to the court, indicate that "what the Founding Fathers clearly contemplated and intended was, that Parliament would step in and provide norms, which would govern the appointment to such a uniquely important post as the post of Chief Election Commissioner and the Election Commissioners."

What was the government's stand?

- The government argued that "in the absence of such a law, the President has the constitutional power." The government has essentially asked the court to exhibit judicial restraint.
- The court in its ruling discusses at length its intention to "maintain a delicate balance" on separation of powers.
- The ruling cites past instances of the Court stepping into to fill a gap in the law, including the Vishaka guidelines to curb sexual harassment at workplace, and the interpretation on the process of appointment of judges.

What are the other findings of the court?

- On the issue of whether the process of removal of Election Commissioners must be the same as it is for the CEC, the Court ruled that it cannot be the same. The Constitution states that the CEC can be removed in a process similar to a judge, through a majority in both houses of Parliament on grounds of proven incapacity or misbehaviour.
- On the issue of funding the EC, the Court left it to the government.

SC LOWERS CRITERION FOR APPOINTMENT AS PRESIDENT, MEMBER OF CONSUMER FORUMS



Why in news?

- Recently, the Supreme Court used its extraordinary powers under Article 142 to attract younger talent to preside over consumer courts by reducing the mandatory professional experience from 20 to 10 years.

Details:

- The lawyers and professionals with 10 years of experience will be eligible for appointment as President and member of the state consumer commission and district forums.
- The Central government and the state governments concerned have to come with an amendment in the Consumer Protection (Qualification for appointment, method of recruitment, procedure of appointment, term of office, resignation and removal of President and Members of State Commission and District Commission) Rules, 2020 to provide for 10 years' experience to become eligible for appointment as President and member of the state commission and district forums instead of 20 years and 15 years respectively.

Judgement under Article 142:

- A bench of Justices M R Shah and M M Sundresh, in exercise of powers under Article 142 of the Constitution to do complete justice, directed that till suitable amendments are made, a person with bachelor's degree from a recognised university and having ability, integrity and standing, and special knowledge and professional experience of not less than 10 years in consumer affairs, law, public affairs, administration and economics can qualify for the posts.
- Those with similar experience in commerce, industry, finance, management, engineering, technology, public health or medicine, shall also be qualified for appointment of the President and members of the State Commission.
- They also introduced written exams and viva voce to check the candidates' performance.

Background:

- The top court upheld an order of the Nagpur Bench of the Bombay High Court which had set aside certain provisions of the Consumer Protection Rules, 2020 that govern appointment of President and members to State and District Consumer Disputes Redressal Commissions.
- The Union Ministry of Consumer Affairs and State of Maharashtra challenged the High Court's judgment before the Supreme Court.
- The apex court said the High Court was right in striking down the relevant rules.

Issues with the Consumer Protection Rules, 2020:

- As per Article 233 of the Constitution, a lawyer needs to have only 7 years of practice as an advocate in High Court. Under the circumstances to provide 20 years' experience under Rule 3(2)(b) is rightly held to be unconstitutional, arbitrary and violative of the Article 14 of the Constitution of India.
- The apex court said it was of the opinion that Rule 6(9) lacks transparency and it confers uncontrolled

discretion and excessive power to the Selection Committee.

- Under Rule 6(9), the Selection Committee is empowered with the uncontrolled discretionary power to determine its procedure to recommend candidates to be appointed as President and Members of the State and District Commission. The transparency and selection criteria are absent under Rule 6(9).
- In absence of transparency in the matter of appointments of President and Members and in absence of any criteria on merits the undeserving and unqualified persons may get appointment which may frustrate the object and purpose of the Consumer Protection Act, it said.

Way Forward:

- It cannot be disputed that the commissions are empowered with the powers of court and are quasi-judicial authorities. They empowered to discharge judicial duties with the adequate powers of the court including civil and criminal.
- Therefore, the standards expected from the members of the tribunal should be as nearly as possible as applicable to the appointment of judges exercising such powers.

ON WOMEN'S DAY EVE, NAGALAND'S FIRST WOMAN MINISTER ASSUMES OFFICE

**Why in news?**

- Ahead of International Women's Day, Salhoutuonuo Kruse made history by becoming Nagaland's first woman Minister.

Details:

- The berth in the Nagaland Cabinet led by Neiphiu Rio came five days after she and Hekani Jakhalu were elected as the first women MLAs of the State. Both represent the Nationalist Democratic Progressive Party (NDPP).
- The NDPP and the BJP have a total of 37 MLAs in the 60-member Assembly. Almost all the other 23 MLAs have extended support to the government, making it opposition-less.

International Women's Day:

- Each year, March 8 is observed as International Women's Day to celebrate the social, economic, cultural, and political achievements of women from all around the world.

History:

- The concept of International Women's Day first emerged in the early 1900s. Women's Day first came into existence in 1909 and it was known as National Women's Day.
- The day was initially celebrated on 28 February 1909, when 15,000 women marched through New York City demanding shorter hours, better pay, and voting rights.
- Around the same time in Europe, in 1910 to be precise, the second International Conference of Working Women was held in Denmark's Copenhagen, where Clara Zetkin, who led the Women's Office for the Social Democratic Party in Germany tabled the idea of an International Women's Day and on March 9, 1911, International Women's Day was honoured for the first time in Austria, Denmark, Germany and Switzerland.
- The United Nations (UN) started celebrating International Women's Day in 1977 and in 1977, it was officially agreed that the day will be widely observed on March 8 every year.

Theme – 2023:

- The theme for 2023 Women's Day, is "DigitALL: Innovation and technology for gender equality".

CENTRE TO RECONSIDER 'SAFE HARBOUR' CLAUSE IN IT LAW

**Why in news?**

- The Union government recently formally outlined the Digital India Act, 2023, which is a broad overhaul of the Information Technology Act, 2000.
- Multiple rounds of consultations will be held before the new Act is brought to Parliament.

Safe harbor:

- The government is reconsidering a key aspect of cyberspace, 'safe harbour', which is the principle that the so-called 'intermediaries' on the Internet are not responsible for what third parties post on their

website. This is the principle that allows social media platforms to avoid liability for posts made by users.

- Safe harbour has been reined in recent years by regulations such as the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, which require platforms to take down posts when ordered to do so by the government, or when required by law.
- From the 2000s onward platforms for which safe harbour was applied as a concept "have now morphed into multiple types of participants and platforms on the Internet, functionally very different from each other, and requiring different types of guardrails and regulatory requirements."

Free Speech:

- It was also signalled that social media platforms' own moderation policies may now take a backseat to constitutional protections for freedom of expression.
- An October 2022 amendment to the IT Rules, 2021 says that platforms must respect users' free speech rights. Three Grievance Appellate Committees have now been established to take up content complaints by social media users.

Other features of Digital India Act 2023:

- A slew of such digital legislation is now likely to be subsumed into the Digital India Act.
- The other aspects that the Digital India Act would cover, such as Artificial Intelligence (AI), deepfakes, cybercrime, competition issues among Internet platforms, and data protection.
- The new law would seek to address "new complex forms of user harms" that have emerged in the years since the IT Act's enactment, such as catfishing, doxxing, trolling, and phishing.
- A new "adjudicatory mechanism" for criminal and civil offences committed online would come into place.

Way Forward:

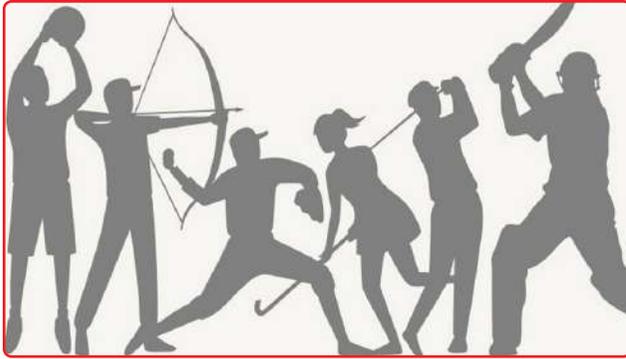
- The government put out a draft Digital Personal Data Protection Bill in 2022 and it would be one of the four prongs of the Digital India Act, with the National Data Governance Policy and amendments to the Indian Penal Code (IPC) being others, along with rules formulated under the Digital India Act.
- The government will hold multiple rounds of consultations with the public and industry stakeholders to arrive first at the principles for this Act, and subsequently to iron out a draft that will be put out by the Ministry.

UTTAR PRADESH CABINET APPROVES NEW SPORTS POLICY 2023

Why in news?

- Recently, the Uttar Pradesh cabinet approved the New Sports Policy, 2023.

- As part of the new sports policy, special focus is to be laid on a range of aspects, from a player's physical fitness to training.



Financial assistance to sports associations and academies:

- The new policy promises financial support for various sports associations and sports academies. Academies and sports organisations with limited resources will benefit from it.
- These associations and academies will be able to expand their infrastructure and training facilities with the government's financial support, which will further lend itself to producing top athletes.
- In addition to this, the Uttar Pradesh government will also cooperate in the development of sports infrastructure facilities through PPP (Public Private Partnership).
- The state will set up 14 centers of excellence, each centered around a particular sport. These are proposed to be set up on PPP model.
- The new sports policy also includes information on coaches and mapping of various sporting facilities.

State Sports Authority:

- In the new sports policy 2023, there is a provision to establish a state sports authority on the lines of the Sports Authority of India (SAI).
- Additionally, the state will put in place a State Sports Development Fund. Through this fund, weak players, associations, or academies will receive assistance.
- In addition, five high-performance centres will be built in the state where high-performance athletes will be provided with training facilities for better physical fitness.

Health insurance:

- The Uttar Pradesh government will also provide financial assistance to budding athletes. In its new sports policy, the government has also included provisions for the same. Each registered player will receive a health insurance cover of up to Rs 5 lakh from the state government.
- Along with this, the state government will also provide funds from the Eklavya Sports Fund for the treatment of injuries suffered sustained by players during competitions.

- Many players decide to retire or quit the sport at the peak of their careers due to financial hardship or poor medical care. The government, under its new sports policy, will also extend a helping hand to such players.

Players will receive training in three categories:

- The players will receive training based on their skill power for better training. They have been divided into three categories by the government for this purpose.
 - The first category will include grassroots (ground level) players who need coaching at the initial level.
 - The second category will focus on the development of players, with talented players being identified and given necessary training as part of an action plan to help them become future players.
 - The third category is of elite-class players-- established players who represent the state in various sports. Such players will be motivated to perform better at national and international levels.

Other Highlights:

- A sports center will be established in each district.
- Special attention will be given to women and para sports.
- Priority will be given to the development of sports facilities in rural areas.
- Local and indigenous sports will be promoted.
- Sports industry will be encouraged in the state.
- Keeping in view the possibilities of sports tourism, efforts will be made in this area as well.
- Provision has also been made to promote e-sports in the state.
- Better facilities like fitness experts, and diet experts will be provided in the hostels.
- A committee of international players will be constituted for admission in hostels.
- Schools will be encouraged to start sports nurseries or academies for the development of various sports.
- A committee will be formed for Khelo India University Games

HOUSE PANEL PULLS UP LABOUR MINISTRY FOR UNDERUTILISATION OF ALLOCATIONS FOR ITS SCHEMES



Why in news?

- Recently, the Parliamentary Standing Committee on Labour, headed by Biju Janata Dal (BJD) leader Bhartruhari Mahtab, has pulled up the Union Labour Ministry for underutilisation of the allocations meant for the Ministry's schemes.

Details:

- The panel has asked the Ministry to assess and work out the likely financial implication for implementing the Supreme Court judgment on higher provident fund pension and approach the Ministry of Finance for additional funds to enable timely payment of amounts that may become due.
- The panel noted that ₹16,893.68 crore was allocated as Budget estimates 2022-23, which was decreased to ₹16,117.65 crore at revised estimates stage whereas the actual expenditure incurred as on February 21, 2023 was ₹ 13,092.99 crore, which amounts to 81.23% of the revised estimates (RE) amount.

Scheme-wise analysis:

- The scheme-wise analysis of utilisation of funds for the fiscal 2022-23 up to February 13, 2023 reveals that the Employee's Pension Scheme (EPS) and National Career Services (NCS) are the only schemes which recorded expenditure up to 90% vis-à-vis RE provisioning whereas for most other schemes, the percentage utilisation has been substantially low.
- In case of Pradhan Mantri Shram Yogi Maandhan, National Database of Unorganised Workers, Labour Welfare Schemes and Rehabilitation of Bonded Labour, the utilisation recorded has been 26.66%, 30.02%, 30.63% and 48.30%, respectively vis-à-vis the Budget provisioning.
- The panel observed that gross underutilisation of the funds has impacted the performance of certain schemes thereby defeating the laudable intent of these schemes in benefiting the targeted groups.

Conclusion:

- The committee, therefore, impress upon the Ministry to leverage their spending pattern on such schemes where the utilisation percentage is not up to the mark so as to ensure optimal achievement of the 2022-23 allocations by the close of the Financial Year, 2022-23.

ATAL INNOVATION MISSION LAUNCHES ATL SARTHI

Why in news?

- Recently, Atal Innovation Mission (AIM) - NITI Aayog launched ATL Sarthi, a comprehensive self-monitoring framework to strengthen the ever-growing ecosystem of Atal Tinkering Labs (ATL).

ATL:

- Atal Innovation Mission is establishing Atal Tinkering Laboratories (ATLs) in schools across India to foster

curiosity, creativity, and imagination in young minds; and inculcate skills such as design thinking mindset, computational thinking, adaptive learning, physical computing etc. As of date, AIM has funded 10,000 schools to establish Atal Tinkering Labs (ATLs).



- AIM is continuously strengthening this ecosystem by developing tools and framework to enhance the performance of ATLs and achieve the desired objectives. ATL Sarthi is one such initiative in this direction.

ATL Sarthi:

- As the name suggests, Sarthi is a charioteer and ATL Sarthi will enable the ATLs to be efficient and effective.
- The initiative has four pillars ensuring the performance enhancement of ATLs through
 - regular process improvements like a self-reporting dashboard known as 'MyATL Dashboard' and
 - Compliance SOPs for schools to ensure financial and non-financial compliances,
 - on-ground enablement of ATLs in collaboration with relevant local authorities through Cluster-based Approach and
 - providing ownership to schools to analyze their performance through Performance-Enablement (PE) Matrix.
- The ATL Cluster aims at providing a self-sustainable model for enablement and monitoring wherein the ATLs and local authorities work in tandem with each other on-ground to form clusters of 20-30 ATLs in a particular region.
- These ATLs can learn from each other through training, collaborations, events and best practices.
- As a pilot, AIM executed ATL Sarthi with different partners in regions like Karnataka, Andhra Pradesh, Gujarat.

Way Forward:

- Atal Innovation Mission aims to foster millions of young innovators in India by setting up ATLs in schools.
- ATL Sarthi provides a Monitoring and Evaluation framework to enhance the performance of ATLs.

FOREIGN LAWYERS, FIRMS CAN OPERATE IN INDIA, SAYS BCI



Why in news?

- The Bar Council of India (BCI) has opened up law practice in India to foreign lawyers and law firms.

Details:

- Recently, the BCI notified in the official gazette the Rules for Registration and Regulation of Foreign Lawyers and Foreign Law Firms in India, 2022.
- It enables foreign lawyers and law firms "to practise foreign law, diverse international law and international arbitration matters in India on the principle of reciprocity in a well-defined, regulated and controlled manner".
- The BCI said that the move would benefit Indian lawyers, whose standards of proficiency in law are comparable to the international standards.

What do the new rules allow?

- According to the Advocates Act, advocates enrolled with the Bar Council alone are entitled to practise law in India. All others, such as a litigant, can appear only with the permission of the court, authority or person before whom the proceedings are pending.
- The notification essentially allows foreign lawyers and law firms to register with BCI to practise in India if they are entitled to practise law in their home countries. However, they cannot practise Indian law.
- They shall be allowed to practise transactional work /corporate work such as joint ventures, mergers and acquisitions, intellectual property matters, drafting of contracts and other related matters on a reciprocal basis.
- They shall not be involved or permitted to do any work pertaining to the conveyancing of property, Title investigation or other similar works, the notification states.
- Indian lawyers working with foreign law firms will also be subject to the same restriction of engaging only in "non-litigious practice."

How have foreign law firms operated so far?

- The issue of foreign law firms entering the Indian market came to courts with a challenge before the

Bombay High Court in 2009. In 'Lawyers Collective v Union of India', the Bombay High Court essentially held that only Indians holding Indian law degrees can practise law in India.

- The HC interpreted Section 29 of the Advocates Act, which states that only advocates enrolled with BCI can practise law. The HC also held that 'practice' would include both litigious and non-litigious practice, so foreign firms can neither advise their clients in India nor appear in court.

'Fly in and fly out'

- In 2012, the issue came up before the Madras High Court in 'AK Balaji v Union of India'.
- In 2015, the Supreme Court in a decision recognised the practice of foreign law firms in a very narrow sense.
- In 'AK Balaji v Government of India', the Madras High Court also held that foreign firms cannot practise either on the litigation or non-litigation side unless they meet the requirements and rules laid down by the Advocates Act and the BCI rules.
- Over 32 foreign law firms from the UK, the US, France and Australia had been impleaded as respondents in the case. However, the Madras High Court created an exception. It said that there would be no ban on temporary visits or advising clients on a "fly in and fly out" basis.

BPOs:

- By 2012, Business Process Outsourcing (BPOs) had arrived in India on a big scale and did backend work for US-based companies.
- In the legal profession, these firms, Legal Process Outsourcing (LPOs), carried support operations for lawyers. They operated in uncertain legal frameworks and the Supreme Court had to intervene to settle the law on the issue.

What was the SC's decision?

- Both the Madras and Bombay High Court judgments were challenged by the BCI and Lawyer's Collective respectively before the Apex Court.
- In 2018, the Supreme Court upheld both the High Court judgments disallowing foreign law firms and lawyers, with some modifications such as holding the expression "fly in and fly out" to cover only "casual visit not amounting to practice."
- This meant that the "fly in and fly out" route could not mean regular visits. On the issue of LPOs, the SC did not decide on their fate.
- They argued that they were essentially BPOs that managed secretarial support, transcription services, proofreading services, travel desk support services, etc. which technically do not come within the purview of the Advocates Act or the BCI Rules.

Way Forward:

- Now, the BCI has reasoned that its move will address concerns about the flow of Foreign Direct Investment

in the country and make India a hub of International Commercial Arbitration.

- The rules bring legal clarity to foreign law firms that currently operate in a very limited way in India.

About BCI:

- The BCI is a statutory body established under the Advocates Act, 1961, and it regulates legal practice and legal education in India.

INTERNATIONAL RELATION

UNDERSTANDING THE WINDSOR FRAMEWORK



Why in news?

- The United Kingdom and the European Union struck a deal recently regarding post-Brexit trade rules for Northern Ireland, with a view to remove the border between Britain and Northern Ireland running through the Irish Sea.
- The fact that the Republic of Ireland remained with the EU after Brexit led to complications on the trade front, a wrinkle that the U. K.'s conservative government ironed out with the Northern Ireland Protocol. However, the Protocol, which allowed EU customs rules to apply across Northern Ireland, led to tensions in the province.
- The Windsor framework is the latest attempt at a remedy to the political complexities that have impacted trade and sentiments in the area.

What is the backdrop?

- Ever since the Anglo-Irish Treaty of 1921 established the Irish Free State, the island's counties comprising Northern Ireland, remained a part of the U.K.
- The political split on the island was exacerbated by growing tensions, especially from the 1960s onwards, with spiralling violence between Unionists, who were set on Northern Ireland remaining within the U.K., and the Republicans, who favoured unification with the Republic of Ireland.
- Over the following three decades of attacks that came to be known as "The Troubles", more than 3,500 people died and many hundreds of thousands were injured. It was resolved only after the Good Friday Agreement in 1998 between Prime Ministers Tony Blair and Bertie Ahern of the U.K. and the Republic of Ireland respectively.

- A key takeaway from the Agreement was that, respecting the wishes of the majority of the people of Northern Ireland, the province would remain a part of the U.K. The people of the province would continue to be governed by blended political institutions, based on power-sharing between the Republic of Ireland and Northern Ireland.

Why were there trade tensions?

- These carefully constructed arrangements faced an imminent challenge with the prospect of Brexit, and that led, in 2019, to the Northern Ireland Protocol, which allowed EU customs rules to apply in Northern Ireland.
- This was to avoid a hard customs border between Northern Ireland and the Republic of Ireland. Specifically, under the Protocol, Northern Ireland would formally be outside the EU single market, yet EU rules on the free movement of goods and customs union would continue to apply.
- While the Protocol promoted peace and harmony on the island, it de facto cut Northern Ireland off from the UK in terms of trade by imposing, in effect, a hard customs border in the Irish Sea.
- This aggravated Northern Ireland unionists who argued that it was unfair that goods could not flow freely between the province and the rest of the UK.

How does the Windsor framework attempt to resolve trade issues?

- The Windsor framework does so by permitting free trade between Great Britain and Northern Ireland through the use of green and red lanes for goods flowing into Northern Ireland.
- Green lane goods will have fewer checks and controls, including no customs checks or rules of origin. Red lane goods under the framework will be subject to full checks and controls to preserve the EU's single market.
- In a bid to ease the impact on farmers, agri-food goods such as meat and dairy will have reduced checks and controls, and food retailers, including supermarkets, wholesalers, and caterers, will be able to move agri-food via the green lane. The prohibition on certain chilled meats from Great Britain being sold in Northern Ireland will be removed.
- The U.K. and EU leaders are hoping that this would lead to greater availability of British goods in Northern Ireland markets, including both foods and medicines.

Will the framework resolve all outstanding trade issues in the area?

- While the Windsor arrangement is aimed at protecting Northern Ireland's position within the U.K., and restoring its people's sovereignty, it is by no means an established working arrangement yet.
- For one, British Prime Minister might be anticipating political blowback from hard-line Tory Brexiteers,

who might be incensed at the continuing applicability of some EU customs rules in Northern Ireland.

- ⇒ Objections to the new arrangement might also be centred on the 'Stormont brake', an emergency measure that permits Northern Ireland's devolved government to quickly halt new EU laws from being imposed on the province, a measure that London retains the right to veto.
- ⇒ Second, the U.K. and the EU will have to pass new legislation to implement some parts of the framework, especially the proposed regulations in areas such as regulation of trade in medicines, and checks on animals and plants.
- ⇒ Ultimately, which EU rules will be accepted in Northern Ireland and which will not, depend on the balance of power between the Unionists and Republicans in the province. However, the Windsor framework certainly scores points as a pragmatic compromise with the EU.

IBSA CAN PLAY VITAL ROLE IN REFORMING DIGITAL GOVERNANCE



Why in news?

- ⇒ India, Brazil, and South Africa, which have together formed the tripartite IBSA Forum, may play a prominent role in the process of reforming digital governance, at a time when digital geopolitical tensions are showing no signs of easing, according to the Geneva-based Diplo Foundation.

Observations made:

- ⇒ The first tangible results from IBSA's digital momentum could be expected during India's G-20 presidency, which, among others, will promote 'a new gold standard for data'. The IBSA countries are strong supporters of multilateral and multi-stakeholder approaches.
- ⇒ But digitalisation also tends to exacerbate major societal tensions that these countries face, including the digital divide, and the need to have digital governance that will reflect local cultural, political, and economic specificities.

Digital inclusion:

- ⇒ The three countries have spearheaded digital inclusion by prioritising affordable access to citizens,

by supporting training for digital skills, and by a legal framework for the growth of small digital enterprises.

- ⇒ For example, India's Aadhaar biometric ID system is seen by many as a leading digital identity initiative, inspiring similar systems in other countries.
- ⇒ On the issue of data and sustainable development, the foundation says that India's G-20 presidency aims for strategic leadership with practical initiatives such as a self-evaluation of nations' data governance architecture; modernisation of national data systems to regularly incorporate citizen voices and preferences; and transparency principles for governing data.

Geopolitical tensions:

- ⇒ Going by the report, digital geopolitics in 2023 will be centred on the issues pertaining to the protection of submarine cables and satellites, production of semiconductors, and the free flow of data.
- ⇒ The report says that from submarine cables to satellites, digital geopolitical tensions remain stressed in 2023, especially between the U.S. and China.

About IBSA:

- ⇒ The grouping was formalized and named the IBSA Dialogue Forum when the Foreign Ministers of the three countries met in Brasilia (Brazil) on 6th June 2003 and issued the Brasilia Declaration.
- ⇒ IBSA does not have a headquarters or a permanent executive secretariat.
- ⇒ At the highest level, it counts on the Summits of Heads of State and Government.
- ⇒ IBSAMAR (IBSA Maritime Exercise) is an important part of IBSA trilateral defence cooperation.

THE INDIA-AUSTRALIA RELATIONSHIP



Why in news?

- ⇒ Australia will host Exercise Malabar for the first time, and India will, also for the first time, participate in Australia's Talisman Sabre exercise, Australian Prime Minister Anthony Albanese announced recently.
- ⇒ As part of his four-day visit, he landed in Ahmedabad and celebrated Holi. He and Indian PM watched a cricket match, the fourth and final Test of the series between India and Australia.
- ⇒ He is the first leader of his country to make a bilateral visit to India since Malcolm Turnbull in 2017.

Historical perspective:

- The India-Australia bilateral relationship has been underpinned by the shared values of pluralistic, Westminster-style democracies, Commonwealth traditions, expanding economic engagement, and increasing high-level interaction.
- The end of the Cold War and beginning of India's economic reforms in 1991 provided the impetus for the development of closer ties between the two nations. The ever-increasing numbers of Indian students travelling to Australia for higher education, and the growing tourism and sporting links, have played a significant role in strengthening bilateral relations.
- With the passage of time, ties evolved in the direction of a strategic relationship, alongside the existing economic engagement. In recent years, the relationship has charted a new trajectory of transformational growth.
- With greater convergence of views on issues such as international terrorism, and a shared commitment to a rules-based order in the Indo-Pacific region, the two democracies have taken their cooperation to plurilateral formats, including the Quad (with the United States and Japan).

Strategic ties:

- In September 2014, Australia's Prime Minister Tony Abbott visited India, and in November 2014, Modi became the first Indian Prime Minister to make an official visit to Australia after Rajiv Gandhi in 1986. He also became the first Indian PM to address a joint sitting of the Parliament of Australia.
- At the India-Australia Leaders' Virtual Summit in June 2020, Modi and Prime Minister Scott Morrison elevated the bilateral relationship from the Strategic Partnership concluded in 2009 to a Comprehensive Strategic Partnership (CSP).
- They met in person in Washington DC and at the COP26 climate summit in Glasgow. At the 2nd India-Australia Virtual Summit in March 2022, several key announcements were made, including on a Letter of Intent on Migration and Mobility Partnership Arrangement to foster the exchange of skills, and a Letter of Arrangement for Educational Qualifications Recognition to facilitate the mobility of students and professionals.
- There has been a series of high-level engagements and exchange of ministerial visits in 2022 and in 2023.

China factor:

- Ties between Australia and China were strained after Canberra in 2018 banned Chinese telecom firm Huawei from the 5G network. Later, it called for an inquiry into the origins of Covid-19, and slammed China's human rights record in Xinjiang and Hong Kong. China responded by imposing trade barriers on

Australian exports, and by cutting off all ministerial contact.

- India has been facing an aggressive Chinese military along the border. Both have been assessing the Chinese challenge since 2013.
- The countries' participation in Quad is an example of their convergence of interests, based on shared concerns.

Wide cooperation**Economic cooperation:**

- The Economic Cooperation Trade Agreement (ECTA), the first free trade agreement signed by India with a developed country in a decade entered into force in December 2022, and has resulted in an immediate reduction of duty to zero on 96% of Indian exports to Australia in value (that is 98% of the tariff lines) and zero duty on 85% of Australia's exports (in value) to India.
- Bilateral trade was US\$ 27.5 billion in 2021; with ECTA, there is potential for it to reach around US\$ 50 billion in five years.

People-to-people ties:

- India is one of the top sources of skilled immigrants to Australia. As per the 2021 Census, around 9.76 lakh people in Australia reported their ancestry as Indian origin, making them the second largest group of overseas-born residents in Australia.
- To celebrate India@75, the Australian government illuminated more than 40 buildings across the country, and Prime Minister Albanese issued a personal video message.

Education:

- The Mechanism for Mutual Recognition of Educational Qualifications (MREQ) was signed on March 2, 2023. This will facilitate mobility of students between India and Australia.
- Deakin University and University of Wollongong are planning to open campuses in India. More than 1 lakh Indian students are pursuing higher education degrees in Australian universities, making Indian students the second largest cohort of foreign students in Australia.

Defence cooperation:

- The 2+2 Ministerial Dialogue was held in September 2021, and the Deputy Prime Minister and Defence Minister of Australia visited in June 2022.
- The Mutual Logistics Support Agreement (MLSA) was concluded during the Virtual Summit in June 2020, and the two militaries held several joint exercises in 2022.
- Australia will host military operations with India, Japan, and the US in the "Malabar" exercises off the coast of Perth in August, and has invited India to join the Talisman Sabre exercises in 2023.

Clean energy:

- The countries signed a Letter of Intent on New and Renewable Energy in February 2022 which provides for cooperation towards bringing down the cost of renewable energy technologies, especially ultra low-cost solar and clean hydrogen.
- During the Virtual Summit in March 2022, India announced matching funds of AUD 10 million for Pacific Island Countries under Infrastructure for Resilient Island States (IRIS) and of AUD 10 million for Pacific Island Countries under International Solar Alliance (ISA).

INDIA, US SIGN MOU TO BUILD RESILIENT SUPPLY CHAIN IN SEMICONDUCTOR SECTOR



Why in news?

- Recently, India and the US inked an initial pact on increasing private sector cooperation in the area of semiconductors under which the two countries would facilitate business opportunities and develop an ecosystem with a view to reduce their dependency on China and Taiwan.
- The Memorandum of Understanding (MoU) on establishing semiconductor supply chain and innovation partnership under the framework of India-US Commercial Dialogue was signed.

Semiconductor sub-committee:

- Both sides have agreed to set up a semiconductor sub-committee, led by the Department of Commerce for the US side and the Ministry of Electronics and Information Technology (MeitY) and Ministry of Commerce and Industry for the Indian side.
- The committee will convene its first engagement in mid-year to review recommendations from the joint industry-led task force launched in connection with the iCET (Initiative on Critical and Emerging Technologies).

Collaboration:

- The MoU seeks to establish a collaborative mechanism between the two governments on semiconductor supply chain resiliency and diversification in view of US's CHIPS and Science Act and India's Semiconductor Mission.

- The CHIPS and Science Act was signed by President Joe Biden in 2022 to boost funding for the American semiconductor industry.

Significance:

- The MoU aims to leverage complementary strengths of both countries and facilitate commercial opportunities and development of semiconductor innovation ecosystems through discussions on various aspects of semiconductor value chain.
- It also envisages mutually beneficial R&D, talent and skill development.

Background:

- After the pandemic, several sectors, including automobile and telecom, were severely impacted on account of shortage of semiconductor chips as India mainly imports them from China and Taiwan.
- Semiconductors are silicon chips that are used in various products, including automobiles, computers and cellphones.
- China has sanctioned USD 140 billion to boost domestic chip manufacturing to overcome the US export restrictions.
- Indian government has also approved a Rs 76,000 crore-scheme to boost semiconductor and display manufacturing in the country in a bid to position India as a global hub for hi-tech production and attract large chip makers.
- Incentives have been lined up for companies engaged in silicon semiconductor fabs, display fabs, compound semiconductors, silicon photonics, sensor fabs, semiconductor packaging and semiconductor design.

Other highlights of India-US Commercial Dialogue:

- Another key outcome of the commercial dialogue was the launch of a new working group on talent, innovation and inclusive growth.
- Both countries have recognised that small businesses and entrepreneurs are the lifeblood of the US and Indian economies. There is a need to facilitate collaboration between the SMEs and to foster innovation ecosystems that facilitate their post-pandemic economic recovery and growth.
- They also launched standards and conformance cooperation program (Phase III) to be carried out in partnership between ANSI (American National Standard Institute) and BIS (Bureau of Indian Standards).
- Besides, they re-launched the travel and tourism working group to continue the progress from before the pandemic and to also address the many new challenges and opportunities to create a stronger travel and tourism sector.

Clean energy:

- The US side would send a senior government official-led clean energy and environmental technology business development mission to India in 2024.

- The trade mission would be an opportunity to further foster US-Indian business partnerships in grid modernisation and smart grid solutions, renewable energy, energy storage, hydrogen, liquified natural gas, and environmental technology solutions.
- Further, both sides pledged to work together in the Global Biofuels Alliance and in the development and deployment of hydrogen technologies.
- Both sides expressed interest in working together in developing next generation standards in telecommunications, including 6G.

INDIA'S SILENCE ON CHINA'S ROLE IN SAUDI ARABIA-IRAN DEAL IS DISQUIETING



Context:

- The Saudi Arabia-Iran agreement signed in China, if successful, will have a far-reaching impact worldwide.

Details:

- The result of negotiations that were kept secret till they reached agreement could signal an easing of tensions between Saudi Arabia and Iran after many years; peace in Yemen, where the two countries have carried out proxy battles; and a boost for China's efforts to project itself as a peacemaker.
- While the agreement has been welcomed by the United Nations, France, Jordan and West Asian countries, it is also seen as a counter to the U.S.-brokered Abraham Accords, and will be greeted with some concern in the U.S., Israel and the UAE.

What it translates for India?

- Though India has not formally reacted to the announcement so far, the fact that two close partners such as Saudi Arabia and Iran have reached a deal with China's influence is disquieting, given India's current tensions with China.
- Previous attempts brokered by Iraq and Oman had not succeeded in any breakthrough.
- Other analysts have pointed to India's focus on the I2U2 quadrilateral along with Israel, the U.S. and UAE, which may have taken the spotlight away from its ties with Iran and Saudi Arabia.

- In November, Saudi Crown Prince and Prime Minister Mohammad Bin Salman cancelled a visit to India, which is expected to be rescheduled 2023.
- Iranian Foreign Minister Hossein Amir-Abdollahian cancelled his participation in Raisina Dialogue 2023, run by the Ministry of External Affairs (MEA) and the Observer Research Foundation, reportedly after protesting a promotional video for the event that appeared critical of Iranian President Ebrahim Raisi.

Strained U.S-Saudi ties:

- While the U.S.-Iran tensions are high given the recent breakdown in talks over the Joint Comprehensive Plan of Action, more commonly known as the Iran nuclear deal, the Beijing agreement also shows up the strain in Washington's ties with Saudi Arabia.
- Despite U.S. President Joe Biden's visit to Riyadh in 2022, Saudi Arabia refused to heed his request to cap oil prices by the Organization of Petroleum Exporting Countries to reduce demand for Russian oil in the wake of the Ukraine conflict.

China-Iran ties:

- Chinese President Xi Jinping's visit to Riyadh in December was a stark contrast, in terms of more than a dozen agreements on energy and infrastructure that were signed.
- Iranian President Mr. Raisi visited Beijing in February, and Mr. Xi is expected to travel to Iran later to take forward talks on the Belt and Road Initiative and an MoU worth an estimated \$400 billion for oil and infrastructure projects.

US influence:

- Diplomats, however, point out that Saudi Arabia's agreement with Iran does not signify a rejection of the U.S., so much as it shows that new global players are exerting their influence.
- While the balance of power remains with the U.S., its influence and commitment in the region have definitely reduced, given an absence of strategic vision in conflicts in Iraq, Syria, Yemen and so on.
- The past decade has shown many Middle Eastern countries losing faith in the U.S., and broadening their options to players like Russia for energy matters, and China for economic and political matters.

AUSTRALIA TO BUY U.S. NUCLEAR SUBMARINES UNDER AUKUS

Why in news?

- Recently, the Australia has unveiled plans to buy up to five U.S. nuclear-powered submarines, then build a new model with U.S. and British technology under an ambitious plan to bulk up Western muscle across the Asia-Pacific in the face of a rising China.
- The announcement came at an event at a San Diego, California, naval base where U.S. President hosted Australian Prime Minister and British Prime Minister.



What is AUKUS?

- The defence deal called AUKUS was agreed upon by Australia, UK and the US in September 2021.
- The first aspect of the pact is equipping Australia with submarines and this part of the agreement is called Pillar One. The US and UK will share plans for their submarines that will help Australia build its own eventually.
- The AUKUS agreement is aimed at preserving a “free and open” Indo-Pacific.
- Before the pact, Australia planned to buy diesel-powered subs from France in a \$60 billion deal in 2016.

What is the submarine deal?

- The three nations will create a new fleet of cutting-edge tech which include Rolls-Royce reactors made in the UK. Under the deal, members of the Royal Australian Navy will be trained to use the subs and will be embedded at submarine bases in the US and the UK from 2023.
- The country will receive at least three nuclear-powered submarines from the US in the early 2030s. These Virginia-class vessels will be second-hand and need the approval of the US Congress. Australia will have the option to purchase two more. These have an estimated value of \$3 billion each.
- Compared with the Collins-class submarines due to be retired by Australia, the Virginia-class is almost twice as long and carries nearly three times more crew, with a capacity for 132 on board.
- The US vessels are also able to stay submerged almost indefinitely and launch powerful cruise missiles.
- From 2027, the US and the UK will base some vessels at Perth’s Ran Base.

What's next?

- Australia will get up to eight new submarines called SSN-AUKUS. They will have British designs and will be powered by the American combat system. These attack crafts will be built in Britain and Australia.
- The UK is expected to get deliver the first home-built sub by the late 2030s. Australia will deliver new vessels to its navy by the early 2040s.
- These boats will be faster than Australia’s existing fleet. They will come with cruise missiles that have the capability of striking targets on land and at sea.

- With the deal, Australia will join a group of seven countries which have such ships: the US, Russia, China, the UK, France and India.

How has China reacted?

- China has long criticised the deal, calling it a “dangerous” provocation in the past. It has repeatedly accused Australia, the UK, and the US of adopting a “Cold War mentality” that risks a greater escalation in the region.
- After the AUKUS deal was announced, China’s mission to the UN said that it is a “blatant act that constitutes serious nuclear proliferation risks, undermines international non-proliferation system, fuels arms races, and hurts peace and stability in the region”.

ICC ISSUES ARREST WARRANT FOR VLADIMIR PUTIN FOR WAR CRIMES IN UKRAINE



Why in news?

- Recently, the International Criminal Court issued an arrest warrant for war crimes for President Vladimir Putin and a second Russian official.

Why did the International Criminal Court issue the warrants?

- The court says Putin bears individual criminal responsibility for the abduction and deportation of Ukrainian children since Russia’s full-scale invasion began in February 2022.
- The court also issued a warrant for Maria Lvova-Belova, Russia’s commissioner for children’s rights, who has been the public face of a Kremlin-sponsored program in which Ukrainian children and teenagers have been taken to Russia.
- A New York Times investigation published in October identified several Ukrainian children who had been taken away under Russia’s systematic resettlement efforts. The children described a wrenching process of coercion, deception and force. Russia has defended the transfers on humanitarian grounds.

What is the International Criminal Court?

- The International Criminal Court was created two decades ago as a standing body to investigate war crimes, genocide and crimes against humanity under a 1998 treaty known as the Rome Statute.

- Previously, the United Nations Security Council had established ad hoc tribunals to address atrocities in places such as the former Yugoslavia and Rwanda.
- The court is based in The Hague, a Dutch city that has long been a center for international law and justice.
- Many democracies joined the International Criminal Court, including close American allies including Britain. But the United States has long kept its distance, fearing that the court might one day seek to prosecute American officials, and Russia is also not a member.

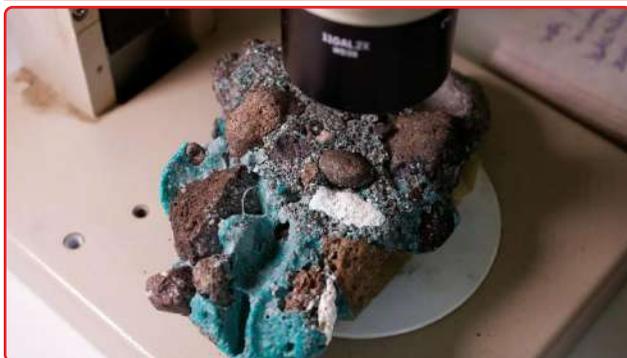
What does the warrant mean for Putin?

- Human rights groups hailed the warrant as an important step toward ending impunity for Russian war crimes in Ukraine, but the likelihood of a trial while Putin remains in power appears slim, because the court cannot try defendants in absentia and Russia has said it will not surrender its own officials.
- Russia's Foreign Ministry quickly dismissed the warrants, noting that it is not a party to the court. Still, the warrant for Putin's arrest deepens his isolation in the West and could limit his movements overseas.
- If he travels to a state that is party to the ICC, that country must arrest him, according to its obligations under international law.

Powers with ICC:

- The court has no power to arrest sitting heads of state or bring them to trial, and instead must rely on other leaders and governments to act as its sheriffs around the world. A suspect who manages to evade capture may never have a hearing to confirm the charges.

WHY HAVE PLASTIC ROCKS BEEN FOUND ON THE REMOTE BRAZILIAN ISLAND OF TRINDADE?



Why in news?

- A recent discovery of rocks made of plastic debris in the remote Brazilian Island of Trindade, which hosts a range of rare marine species, has sparked alarm among scientists.
- The fact that plastic had reached the secluded volcanic island known for its unique geology was terrifying.

What are the geological features of Trindade Island?

- Trindade Island is the easternmost and most remote point in Brazilian territory, located about 1,140 km from the southeastern state of Espírito Santo.

Flora & fauna:

- Trindade surfaced owing to volcanic activity under the Atlantic Ocean about three million years ago. Trindade, along with the Martim Vaz archipelago about 40 km away, hosts many species of native flora and fauna including seabirds and marine creatures.
- Trindade is known for being one of the most important conservation and nesting spots, both in Brazil and globally, for green sea turtles (*Chelonia mydas*), hosting nearly 1,800 nests annually on a small stretch of land.
- It is also known for hosting native seabirds like the Trindade Petrel, and the great frigatebird, which is otherwise only found in the Indo-Pacific and not the Atlantic. The surrounding region also hosts species of sharks, dolphins, and corals.

Formation:

- Its formation due to volcanic activity makes its terrain unique, reaching a 600 m elevation at multiple points while having surrounding oceanic depths of 6000 m.
- The island is considered one of the most recent manifestations of alkaline volcanic activity in Brazil. It is at the eastern end of a chain of guyots, or submarine volcanic mountains with flat tops, extending east to west about 1,100 km from the continental shelf off Brazil's coast.
- The island was first sighted in 1502 by a Portuguese sailor and was first inhabited by humans only in 1730 when Azorean communities colonised the Island.
- Currently, Trindade is a protected area not inhabited by any humans except for a small Brazilian Navy Crew which oversees the waters. It is also free of tourist activity.

How did plastic rocks get formed on the remote Island?

- The melted plastic became intertwined with rocks on the island. Plastic reaching Trindade despite it being hundreds of miles away from the mainland was evidence of humans' growing influence over the earth's geological cycles.
- They ran chemical tests on the rocks to determine what kind of plastics were in these rocks called "plastiglomerates" since they are made of a mixture of sedimentary granules and other debris held together by plastic.
- The scientists also revealed that the spot where they found the plastic rocks is a "permanently preserved area in Brazil, near the place green turtles lay their eggs".

How bad is marine pollution today?

- ⇒ While talking about the ecologically damaging discovery, the geologist said this was a clear manifestation of the Anthropocene, a term proposed by scientists to describe the current geological epoch, where humans are knowingly shaping the planet, instead of the usual geological processes which take millions of years.
- ⇒ The garbage and plastic dumped incorrectly in the oceans are turning into "geological material" and getting preserved in the "earth's geological records".
- ⇒ According to the UN, decades of overuse and a surge in short-lived, single-use plastics, have led to devastating levels of marine pollution. Nearly 12 million tonnes of plastics are swept into the oceans annually and gyres, which are described as 'islands of plastic', have cropped up.
- ⇒ While most plastics remain intact for years and even centuries, some erode to form 'microplastics', which are then consumed by marine wildlife and finally humans. Microplastics are plastic particles less than 5mm in diameter. They contribute to over 80% of ocean debris.

ECONOMY

COMBINING SOCIAL WELFARE AND CAPITAL MARKETS THROUGH SSE



Why in news?

- ⇒ Recently, the National Stock Exchange of India received the final approval from the markets regulator Securities and Exchange Board of India (SEBI) to set up a Social Stock Exchange (SSE).
- ⇒ Finance Minister, presenting the Union Budget back in 2019, had proposed to initiate steps for creating a stock exchange under the market regulator's ambit. The proposal was cleared in September 2021.

What is a Social Stock Exchange?

- ⇒ The SSE would function as a separate segment within the existing stock exchange and help social enterprises raise funds from the public through its mechanism.

- ⇒ It would serve as a medium for enterprises to seek finance for their social initiatives, acquire visibility and provide increased transparency about fund mobilisation and utilisation.
- ⇒ Retail investors can only invest in securities offered by for-profit social enterprises (SEs) under the Main Board. In all other cases, only institutional investors and non-institutional investors can invest in securities issued by SEs.

What about eligibility?

- ⇒ Any non-profit organisation (NPO) or for-profit social enterprise (FPSEs) that establishes the primacy of social intent would be recognised as a social enterprise (SE), which will make it eligible to be registered or listed on the SSE.
- ⇒ The seventeen plausible criteria as listed under Regulations 292E of SEBI's ICDR (Issue of Capital and Disclosure Requirements) Regulations, 2018 entail that enterprises must be serving to
 - a) eradicate either hunger, poverty, malnutrition and inequality;
 - b) promoting education, employability, equality, empowerment of women and LGBTQIA+ communities;
 - c) working towards environmental sustainability;
 - d) protection of national heritage and art or bridging the digital divide, among other things.
- ⇒ At least 67% of their activities must be directed towards attaining the stated objective. This is to be established by enumerating that, in the immediately preceding three-year period, either 67% of its average revenue came from the eligible activities, expenditure (in the same proportion) was incurred towards attaining the objective or the target population constitute 67% of the overall beneficiary base.
- ⇒ Corporate foundations, political or religious organisations or activities, professional or trade associations, infrastructure and housing companies (except affordable housing) would not be identified as an SE.
- ⇒ Additionally, NPOs would be deemed ineligible should it be dependent on corporates for more than 50% of its funding.

How do NPOs raise money?

- ⇒ NPOs can raise money either through issuance of Zero Coupon Zero Principal (ZCZP) Instruments from private placement or public issue, or donations from mutual funds.
- ⇒ SEBI had earlier recognised that NPOs by their very nature have primacy of social impact and are non-revenue generating. Thus, there was a need to provide NPOs a direct access to securities market for raising funds.
- ⇒ ZCZP bonds differ from conventional bonds in the sense that it entails zero coupon and no principal payment at maturity. The latter provisions a fixed

interest (or repayment) on the funds raised through varied contractual agreement, whereas ZCZP would not provision any such return instead promising a social return.

- It is mandatory that the NPO is registered with the SSE for facilitating the issuance. The instrument must have a specific tenure and can only be issued for a specific project or activity that is to be completed within a specified duration as mentioned in the fund-raising document (to be submitted to the SSE).
- It must also demonstrate the requisite expertise through their performance in similar projects in the past, thus, acquiring investor confidence and tackle concerns about potential default.
- The minimum issue size is presently prescribed as Rs 1 crore and minimum application size for subscription at Rs 2 lakhs for ZCZP issuance.
- The NPO may choose to register on the SSE and not raise funds through it but via other means. However, they would have to make necessary disclosures about the same.

What about on completion of projects?

- Another structured finance product available for NPOs is the Development Impact Bonds.
- Upon the completion of a project and having delivered on pre-agreed social metrics at pre-agreed costs/rates, a grant is made to the NPO. The donor who makes the grant upon achieving the social metrics would be referred to as 'Outcome Funders'.
- Since the payment above is on post facto basis, the NPOs would have to also raise money to finance their operations. This is done by a 'Risk Funder' who alongside enabling the financing of operations on a pre-payment basis, also bears the associated risk with non-delivery of social metrics. S/he typically earns a small return if the metrics are delivered.

How do FPOs raise money?

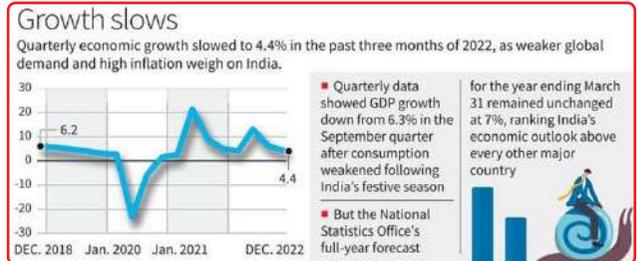
- For-Profit Enterprises (FPEs) need not register with social stock exchanges before it raises funds through SSE. However, it must comply with all provisions of the ICDR Regulations when raising through the SSE.
- It can raise money through issue of equity shares (on main board, SME platform or innovators growth platform of the stock exchange) or issuing equity shares to an Alternative Investment Fund including Social Impact Fund or issue of debt instruments.

What disclosures need to be made?

- SEBI's regulations state that a social enterprise should submit an annual impact report in a prescribed format. The report must be audited by a social audit firm and has to be submitted within 90 days from the end of the financial year.
- Listed NPOs, on a quarterly basis, are specifically required to furnish details about the money they have raised category-wise, how they have been utilised

and the unutilised balance amount. The latter needs to be furnished until the proceeds are fully utilised or the purpose has been achieved.

Q3 GDP GROWTH SLOWS TO 4.4%, PAST DATA UPGRADED



Why in news?

- India's GDP growth slowed to 4.4% in the October-December 2022 quarter, from 6.3% in the second quarter (Q2) of 2022-23 as per the National Statistical Office (NSO), which retained its full-year growth estimate for the economy at 7%, despite revising the preceding fiscal's GDP growth figure 40 basis points higher to 9.1%.

Key Highlights:

- The NSO revised the GDP contraction numbers for the COVID-hit year of 2020-21, pegging the overall hit to the economy that year at -5.7% as per Second Revised Estimates, significantly narrower than its first provisional estimate of a 7.3% contraction.
- The Gross Value Added (GVA) in the economy grew 4.6% in the third quarter (Q3) of 2022-23, slower than 5.5% in Q2.
- Manufacturing continued to shrink for the second quarter, albeit at a slower pace of 1.1% compared with Q2's 3.6% contraction.

Why growth slowed down?

- Economists termed the manufacturing sector's persistent slack a negative surprise that brought Q3 growth levels lower than their projections.
- The 4.4% GDP growth print is also because of the revisions made to the previous years when the base has gone up.

Future projections:

- The NSO had persisted with the 7% growth hopes for 2023 as projected in early January, implied that GDP growth would improve to 5.1% in the ongoing final quarter of the year, which was higher than "current expectations".
- The CEA pointed out that even if the 4.4% growth rate of Q3 persisted in the January-March period (Q4), the full-year growth rate would still be about 6.8%.
- Cumulatively, the first nine months of 2022-23 have now reported a GVA uptick of 7.2% compared with 10.7% in the same period of 2021-22, while GDP is

estimated to have risen 7.7% compared with 11.1% in April to December 2021.

Sharp revisions:

- Following the data revisions for the past two years, the cumulated average real GDP growth rate over the period 2019-20 to 2022-23 is 3.2%.
- Overall GVA growth in Q1 has been revised lower from the 12.7% reckoned earlier to 12.1%, while the Q2 GVA uptick has been pared marginally from 5.6% estimated earlier to 5.5%. GDP growth for the first quarter of 2022-23 has been revised down to 13.2% from 13.5% estimated earlier, but Q2 GDP growth estimates have been left unchanged.
- Manufacturing and Mining GVA contractions for Q2 have been upgraded by the NSO from its earlier estimates of a 4.3% and 2.8% shrinkage in the two sectors, respectively.
- Agriculture GVA growth, on the other hand, has been downgraded sharply for Q1 as well as Q2. The Q3 Mining and quarrying GVA recovered from a 0.4% contraction in Q2 to grow 3.7% in Q3, while Agriculture, Forestry and Fishing GVA accelerated to 3.7%, the fastest pace of growth in 2023.

Conclusion:

- The CARE Ratings expressed greater concern about the fall in India's investment to GDP ratio to around 32 in Q3 from 34 in Q2, and said it is critical that domestic demand should accelerate in the months ahead as external demand conditions remain weak.

SAMARTH SCHEME OPERATIONAL TILL MARCH 2024



Why in news?

- Samarth is a demand driven and placement-oriented umbrella skilling programme of Ministry of Textiles. The implementation period of the scheme is up to March 2024.
- The scheme was formulated under the broad skilling policy framework adopted by M/o Skill Development & Entrepreneurship.

About Samarth:

- Samarth aims to incentivize and supplement the efforts of the industry in creating jobs in the organized

textile and related sectors, covering the entire value chain of textiles, excluding Spinning and Weaving.

- The training programme and course curriculum have been rationalized keeping in view the technological and market demand of the domestic and international economies.
- In addition to the entry level skilling, a special provision for upskilling/ re-skilling programme has also been operationalized under the scheme towards improving the productivity of the existing workers in Apparel & Garmenting segments.
- Samarth also caters to the upskilling/ re-skilling requirement of traditional textile sector such as handloom, handicraft, silk and jute.

Implementation:

- The scheme is implemented through Implementing Partners (IPs) comprising of Textile Industry/ Industry Associations, State government agencies and Sectoral Organizations of Ministry of Textiles like DC/ Handloom, DC/Handicrafts and Central Silk Board.

Advanced features:

- Samarth has been formulated with advanced features such as Aadhaar Enabled Biometric Attendance System (AEBAS), Training of Trainers (ToT), CCTV recording of training programme, dedicated call centre with helpline number, mobile app, Web based Management Information System (MIS), on-line monitoring of the training process etc.
- The State, District, Training Centre-wise information/ data in dashboard available in public domain.

The major processes/procedures adopted in the implementation of scheme are:

- Training Centres proposed by the implementing partners are to be physically verified through dedicated Government agencies for ensuring adequacy of requisite infrastructure as per the protocol adopted for each course under the scheme.
- Furthermore, a total of 184 courses aligned with National Skill Qualification Framework (NSQF) have been adopted under the scheme across various textile segments covering traditional sector like Handloom/ Handicrafts to conventional sector like Garmenting to advanced sector like Technical Textiles.
- In addition, end to end Digital solution for ease of implementation and monitoring.
- Employment linkage is mandated in the courses under organized textile sector with mandatory placement 70% in entry level & 90% for Upskilling programmes. Also, a mobile app for physical verification of the training centers with Geo- tagging /time stamped photographs.
- Besides, third party assessment trainees and QR code enabled e-certificate has been operationalized for this purpose. Additionally, all trainers are accredited

- through Training of Trainers (ToT) (Online & Offline mode) programme through due process.
- Wage compensation in traditional sector courses undertaken by sectoral organization of Ministry.

CENTRE ISSUES GUIDELINES TO ENSURE SAFETY IN TRANSPORTATION OF DANGEROUS GOODS



Why in news?

- The Bureau of Indian Standards (BIS), the National Standards Body of India, has recently published new guidelines aimed at enhancing safety in the transportation of dangerous goods.
- The guidelines, known as 'IS 18149:2023 - Transportation of Dangerous Goods – Guidelines', have been formulated under the Transport Services Sectional Committee, SSD 01, of BIS, and are expected to set a new benchmark for the safe handling and transportation of hazardous materials across the country.

What are Dangerous goods?

- Dangerous goods are substances and articles that have explosive, flammable, toxic, infectious or corrosive properties and pose a risk to public safety, property and the environment. The transportation of these goods involves the implementation of adequate measures to ensure their transit in total security and safety.
- While the transportation of hazardous goods may be by land, sea, waterways, rail or even by air, the sensitivity and risk factors involved in the process require specific precautions to be taken.
- These include meticulous packaging and conditioning, specific handling operations during transportation and training and development for persons engaged in transportation and handling of this category of goods.

Guidelines:

- The IS 18149:2023, provides guidelines on classification, packaging, labelling and marking, handling, documentation, role of stakeholders, training, transportation, emergency action and provisions for segregation.

- The dangerous goods referred in the standard include explosives, gases, flammable liquids, flammable solids, oxidizing substances and organic peroxides, poisonous and infectious substances, radioactive substances, corrosive substances and other miscellaneous dangerous substances.
- This standard is formulated to provide guidelines for all the stakeholders including vehicle owner's/transport agencies, contractors, consignors, consignees, operators and drivers carrying dangerous goods/substances for the safe transportation of dangerous goods.

Way Forward:

- With the aim of standardizing the transportation practices, the BIS guidelines will help ensure that hazardous goods are transported in a safe and secure manner, reducing the risk of accidents and potential harm to people and the environment.

NATIONAL YOUTH CONCLAVE 2023



Why in news?

- India's biggest youth summit- 'National Youth Conclave' is being organized by the Smart Cities Mission, MoHUA, Department of Youth Affairs and National Institute of Urban Affairs (NIUA).

Stakeholders:

- The event is organized under the aegis of India's G20 presidency in 2023, and aligning with the Urban20 and Youth20 engagement groups.
- Both, Ministry of Housing and Urban Affairs and the Ministry of Youth Affairs and Sports are coming together in this 2-day Conclave, being held on 13-14 March 2023 at Vigyan Bhawan, New Delhi.

About Urban20:

- Urban 20 (U20), an Engagement Group under the G20, brings together mayors from major G20 cities to inform the discussions of national leaders at the G20, and establishes a platform for cities to collectively inform G20 negotiations.
- U20 dialogue 2023 will emphasize on the need for changing the urban sector to achieve long-term beneficial results for the globe and set the way for coordinated city-level activities.
- The deliberations under U20 will be focused on six priority areas that are critical for grounding complex

global urban agendas into actionable city-level initiatives. Inclusion will be a cross cutting focus across all deliberations.

Priority Areas of U20 are:

- Encouraging Environmentally Responsible Behaviours
- Ensuring Water Security
- Accelerating Climate Finance
- Championing 'Local' Identity
- Reinventing Frameworks for Urban Governance and Planning
- Catalyzing Digital Urban Futures

About Youth20:

- Youth20 (Y20) engagement group, with its first Y20 conference held in 2010, provides a platform that allows youth to express their vision and ideas on the G20 priorities and comes up with a series of recommendations which are submitted to the G20 Leaders.
- The Y20 India summit in 2023 would exemplify India's youth-centric efforts and provide an opportunity to showcase its values and policy measures so that India's leadership of this summit can stand out among the youth cohort.
- The priority areas selected for the summit will showcase Indian leadership on these issues to both global and domestic audiences and help fulfil India's vision of making the G20 summit truly participative.

Priority areas of Y20 are:

- Future of Work: Industry 4.0, Innovation, & 21st Century Skills
- Climate Change and Disaster Risk Reduction: Making Sustainability a Way of Life
- Peace building and Reconciliation: Ushering in an Era of No War
- Shared Future: Youth in Democracy and Governance
- Health, Wellbeing & Sports: Agenda for Youth

SILICON VALLEY BANK 'CONTAGION' MAY LEAVE INDIA UNSCATHED



Why in news?

- The collapse of Silicon Valley Bank is causing global contagion, with some impact on the sentiment of the

market in the short term and long term. However, the Indian banking system is more insulated and regulated, and the Indian equity markets are unlikely to be impacted.

- There will be some impact on the sentiment of the market in the short to medium term but will not affect Indian equity markets in the long term.

Why did Silicon Valley Bank fail?

- The Silicon Valley Bank became the largest bank to fail since the 2008 financial crisis. The move put nearly \$175 billion in customer deposits under the control of the Federal Deposit Insurance Corp.
- Silicon Valley Bank was hit hard by the downturn in technology stocks over the past year as well as the Federal Reserve's aggressive plan to increase interest rates to combat inflation.
- The bank bought billions of dollars worth of bonds over the past couple of years, using customers' deposits as a typical bank would normally operate. These investments are typically safe, but the value of those investments fell because they paid lower interest rates than what a comparable bond would pay if issued in today's higher interest rate environment.
- Typically that's not an issue, because banks hold onto those for a long time, unless they have to sell them in an emergency.
- But Silicon Valley's customers were largely startups and other tech-centric companies that started becoming more needy for cash over the past year.

Withdrawal of funds:

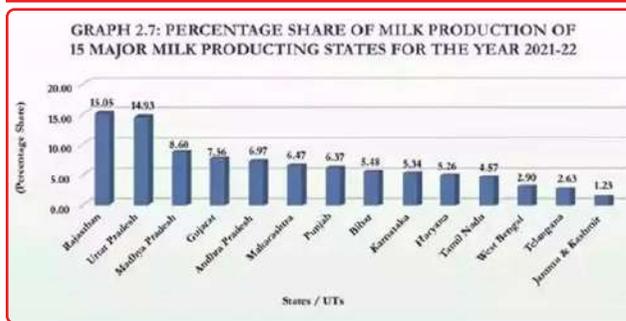
- Venture capital funding was drying up, companies were not able to get additional rounds of funding for unprofitable businesses, and therefore had to tap their existing funds, often deposited with Silicon Valley Bank, which sat in the center of the tech startup universe. So Silicon Valley customers started withdrawing their deposits.
- Initially that wasn't a huge issue, but the withdrawals started requiring the bank to start selling its own assets to meet customer withdrawal requests.
- Because Silicon Valley customers were largely businesses and the wealthy, they likely were more fearful of a bank failure since their deposits were over \$250,000, which is the government-imposed limit on deposit insurance.
- That required selling typically safe bonds at a loss, and those losses added up to the point that Silicon Valley Bank became effectively insolvent. The bank tried to raise additional capital through outside investors, but was unable to find them.
- Bank regulators had no other choice but to seize Silicon Valley Bank's assets to protect the assets and deposits still remaining at the bank.

Is this a sign of repeat what happened in 2008?

- At the moment, no, and experts don't expect there to be any issues spreading to the broader banking sector.

- Silicon Valley Bank was large but had a unique existence by servicing nearly exclusively the technology world and VC-backed companies. It did a lot of work with the particular part of the economy that was hit hard in the past year.
- Other banks are far more diversified across multiple industries, customer bases and geographies. The most recent round of "stress tests" by the Federal Reserve of the largest banks and financial institutions showed that all of them would survive a deep recession and a significant rise in unemployment.
- However, there might be economic ripple effects in the Bay Area and in the technology start-up world if the remaining money can't be released quickly.

RELEASE OF 'BASIC ANIMAL HUSBANDRY STATISTICS 2022'



Why in news?

- Recently, Union Minister Ministry of Fisheries, Animal Husbandry & Dairying (FAHD) unveiled the department's annual publication, the 'Basic Animal Husbandry Statistics 2022'.

Details:

- The publication gives an overview of Animal Husbandry sector briefly in terms of important livestock statistics on livestock population, livestock production and other information like animal diseases, infrastructure etc.
- It is the primary source of data on production estimates of four Major Livestock Products (MLPs) like Milk, Egg, Meat and Wool for the year 2021-22 and other technical aspects of Integrated Sample Survey (ISS).
- In addition to the production estimates, it also contains data of secondary information like livestock population as per latest 20th Livestock Census, import and export data of livestock and livestock products, incidence of livestock disease, infrastructure and economic contribution of livestock sector.

Key Highlights:

- Total milk production in the country during 2021-22 is 221.06 million tonnes.
- In the current year 2021-22, the milk production has registered an annual growth rate of 5.29%.

- Top five major milk producing States are Rajasthan (15.05%), Uttar Pradesh (14.93%), Madhya Pradesh (8.06%), Gujarat (7.56%) and Andhra Pradesh (6.97%).
- In 2021-22, the total egg production in the country is 129.60 billion nos which has increased by 6.19% as compared to previous year.
- Total five major egg producing States are Andhra Pradesh (20.41%), Tamil Nadu (16.08%), Telangana (12.86%), West Bengal (8.84%) and Karnataka (6.38%).
- The total meat production in the country is 9.29 million tonnes for the year 2021-22 with an annual growth rate of 5.62%.
- The total five major meat producing States are Maharashtra (12.25%), Uttar Pradesh (12.14%), West Bengal (11.63%), Andhra Pradesh (11.04%), and Telangana (10.82%).
- The total wool production in the country during 2021-22 is 33.13 thousand tonnes which has decline by 10.30% as compared to previous year.
- The top five major wool producing States are Rajasthan (45.91%), Jammu and Kashmir (23.19%), Gujarat (6.12%), Maharashtra (4.78%) and Himachal Pradesh (4.33%).
- The per-capita availability of milk is 444 gram/day during 2021-22 increased by 17 gram/day over previous year.
- In 2021-22, the per-capita availability of egg is 95 nos/annuum increased by 5 nos/annuum over previous year.
- The per-capita availability of meat is 6.82 kg/annuum during 2021-22 increased by 0.30 kg/annuum over previous year.
- During 2014-15 and 2020-21, the value addition of sector grew at a compound annual growth rate of 7.93%.
- In 2020-21, the share of Livestock at constant prices in Agriculture Sector and total GVA was 30.13% and 4.9% respectively.

Significance:

- The information will be useful for all stakeholders for planning and policy making purposes as well as for research and academician across the globe.

EXPORTS FALL 8.8%, TRADE DEFICIT SHRINKS OVER 7%

Why in news?

- Tentative global demand pulled India's goods exports down 8.8% in February to \$33.9 billion, while imports fell 8.2% from a year ago to \$51.31 billion, according to Commerce Ministry estimates.
- This is the third time in five months that merchandise exports have contracted, following an 11.6% drop in October 2022 and a 3% fall in December 2022.

Details:

- Outbound shipments' value dropped for as many as 16 of India's top 30 export items in February, with 14

of them recording close to or higher than double digit declines. This included a 9.7% dip in engineering exports, which have been a bulwark of India's exports in recent years.

Trade woes
The negative growth is consistent with global trends that have impacted India's exports in recent months



FIGURES IN \$ BILLION

	June 2018	May 2019	June 2019	Growth %, year-on-year
Exports	27.7	29.99	25.01	-9.71
Imports	44.3	45.35	40.29	-9.05
Trade imbalance	-16.6	-15.36	-15.28	

- The merchandise trade deficit during February 2023 fell 7% to \$17.43 billion, slightly higher than January's \$16.56 billion deficit, which in turn was the lowest in at least 18 months.
- The first two months of 2023 clocked a sharply lower average deficit than seen through all of 2022, when the monthly deficit hit a record \$29.23 billion in September.
- Although gold imports dropped almost 45% from February 2022 levels to \$2.63 billion, this constituted a 277% month-on-month jump from January's imports of the yellow metal.

Import & Export:

- For the first 11 months of 2022-23, India's total goods exports now stand at \$405.94 billion, 7.55% higher than in the corresponding period of 2021-22.
- Imports have grown 18.82% over the corresponding period to \$653.47 billion from about \$550 billion a year ago. Consequently, India's goods trade deficit for this year is now 43.5% higher than in the first 11 months of 2021-22, at \$247.53 billion.
- On the exports front, despite the dip, India has "kept the momentum" and will "exceed the year's target", related to a \$750 billion goalpost for goods and services exports in 2022-23.

Revised estimates:

- While the government had initially estimated a 6.6% drop in exports for January, the month's exports have now been revised upward to \$35.76 billion, reflecting a 1.5% rise from January 2022 levels. Import numbers for January have also been upgraded from \$50.66 billion to \$52.33 billion.
- On a sequential basis, February's exports were 5.25% lower than January while the import bill was about 2% below the previous month's level.

SEVEN PM MITRA PARK SITES ANNOUNCED

Why in news?

- Recently, the Government announced the sites for setting up of 7 PM Mega Integrated Textile Regions

and Apparel (PM MITRA) Parks for the Textile industry.

Modi Govt Notifies Setting up of 7 PM MITRA Parks



- Total outlay of ₹4,445 Crores in 5 years
- Generation of 7 lakh direct & 14 lakh indirect employment
- Enable spinning, weaving, processing /dyeing & printing to garment manufacturing at 1 location

Encompassing '5F' Vision of PM Modi - Farm to Fibre to Factory to Fashion to Foreign

Vision:

- Inspired by the 5F vision of the Prime Minister (i.e. Farm to Fibre to Factory to Fashion to Foreign), the PM MITRA Parks are a major step forward in realising the Government's vision of making India a global hub for textile manufacturing and exports.
- It is expected that these parks will enhance the competitiveness of the textiles industry by helping it achieve economies of scale as well as attract global players to manufacture in India.

Eligible States:

- The Parks will come up in Tamil Nadu, Telangana, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh and Maharashtra.
- Eligible States and sites were evaluated using a transparent Challenge Method based on objective criteria taking into account a variety of factors such as connectivity, existing ecosystem, textile/industry policy, infrastructure, utility services etc. PM Gati Shakti- National Master Plan for Multi-modal Connectivity was also used for validation.

Implementation:

- PM MITRA Parks will help in creating world-class industrial infrastructure that would attract large scale investment including foreign direct investment (FDI) and encourage innovation and job creation within the sector.
- The Ministry of Textiles will oversee the execution of these projects. An SPV owned by Centre and State Government will be set up for each park which will oversee the implementation of the project.
- The Ministry of Textiles will provide financial support in the form of Development Capital Support upto Rs. 500 crore per park to the Park SPV.
- A Competitive Incentive Support (CIS) upto Rs 300 crore per park to the units in PM MITRA Park shall also

be provided to incentivise speedy implementation. Convergence with other GOI schemes shall also be facilitated in order to ensure additional incentives to the Master Developer and investor units.

- State governments will provide contiguous and encumbrance-free land parcel of at least 1000 acres of land and will also facilitate provision of all utilities, Reliable Power Supply and Water availability and Waste Water Disposal system, an effective single window clearance as well as a conducive and stable industrial/textile policy.

Way Forward:

- The parks will offer an excellent infrastructure, plug and play facilities as well as training and research facilities for the industry.
- PM MITRA Parks represent a unique model where the Centre and State Governments will work together to increase investment, promote innovation, create job opportunities and ultimately make India a global hub for textile manufacturing and exports.
- Nearly Rs. 70,000 crores investment and 20 lakhs employment generation is envisaged through these parks.

APEDA ORGANIZES GLOBAL MILLETS (SHREE ANNA) CONFERENCE



Why in news?

- Recently, the Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Commerce and Industry, has organized the Global Millets (Shree Anna) Conference at Subramaniam Hall, NASC Complex, Pusa Road, New Delhi to stimulate the exports of millets from India and provide market linkage to the producers.

Participants:

- Around 100 Indian millet exhibitors from different parts of the country and around 100 international buyers from various countries like the USA, UAE, Kuwait, Germany, Vietnam, Japan, Kenya, Malawi, Bhutan, Italy and Malaysia have been invited to the Conference.
- APEDA requested 30 potential millet importing countries to send their major buyers for this conference

to visit the exhibition and travel around the stalls of 100 exhibitors of unique products of millets.

Indian exports of Millets:

- India's export of Millets is 64 million USD in the year 2021-22. There is an increase in export of Millets by 12.5 % during the period April-December 2023 as compared to the same period last year. Export of millets has witnessed a change in paradigm in the last decade.
- The major importing countries were USA, Australia, Japan, Belgium etc in 2011-12 which had been shifted to Nepal (USD 6.09 million), UAE (USD 4.84 million) and Saudi Arabia (USD 3.84 million) in 2021-22. Kenya, Pakistan were also among the potential import destinations of India in the last decade.
- The other seven destinations in the current top-ten list of India's millet export are Libya, Tunisia, Morocco, UK, Yemen, Oman and Algeria. India is exporting millets to 139 countries across the globe. The export of value-added products of Indian millets are also spread across the world.

Millets in India:

- India is the largest producer of millets. The country is enriched with a wide range of millets produced in major millet-growing states like Rajasthan, Maharashtra, Karnataka, Andhra Pradesh, Madhya Pradesh, etc. India produced 17.96 million Metric Tonne (MT) of Millets.
- Millet grown in India are Pearl Millet, Sorghum, Finger Millet and minor Millets like Proso Millet, Kodo Millet, Little Millet, Foxtail Millet, Browntop Millet, Barnyard Millet, Amaranthus and Buckwheat.
- The Indian government has also been promoting Millet production as part of its National Food Security Mission. As a result of these factors, millet production in India is expected to continue to grow in the coming years.

Initiatives by APEDA:

- APEDA participated in the opening ceremony of the International Year of Millets 2023 organised by FAO at its HQ in Rome, Italy displaying different varieties of Millets and value added Millet products.
- APEDA has formulated a robust strategy focussing to expand the global basket with millets and its value-added products to achieve USD 100 million targets by 2025 with monumental efforts to broaden global reach. India is marching ahead in the International Year of Millets 2023 with a basket of nutritiously rich Indian Millets – popularly known as Shree Anna in the global market.
- APEDA in collaboration with Indian Institute of Millets Research and respective State Agricultural universities has incubated more than 200 start-ups to develop a range of millet based value-added products, Ready to Eat , Ready to Cook and Ready To Serve

products, easy meal solutions as wholesome food suitable for all age groups.

INITIATIVES TAKEN BY MOCA TO PROMOTE SUSTAINABLE DEVELOPMENT IN THE AVIATION SECTOR



Why in news?

- ➔ India's aviation sector has experienced rapid growth in recent years, leading to an increase in carbon emissions from airports.
- ➔ Ministry of Civil Aviation (MoCA) has taken a number of initiatives to promote sustainable development in the aviation sector and reduce carbon emissions at airports

Green House Gas emission from airports can be categorized in three scopes:

- ➔ As per analysis, Scope 1 contributes 5% and Scope 2 contributes to 95% to the total direct emission from airports.
- a) Scope 1: Emissions from airport-owned or controlled sources. Examples include airport-owned power plants that burn fossil fuel, conventional vehicles that use gasoline, or conventional GSE that use diesel fuel.
- b) Scope 2: Indirect emissions from the consumption of purchased energy (electricity, heat, etc.)
- c) Scope 3: Indirect emissions that the airport does not control but can influence. Examples include tenant emissions, on-airport aircraft emissions (typically, after an aircraft is parked on the apron), emissions from passenger vehicles arriving or departing the airport, and emissions from waste disposal and processing.

Green airports:

- ➔ A green airport is an airport that has implemented sustainable practices to reduce its environmental impact and promote sustainable development.
- ➔ Green airports aim to minimize their carbon footprint, conserve energy & water resources, reduce waste and emissions.

Initiatives taken by MoCA to sensitize stakeholders:

- ➔ MoCA organized knowledge sharing sessions to standardize Carbon Accounting and Reporting

framework of Indian Airports as well as to create awareness on Climate Change mitigation.

- ➔ Advised all the operational Brownfield Airports and upcoming Greenfield Airports operators to:
 - Work towards achieving Carbon Neutrality & Net Zero which inter-alia includes use of 100% Green Energy.
 - Get Accreditation by Airports Council International (ACI)/ISO 14064 through empaneled verifiers.
 - Adopt Carbon Mitigation Measures as well as Carbon Management plans with milestones.
 - Advised all the Chief Secretaries/Administrators to ensure Carbon Emission reduction measures and achieving Net Zero target ab-initio by incorporating design/standards in the Greenfield airport development proposal, DPR, Airport Master plan etc. before sending the same to MoCA.
 - Advised Airports Economic Regulatory Authority to consider the cost associated with the Green Energy use for Airport Tariff Determination.

Steps taken by the MoCA for encouraging usage of Sustainable Aviation Fuel (SAF):

- ➔ ICAO has launched Carbon Offsetting & Reduction Scheme for Aviation (CORSA) to reduce emissions from international aviation which require offsetting of emissions above a baseline value. CORSA Scheme is envisaged in 3 phases:
 - a) Pilot Phase - (2021-2023)
 - b) First Phase - (2024-2026)
 - c) Second Phase (2027-2035)
- ➔ Pilot and first phases are voluntary phases whereas second phase is mandatory for all the ICAO member States. Government of India has decided not to participate in the voluntary phases of CORSA. Offsetting requirement under CORSA for Indian carriers will start from 2027.
 - Airlines can either use SAF or offset their emissions by purchasing carbon credits from ICAO approved Emissions Unit Programmes.
 - In the 41st ICAO General Assembly, the baseline of CORSA has been revised to be 85% of 2019 emissions. Also, the Individual Growth Factor (IGF) for airlines has been reduced to 0% from 20% in 2030-32 compliance cycle and to 15% from 70% in the final 2033-35 compliance cycle.
 - To realize the goals of decarbonization of Aviation Sector, Ministry of Petroleum & Natural Gas constituted a Bio-Aviation Turbine Fuel (ATF) Programme Committee to take forward the Bio-ATF programme in the country to promote use of clean fuels.
 - The Bio-ATF Programme Committee has submitted its report to MoP&NG for approval.
 - SpiceJet, a private Indian carrier, had conducted a demonstration flight with Bombardier Q400 aircraft in August 2018 using bio-fuel blended with ATF (in the ratio of 25:75) in one engine.

- MoCA and DGCA have held meetings with the Indian carriers to sensitize them regarding the impact of CORSIA on airlines once the mandatory phase starts and the resultant need to be prepared for the same.
- As on date, Airbus and Boeing aircraft are capable of flying with up to a 50% blend of SAF. Both the manufacturers aim to enable 100% SAF capability by 2030.
- Clean Skies for Tomorrow (CST) is an initiative of the World Economic Forum to help the aviation sector move towards net-zero emissions by accelerating the use of sustainable aviation fuels. Representative of CST Coalition is a member of the Bio-ATF Programme Committee. Airlines, airports, SAF producers and OEMs are part of the CST Coalition.

Initiatives by MoCA taken for reduction of Green House Gases (GHG) in airspace:

Flexible Use of Airspace (FUA):

- Due to Flexible Use of Airspace, cumulative reduction in carbon emission of approx. 90,000 tCO₂ in addition to cumulative saving of approx. INR 400 crore on ATF expenses has been achieved since its implementation in August, 2020.
- Further, about 128 CDRs (Conditional Routes) have been promulgated since implementation of FUA in consultation & coordination with IAF, MoD.

Implementation of Central Air Traffic Flow Management (C-ATFM):

- This management technique is helping AAI to manage air traffic flows strategically in the Indian sky, which has helped to ensure reduced delays & holding and optimisation of capacity, leading to reduction in fuel consumption and GHG emissions.
- The C-ATFM system was operationalized in January 2017, India thereby becoming the 7th country in the world (after USA, Europe, Australia, South Africa, Japan and Brazil) to implement the Air Traffic Flow Control Measures across the country.

Implementation of Performance Based Navigation (PBN):

- PBN supports development of air routes / arrival-departure paths / approach procedures which help reduce/optimize track miles, descent and climb profile and thereby enhance airspace capacity.
- These measures improve operational efficiency of aircraft operations and lead to reduction in fuel consumption and GHG emissions.

Implementation of Continuous Descent Operations (CDOs):

- CDOs have been implemented to permit aircraft to maintain a very fuel-efficient arrival flight path, which helps reduce fuel consumption and noise at ground, thereby reducing GHG Emissions.

Airports Council International - Global Framework

- The Airports Council International (ACI) has launched the Airport Carbon Accreditation program, which is a global standard for carbon management at airports.
- The program helps airports to assess their carbon emissions, develop a carbon management plan, and reduce their carbon footprint.

INDIA AIMS AT BECOMING 'GLOBAL HUB FOR GREEN SHIP' BUILDING BY 2030



Why in news?

- Recently, the Union Minister of Ports, Shipping & Waterways (MoPSW) has said India aims at becoming 'Global Hub for Green Ship' building by 2030 with launch of Green Tug Transition Programme (GTTP).

Green Tugs:

- Inaugurating India's first National Centre of Excellence in Green Port & Shipping (NCoEGPS) in Gurugram, Haryana he said the programme will start with 'Green Hybrid Tugs', which will be powered by Green Hybrid Propulsion systems, and subsequently adopting non-fossil fuel solutions like (Methanol, Ammonia, Hydrogen).
- The target has been set for the initial Green Tugs to start working in all major ports by 2025.
- At least, 50% of all the Tugs are likely to be converted into Green Tugs by 2030, which will considerably reduce emission as the country move towards achieving sustainable development.

Highlights on NCoEGPS

- Country's first National Centre of Excellence in Green Port & Shipping (NCoEGPS) is the result of a collaboration between the Ministry of Ports, Shipping & Waterways, Government of India and the Energy and Resources Institute (TERI).
- With the NCoEGPS acting as the Nodal entity for the industry, the plan is afoot to make India as the 'Global hub for building Green Ships' by 2030.
- With these initiatives, the Centre is aimed at playing a crucial role towards achievement of UN's Sustainable Development Goal (SDG 14) to sustainably manage and protect marine & coastal ecosystems from pollution, conservation & sustainable use of ocean based resources.

- The Centre will engage in developing the regulatory framework and alternative technology adoption roadmap for green shipping in India. The NCoEGPS housed within the TERI complex in Gurugram will work towards meeting the obligations under the Paris Agreement.

Maritime Vision Document 2030:

- The PM Gati Shakti - National Master Plan for Multi Modal Connectivity along with the Green Ports initiative has already accelerated the development of green logistics supply chain in the country.
- The ports have also aimed to reduce Carbon emissions per ton of cargo handled by 30% by 2030.
- The Maritime Vision Document 2030, released by Prime Minister is a 10 Year blueprint on India's vision of a sustainable Maritime sector and vibrant blue economy.
- India has been selected as the first country under the IMO Green Voyage 2050 project to conduct a pilot project related to Green Shipping.
- The Ministry has already identified Paradip Port, Deendayal Port and V.O. Chidambaram Port to developed as Hydrogen Hubs - capable of handling, storing and generation of green hydrogen by 2030.
- With the development of these infrastructure, India will be able to export Green Hydrogen, produced in the country using renewable sources, with the support of NCoEGPS in technology and market leadership.

Significance of NCoEGPS:

- NCoEGPS will act as a technological arm of MoPSW for providing the needed support on Policy, Research and Cooperation on Green Shipping areas for Ports, DG Shipping, CSL and other institutions under the umbrella of MoPSW.
- The Center will be a host of several technological arms to support the port and shipping sector and will provide solutions to a variety of problems being faced in the industry through scientific research.
- It will also carry out valuable education, applied research and technology transfer in maritime transportation at the local, regional, national and International levels.
- It will focus on the following areas like energy management, emission management, Sustainable Maritime Operations etc.
- The NCoEGPS aims at empowering 'Make in India' in Port, Coastal and Inland water transport, and Engineering by developing state of art technologies and application products.
- It will enable fast-track innovations in order to provide most appropriate solutions to various challenges in these sectors. The Centre also aims to create a pool of competent manpower to the industry equipped with state of the art theoretical and practical knowhow.
- The NCoEGPS will work on 10 crucial projects, including ones on developing a regulatory framework

for the usage of wind energy for marine applications, and identifying a suitable biofuel for blending with conventional marine fuels.

- It will also work towards identifying a fuel cell technology for long haul shipping as well as developing a regulatory framework for the transportation of hydrogen upto 700 bar pressure.
- It will also prepare detailed project reports on low energy consumption port, and on an offshore platform for tapping solar energy, production, storage and usage of green hydrogen.

DIGICLAIM FOR CLAIM DISBURSAL THROUGH NATIONAL CROP INSURANCE PORTAL (NCIP) LAUNCHED



Why in news?

- Recently, the Union Minister of Agriculture & Farmers Welfare, launched National Crop Insurance Portal's digitized claim settlement module namely DigiClaim under the ambit of Pradhan Mantri Fasal Bima Yojana (PMFBY) at Krishi Bhawan, New Delhi.

Details:

- With the launch of the module, claims will be disbursed electronically, which will benefit the respective farmers of six states.
- Now, the automated claim settlement process will be an ongoing activity to ease all insured farmers' lives and provide them with a sustainable financial flow and support.
- With the launch of a DigiClaim Module, insurance claims totaling Rs 1260.35 crore have been disbursed on March 23, 2023 to insured farmers in the states of Rajasthan, Uttar Pradesh, Himachal Pradesh, Chhattisgarh, Uttarakhand and Haryana with the click of a button, and the process will continue as and when the claims are released.
- Till date Rs 1.32 lakh crore claim amount has been disbursed to the insured farmers under PMFBY.
- The ongoing campaign 'Meri Policy, Mere Haath' has been monumental in enhancing the awareness around PMFBY at the grassroot levels.

How DigiClaim Module will help?

- In the current system, there have been several instances of insured farmers' claims being delayed

due to a variety of factors. With the DigiClaim Module now farmers' claims will be processed directly to their respective bank accounts in a transparent and accountable manner.

- This technology has been enabled through the integration of National Crop Insurance Portal (NCIP) and Public Finance Management System (PFMS).
- This would directly impact the claim reversal ratio, which is expected to go down with DigiClaim.
- Another noteworthy feature of this digital advancement is that farmers would be able to track the claim settlement process on their mobile phones in real-time and avail the scheme's benefits.

Background:

- In the era of rapid innovations, Digitization and Technology are playing a significant role in scaling up the reach and operations of PMFBY with precision agriculture.
- In last few years, various innovative technologies have been piloted and integrated with the scheme to make the process of yield estimation and crop loss assessment more accurate, like Yes-Tech, WINDS and CROPIC.
- Further, for timely redressal of farmers' grievances, Farmer Grievance Portal has been launched in the first phase for the state of Chhattisgarh, which has received a plethora of positive response and in the second phase, it will be implemented in the entire country.

Way Forward:

- DigiClaim is yet another feather in PMFBY's cap in its ongoing effort to usher in advanced technological solutions such as automated calculation and disbursement of crop insurance claims.

INTERNAL SECURITY

INDIA HOLDS CONFERENCE OF GLOBAL INTELLIGENCE CHIEFS



Why in news?

- Amid the G-20 Foreign Ministers' Meeting and ahead of the Raisina Dialogue, India quietly held the second conference of intelligence and security chiefs

and top officials from around the world, called the Raisina Security Dialogue, on March 1 which saw participation from over 26 countries.

Details:

- India is trying to make its presence felt in bringing together global intelligence agencies for exchanges on issues of common concern.
- The focus of the discussions was largely on global security which encompassed counterterrorism, radicalisation, drugs trafficking, and illegal arms smuggling, among others.
- Prime Minister Modi and National Security Adviser addressed the conference, which is modelled on the lines of the Munich Security Conference, the 59th edition of which took place from February 17 to 19, and Singapore's Shangri-La Dialogue.

Conducted by R&AW:

- The security conference is organised by the country's external intelligence agency, the Research and Analysis Wing (R&AW) and the National Security Council Secretariat (NSCS) that reports to National Security Adviser.
- The conference was held for the first time in April 2022, a day before the start of Raisina Dialogue, India's flagship conference on "geopolitics and geo-strategy" organised by the Ministry of External Affairs (MEA) in collaboration with Observer Research Foundation (ORF). The eighth edition 2023 was held from March 2-4.

Background:

- The conference comes a year after the war in Ukraine that is still ongoing and the global attention fixed on it, while India has been flagging other global issues including Afghanistan.
- Deep differences over Ukraine between the U.S.-led Western countries and the Russia-China combine thwarted India's attempts to bring out a joint statement at the G-20 Foreign Ministers' Meeting.

GOVT PUTTING IN PLACE PROTOCOLS TO TACKLE THREAT OF SPY BALLOONS AFTER ANDAMANS INCIDENT



Why in news?

- Recently, the Indian military has drafted a set of basic protocols to tackle newer threats like surveillance balloons or other unidentified objects in the sky after a similar entity was spotted a year ago over the strategic Andaman and Nicobar Islands.

Details:

- The protocols detail the sequence of action in case an unidentified slow-moving aerial object is spotted. This includes detection, positive identification, verification and targeting using a suitable platform and weapon system, followed by detailed photography of the target, a comprehensive report on it and analysis of remnants, if recovered.
- The set of tri-service protocols being put in place will be open to upgradation. Already, several radars are being upgraded at key military installations.

Spy balloon in US:

- In February, the United States shot down a giant Chinese balloon, which it accused of spying on its crucial military sites, with an AIM-9X Sidewinder missile fired from an F-22 fighter jet.
- China denied the allegations and said it was a civilian aircraft meant to research weather-related aspects.
- Days later, the US shot down a cylindrical-shaped object over Canada and another unidentified aerial object in its own airspace.

Why India issued a protocol?

- India's protocols were drafted after an aerial object was spotted over the Andamans, even though its origin could not be ascertained at that time. The object had drifted away over the ocean before military authorities could take a decision on action to be taken.
- As per the standard operating procedure, positive identification of the aerial object and subsequent verification to rule out the possibility of it being a civil asset will be the first steps when such a flying object is spotted.
- Once identified and verified, a decision will be taken to destroy the target. The weapon systems, such as missiles or a ground-based air defence system, and the aircraft deployed will be selected based on the altitude of the target.

Strategic importance of Andaman and Nicobar Islands:

- The Andaman and Nicobar Islands house the tri-service Andaman and Nicobar military command. What makes these islands strategically important is their proximity to the Indo-Pacific as well as to major choke-points or sea lines of communication (SLOC) in the Bay of Bengal – the Malacca Strait, Sunda Strait, Lombok Strait and the Ombai-Wetar straits.
- Most of the world's shipping trade passes through these choke-points.

- The islands offer India the potential to play a critical role towards enhancing its influence in the Indian Ocean region and support its military operations in the area.

INDIA REMAINS WORLD'S LARGEST IMPORTER OF ARMS: SIPRI REPORT**Why in news?**

- India remained the world's largest arms importer for the five-year period between 2018 and 2022 even though its arms imports dropped by 11% between 2013-2017 and 2018-2022, according to the Swedish think tank Stockholm International Peace Research Institute (SIPRI).
- Russia was the largest supplier of arms to India from 2013 to 2022, but its share of total imports fell from 64% to 45% while France is the second largest supplier.

India as exporter:

- As per latest SIPRI data, among the top 10 arms exporters for the period 2018 to 2022, India was the biggest arms export market to three countries; Russia, France and Israel and the second largest export market to South Korea.
- India was also the third largest market for South Africa, which was ranked 21 in the list of arms exporters.

India as importer:

- For the same period, India remained the largest arms importer followed by Saudi Arabia. Russia accounted for 45% of India's imports followed by France (29%) and the U.S. (11%).
- Also, India was the third largest arms supplier to Myanmar after Russia and China accounting for 14% of its imports.
- India's arms imports from France, which included 62 combat aircraft and four submarines, increased by 489% between 2013 to 2017 and 2018 to 2022. France therefore displaced the U.S. to become the second largest supplier to India in 2018 to 2022.

Observations:

- India's tensions with Pakistan and China largely drive its demand for arms imports. With an 11% share of total global arms imports, India was the world's

biggest importer of major arms in 2018 to 2022, a position it has held for the period 1993 to 2022.

- It retained this position even though its arms imports dropped by 11% between 2013 to 2017 and 2018 to 2022.
- The decrease can be attributed to several factors including India's slow and complex arms procurement process, efforts to diversify its arms suppliers, and attempts to replace imports with major arms that are designed and produced domestically.

Russian arm's export to India:

- The Russia's position as India's main arms supplier is under pressure due to strong competition from other supplier states, increased Indian arms production and, since 2022, also the impact of war in Ukraine
- Just under two thirds of Russian exports went to three states from 2018 to 2022; India (31%), China (23%) and Egypt (9.3%). India was also the largest recipient of Russian arms from 2013 to 2017, but exports decreased by 37% between the two periods.

SOCIAL ISSUE

NATIONAL POLICY ON SENIOR CITIZEN



Why in news?

- Recently, Minister of State for Social Justice and Empowerment, in a written reply in Rajya Sabha, gave details about ongoing policies for care and welfare of senior citizens.

National Policy on Older Persons (NPOP):

- The National Policy on Older Persons (NPOP) was announced in 1999 to reaffirm the commitment to ensure the well-being of older persons.
- The Policy envisages State support to ensure financial and food security, health care, shelter and other needs of older persons, equitable share in development, protection against abuse and exploitation, and availability of services to improve the quality of their lives.

Schemes launched by Ministry of Social Justice and Empowerment:

- Central Sector Scheme of Integrated Programme for Senior Citizens (IPSRc):
- The Ministry of Social Justice and Empowerment

implements a Central Sector Scheme of Integrated Programme for Senior Citizens (IPSRc) under which grants in aid are given for running and maintenance of Senior Citizens Homes (Old Age Homes)/ Continuous Care Homes, Mobile Medicare Units etc. to the Implementing Agencies (IAs) such as State Governments / Union Territory Administrations (through Registered Societies)/ Panchayati Raj Institutions (PRIs) / Local bodies; Non-Governmental/ Voluntary Organizations.

Rashtriya Vayoshri Yojana (RVY):

- Rashtriya Vayoshri Yojana (RVY) is a Central Sector Scheme funded from Senior Citizens' Welfare Fund.
- Under the Scheme of RVY, aids and assistive living devices are provided to senior citizens belonging to BPL category or those senior citizens who earn less than 15000/- per month and suffer from age related disabilities such as low vision, hearing impairment, loss of teeth and loco-motor disabilities.
- The aids and assistive devices viz. walking sticks, elbow crutches, walkers/crutches, tripods/quadpods, hearing aids, wheelchairs, artificial dentures and spectacles are provided to eligible beneficiaries, free of cost.
- The Scheme is being implemented by Artificial Limbs Manufacturing Corporation of India (ALIMCO) which is a Public Sector Undertaking under the Ministry of Social Justice and Empowerment.

National Helpline for Senior Citizen (14567) - Elderline:

- The Ministry has set up the National Helpline for Senior Citizen for senior citizen to address the grievance of the elders.
- The helpline has been launched across the country and has been dedicated to the nation on the occasion of the International Day for Older Persons i.e. on 1st October, 2021. The Elder line offers services to the senior citizens through toll free number 14567.

State Action Plan for Senior Citizens (SAPSRc):

- Appreciating the critical and significant role of States/ UTs, each State/UT is expected to plan and strategize taking into account their local considerations and frame their own State Action Plans for the welfare of their senior citizens.
- This State Action Plan may comprise a long-term strategy for five years as well as Annual Action Plans. Department of Social Justice and Empowerment shall release funds to the States/UTs for formulation and implementation of their State Action Plans.

SAGE:

- To promote out-of-the-box and innovative solutions for the commonly faced problems, innovative start-ups will be identified and encouraged for developing products, processes and services for the welfare of the elderly under this initiative.

⇒ The selected start-ups/start-up ideas can be provided equity support of upto Rs.1 crore per project while ensuring that the total Government equity in the start-up should not exceed 49%. For this, the SAGE portal has been launched in June 2021.

Atal Vayo Abhyuday Yojana:

- ⇒ Under Umbrella Scheme of Atal Vayo Abhyuday Yojana, Ministry has included awareness generation/sensitization programmes with school/college students for strengthening Inter-generational bonding.
- ⇒ It also aims to provide information and educational material to individuals, families and groups for better understanding of the ageing process so as to enable them to handle issues relating to it.

WHAT IS INDIA'S STAND ON SAME-SEX MARRIAGE?



Why in news?

- ⇒ Recently, a Bench led by Chief Justice of India D.Y. Chandrachud referred petitions to legally recognise same-sex marriages to a Constitution Bench of five judges of the Supreme Court.
- ⇒ The Court has listed the case for final arguments on April 18.

What is the case?

- ⇒ The Court has been hearing multiple petitioners' requests for legal recognition of same-sex marriages under a special law.
- ⇒ Initially, it took up the case of two partners who said the non-recognition of same-sex marriage amounted to discrimination that strikes at the root of "dignity and self-fulfilment" of LGBTQIA+ couples.
- ⇒ The petitioners cited the Special Marriage Act, 1954, which provides a civil marriage for couples who cannot marry under their personal law, and appealed to the Court to extend the right to the LGBTQIA+ community, by making the "marriage between any two persons" gender neutral.

Why does the community want this right?

- ⇒ Even if LGBTQIA+ couples may live together, legally, they are on a slippery slope. They do not enjoy the rights married couples do.

- ⇒ For example, LGBTQIA+ couples cannot adopt children or have a child by surrogacy; they do not have automatic rights to inheritance, maintenance and tax benefits; after a partner passes away, they cannot avail of benefits like pension or compensation.
- ⇒ Most of all, since marriage is a social institution, "that is created by and highly regulated by law," without this social sanction, same-sex couples struggle to make a life together.

Which way are the Courts leaning?

- ⇒ The Courts, leaning on Article 21 that guarantees the right to life and liberty, have time and again ruled in favour of inter-faith and inter-caste marriages, directing the police and other rights organisations to give them protection when they were threatened by parents or society, pointing out that "all adults have the right to marry a person of their choice."
- ⇒ In Navtej Singh Johar (2018), when homosexuality was decriminalised, the Court said, "Members of the LGBT[QIA+] community are entitled to the benefit of an equal citizenship, without discrimination, and to the equal protection of law"; "The choice of whom to partner, the ability to find fulfilment in sexual intimacies and the right not to be subjected to discriminatory behaviour are intrinsic to the constitutional protection of sexual orientation."
- ⇒ Last November, the Court transferred same-sex cases pending before several High Courts to itself.

What is the Centre's stand?

- ⇒ At depositions in courts and outside, the Centre has opposed same-sex marriage, and said judicial interference will cause "complete havoc with the delicate balance of personal laws".
- ⇒ While filing a counter-affidavit during this hearing, the government said that decriminalisation of Section 377 IPC does not give rise to a claim to seek recognition for same-sex marriage.
- ⇒ After the K.S. Puttaswamy verdict (2017) which upheld the right to privacy and Navtej Singh Johar (2018) that decriminalised homosexuality, there was hope that same-sex marriages would be legalised, but that has not been the case, prompting many couples to move court.
- ⇒ In its affidavit filed in the Supreme Court, the government said that the "notion of marriage itself necessarily and inevitably presupposes a union between two persons of the opposite sex. This definition is socially, culturally and legally ingrained into the very idea and concept of marriage and ought not to be disturbed or diluted by judicial interpretation."
- ⇒ It submitted that despite the decriminalisation of Section 377 of the Indian Penal Code, the petitioners cannot seek same-sex marriage to be treated as a fundamental right and be recognised under the laws of the country.

- ⇒ The government submitted that statutory recognition of marriage as a union between a 'man' and a 'woman' is inextricably tied to acceptance of the heterogeneous institution of marriage and acceptance of Indian society based on its own cultural and sociological norms acknowledged by the competent legislature.

Are the executive and the judiciary on opposing sides on this?

- ⇒ With the government saying that the concept of marriage "ought not to be disturbed or diluted by judicial interpretation," and the Court leaning towards granting equal rights, including marriage of same-sex couples, citing the Constitution and changing norms, it is clear that the two organs of the state are not in agreement on this.
- ⇒ Even if the Court rules in its favour, the march towards equality for the LGBTQIA+ community will be hard. Enforcing something like same-sex marriage in a diverse country with well-entrenched traditions will not be easy.
- ⇒ Rights activists are calling for awareness on sex, gender and constitutional rights from the school level to change things on the ground.

WHY TRANSGENDER FEMALE ATHLETES CAN'T COMPETE IN FEMALE EVENTS



Why in news?

- ⇒ Transgender women have been barred from competing in the female category by World Athletics (WA), the international governing body for track and field.
- ⇒ WA has followed the path of FINA, the international swimming federation, which enforced a similar ban in June 2022.

What does the ban mean?

- ⇒ Transgender women who have experienced male puberty will not be able to compete in the female competition after March 31, 2023. However, the World Athletics Council has set up a working group to conduct research "to further consider the issue of transgender inclusion".
- ⇒ The former double Olympic gold medalist in the 1,500 metres emphasised on "fair and meaningful" female competition.

Why have transgender women been barred?

- ⇒ In its 'Eligibility Regulations for Transgender Athletes', WA focuses on the physical advantages men have over women post-puberty.
- ⇒ The substantial sex difference in sports performance that emerges from puberty onwards means that the only way to achieve the objectives set out is to maintain separate classifications (competition categories) for male and female athletes.
- ⇒ The debate has raged since New Zealand weightlifter Laurel Hubbard competed in the women's 87-kg class at the Tokyo Olympics, although she had participated in the men's category earlier.
- ⇒ NCAA swimmer Lia Thomas used hormone replacement therapy and moved from the men's category to the women's category. She started breaking records in the IVY League competition before FINA stepped in.

What were the rules for transgender women before WA's ban?

- ⇒ Under the previous rules, there was no blanket ban, but transgender women had to reduce the amount of blood testosterone to 5 nanomoles per litre (nmol/L) and maintain this level for 12 months in order to participate.

What had WA initially proposed?

- ⇒ In January, WA had come up with the 'preferred option' for transgender women. Instead of a complete ban, WA said it would allow transgender women to compete in the female category but would reduce the blood testosterone limit to below 2.5nmol/L for two years – basically cutting it down by half, and doubling the time period before they become eligible to compete.

Which other sports have banned transgender female athletes?

- ⇒ The International Olympic Committee's Framework on Fairness released in November 2021 stated that "athletes are not excluded solely on the basis of their transgender identity or sex variations".
- ⇒ But the IOC had put the onus on sports federations to put in place rules. FINA implemented a ban in 2022.
- ⇒ However, it was World Rugby in 2020 which became the first international sports federation to bar transgender women from the female competition.
- ⇒ Following this, Rugby Football League and Rugby Football Union also banned transgender women from the female competition.
- ⇒ In 2022, British Triathlon implemented a similar ban.

Did WA also change other rules?

- ⇒ DSD (Differences in Sex Development) athletes ; those who have genes which are generally associated with one sex but whose reproductive organs may not be atypical will now have to keep their testosterone below 2.5 nmol/L for 24 months to participate in the female category across events.

- Earlier, DSD athletes were not required to maintain a testosterone limit unless they wanted to participate in restricted events – 400 metres to a mile.
- For restricted events, DSD athletes had to keep their testosterone below 5 nmol/L for six months before being eligible to participate.

ENVIRONMENT

ANTARCTIC GLACIERS FLOW FASTER IN SUMMERS, SHOW SEASONAL BEHAVIOUR: STUDY



Why in news?

- Glaciers along Antarctica's coastline are flowing faster in the summer because of a combination of melting snow and warmer ocean waters, said researchers in a new study.

Details:

- On average, the glaciers, or giant blocks of moving ice, travel at around one kilometre a year.
- But the study has found a seasonal variation to the speed of the ice flow, which speeded up by up to 22 per cent in summer when temperatures are warmer.
- This gives an insight into the way climate change could affect the behaviour of glaciers and the role they could play in raising sea levels.

Antarctic Peninsula:

- The Antarctic Peninsula is the largest reservoir of frozen water on Earth.
- It is estimated that between 1992 and 2017, melt water from the glaciers increased global sea levels by around 7.6 mm. How that may change in the future is one of the big uncertainties in modelling climate change.
- The Antarctic Peninsula is the most northern and warmest region of Antarctica. It has a 1,000 km long mountainous spine, similar to the length of the east coast of Great Britain, and home to a rich marine ecosystem of seals, penguins and whales.
- Along the west coast of the peninsula, the glaciers drain ice from the ice sheet directly into the Southern Ocean.

How the study was conducted?

- A team of researchers, led by scientists at the University of Leeds, has used more than 10,000 satellite images, taken above the Antarctic Peninsula between 2014 and 2021, to understand how the flow of glaciers into the waters around the Antarctic alters during colder and warmer periods.

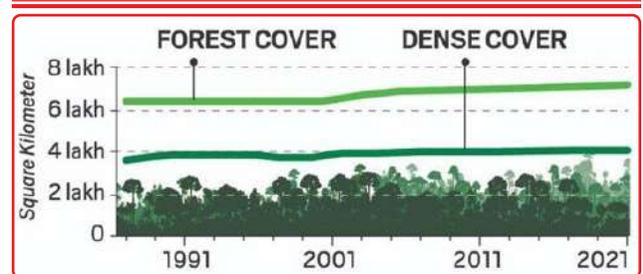
Key findings:

- Analysis of the satellite data showed that the glacier speed-up occurs in summer as snow melts and the temperature of the waters in the Southern Ocean rise.
- It is thought that water from the melting snow acts as a lubricant between the ice sheet and the underlying rock. As a result, friction is reduced and the speed at which the glaciers slide increases.
- In addition, the warmer waters of the Southern Ocean erode the front of the moving ice, which reduces the buttressing forces it exerts to resist the ice flow.

Way Forward:

- The Antarctic Peninsula has seen some of the most rapid warming of any region on Earth.
- Continuing work like this will help glaciologists monitor how quickly change is occurring, enabling accurate assessments of how Earth's ice will respond to climate change.

THE CASE FOR OPEN, VERIFIABLE FOREST COVER DATA



Why in news?

- India is one of the few countries to have a scientific system of periodic forest cover assessment that provides “valuable inputs for planning, policy formulation and evidence-based decision-making”.
- Since 19.53% in the early 1980s, India's forest cover has increased to 21.71% in 2021. Adding to this a notional 2.91% tree cover estimated in 2021, the country's total green cover now stands at 24.62%.

Forest and tree cover:

- While the Forest Survey of India (FSI) started publishing its biennial State of Forest reports in 1987, it has been mapping India's forest cover since the early 1980s.
- India counts all plots of 1 hectare or above, with at least 10% tree canopy density, irrespective of land use or ownership, within forest cover. This disregards the United Nation's benchmark that does not include

areas predominantly under agricultural and urban land use in forests.

- All land areas with tree canopy density of 40% and above are considered dense forests and those between 10-40% are open forests. Since 2003, a new category, very dense forest was assigned to land with 70% or more canopy density.
- Since 2001, isolated or small patches of trees, less than 1 hectare and not counted as forest are assessed for determining a notional area under tree cover by putting together the crowns of individual patches and trees.

NRSA versus FSI:

- The National Remote Sensing Agency (NRSA) under the Department of Space estimated India's forest cover using satellite imagery for periods 1971-1975 and 1980-1982 to report a loss of 2.79% from 16.89% to 14.10% in just seven years.
- While reliable data on encroachment is unavailable, government records show that 42,380 sq km, nearly the size of Haryana of forest land was diverted for non-forest use between 1951 and 1980.
- However, the government was reluctant to accept such a massive loss and, after much negotiations, the NRSA and the newly established FSI "reconciled" India's forest cover at 19.53% in 1987.
- Significantly, the FSI did not contest the NRSA finding that the dense forest cover had fallen from 14.12% in the mid-1970s to 10.96% in 1981, and reconciled it to 10.88% in 1987.

Recorded Forest Areas:

- In India, land recorded as forest in revenue records or proclaimed as forest under a forest law is described as Recorded Forest Area. These areas were recorded as forests at some point due to the presence of forests on the land.
- Divided into Reserved, Protected and Unclassed forests, Recorded Forest Areas account for 23.58% of India.
- Over time, some of these Recorded Forest Areas lost forest cover due to encroachment, diversion, forest fire etc. And tree cover improved in many places outside the Recorded Forest Areas due to agro-forestry, orchards etc.
- In 2011, when the FSI furnished data on India's forest cover inside and outside Recorded Forest Areas, it came to light that nearly one-third of Recorded Forest Areas had no forest at all.
- Almost one-third of India's old natural forests, over 2.44 lakh sq km (larger than Uttar Pradesh) or 7.43% of India were already gone. Of what remains of forests in Recorded Forest Areas, only a fraction is dense forests.

Natural forests shrink:

- Even after extensive plantation by the forest department since the 1990s, dense forests within

Recorded Forest Areas added up to cover only 9.96% of India in 2021. That is a one-tenth slide since the FSI recorded 10.88% dense forest in 1987.

- This loss remains invisible due to the inclusion of commercial plantations, orchards, village homesteads, urban housings etc as dense forests outside Recorded Forest Areas. The SFR 2021, for example, reports 12.37% dense forest by including random green patches.
- Since 2003, nearly 20,000 sq km of dense forests have become non-forests. Much of that loss is compensated by nearly 11,000 sq km of non-forest areas that became dense forests in successive two-year windows since 2003. These are plantations, since natural forests do not grow so fast.

Natural vs manmade:

- The steady replacement of natural forests with plantations are worrisome:
 - a) First, natural forests have evolved naturally to be diverse and, therefore, support a lot more biodiversity. It has many different plants to sustain numerous species.
 - b) Secondly, plantation forests have trees of the same age, are more susceptible to fire, pests and epidemics, and often act as a barrier to natural forest regeneration.
 - c) Thirdly, natural forests are old and therefore stock a lot more carbon in their body and in the soil.
- In 2018, the United Nations Framework Convention on Climate Change (UNFCCC) flagged India's assumption that new forests (plantations) reach the carbon stock level of existing forests in just eight years.
- On the other hand, plantations can grow a lot more and faster than old natural forests. This also means that plantations can achieve additional carbon targets faster. But compared to natural forests, plantations are often harvested more readily, defeating carbon goals in the long term.

Fluctuations in data:

- Until the mid-1980s (SFR 1987), the forest cover was estimated through satellite images at a 1:1 million scale. The resolution then improved to 1:250,000, reducing the minimum mappable unit size from 400 to 25 hectares.
- Since 19.53% in the early 1980s, India's forest cover has increased to 21.71% in 2021. By 2001, the scale improved to 1:50,000, bringing down the unit size to 1 hectare, and interpretation went fully digital.
- The forest cover fluctuated with every change in technology and the radical refinement in 2001 made the data incomparable with the previous assessments.
- Between 1997 and 2005, our forest cover jumped by 9%, gaining 56,774 sq km, and dense forest cover increased by 10% or 36,160 sq km. Since 2015, the total gain is 12,294 sq km, including 5,297 sq km of dense forests.

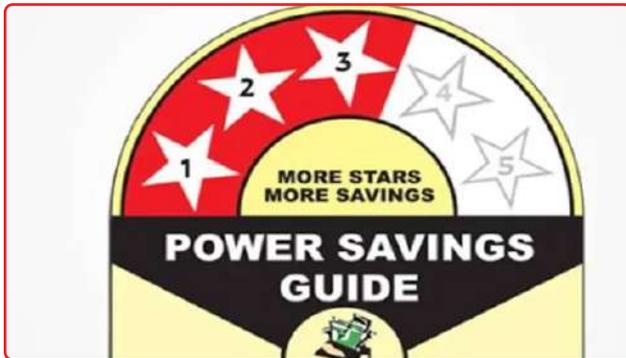
Lack of transparency:

- The FSI compares some interpreted data with the corresponding reference data collected from the ground under the National Forest Inventory (NFI) programme.
- In 2021, it claimed to have established an overall accuracy of 95.79% in identifying forests from non-forests. However, given the limited resources, the exercise was limited to less than 6,000 sample points.
- Yet, the FSI never made its data freely available for public scrutiny. Inexplicably, it also bars the media from accessing its geo-referenced maps.

Way Forward:

- Brazil's National Institute for Space Research (INPE) maintains an open web platform, TerraBrasilis, for queries, analysis and dissemination of data on deforestation, forest cover change and forest fire.
- Since lack of manpower limits the FSI's scope for verifying the quality of remotely sensed data in the field, making the field data freely available to the public may also ease its burden.
- With environmental awareness on the rise, thousands of researchers and enthusiasts can volunteer to verify the country's forest data on the ground and be proud custodians of this vital national asset.

UNION MINISTER LAUNCHED STAR-RATED APPLIANCES PROGRAM

**Why in news?**

- Recently, the Union Minister of Power and New & Renewable Energy, while commending the contribution of the Bureau of Energy Efficiency in building an energy-efficient economy, launched the Star-rated appliances program and also hailed the completion of a decade of PAT Scheme.
- He was speaking at a function to celebrate the 21st Foundation Day of Bureau of Energy Efficiency in New Delhi.

Voluntary Star Labelling Programme:

- He launched the Voluntary Star Labelling Programme for multi-door refrigerators, table and wall-mounted fans, pedestal fans, and induction hobs.
- This program is expected to save approximately 11.2 billion units of electricity by 2030 and will enable the

reduction of CO₂ emission close to 9 million tonne by 2030 and shall support India to transition towards low carbon sustainable growth and achieve its ambition of net zero by 2070.

- To enhance the impact of PAT, a program namely DEEP (Demonstration of Energy Efficient Project) is being implemented. While celebrating the decade of PAT, MoUs were signed by Designated Consumers (DCs).
- Total 13 energy intensive sectors including more than 1000 Designated Consumers were covered during this period. These sectors have been able to realise a total of 24 MToE energy savings during this period which is equivalent to emission reduction of 106 MTCO₂.

Implementation:

- Spearheading the country's initiatives on various levels, the Star-labelling program formulated by the BEE under the Energy Conservation Act, 2001, now covers 34 appliances, including the four newly added energy-efficient appliances.
- The voluntary program of these newly added appliances will be effective from March 1, 2023.
- The BEE is implementing several other innovative energy efficiency schemes and national programs that have been successfully designed and implemented like the PAT Scheme, Standards and Labelling for Energy Efficient Appliances, Energy Conservation Building Codes (ECBC), Demand Side Management etc.

iDEEKSHA Portal:

- He also launched the iDEEKSHA Portal. Industrial Decarbonization and EE Knowledge-Sharing Platform, iDEEKSHA is a platform developed under the Accelerating Smart Power and Renewable Energy (ASPIRE) Technical Assistance Programme.
- ASPIRE is a bilateral program implemented by Foreign Commonwealth and Development Office, Government of UK in association with Ministry of Power and Ministry of New and Renewable Energy.
- iDEEKSHA is designed to serve as one-stop shop for all energy efficiency and decarbonisation needs of Indian energy-intensive industries.
- It aims to facilitate the exchange of information, knowledge and experience and best practices related to the wide gamut of stakeholders such as industries, industrial associations, technology and service providers, and research institutions etc.

About BEE:

- BEE is a statutory body under the Ministry of Power, Government of India.
- It assists in developing policies and strategies with the primary objective of reducing the energy intensity of the Indian economy.
- BEE coordinates with designated consumers, designated agencies, and other organizations to identify and utilize the existing resources and

infrastructure, in performing the functions assigned to it under the Energy Conservation Act.

SALT FLATS AROUND THE WORLD ARE COVERED IN A SIMILAR PATTERN OF RIDGES



Context:

- In salt flats across the world, the salt on the surface forms ridges that join together in a patchwork of pentagons and hexagons. These captivating patterns have been photographed as far apart as Bolivia, Chile, China, India (in the Rann of Kutch), Iran, Tunisia, and the U.S. These shapes are also invariably a metre or two across.
- That the salt always crenellates in these shapes and at these sizes, irrespective of the local environmental conditions, the mineral chemistry, the soil type, and other factors has puzzled researchers.

New study:

- In a new study, researchers from Austria, Germany, and the U.K. using a combination of ground sampling and computer models, they have found the way salt flows up and down in the soil below this formation.
- It is important to know the underlying mechanism because salt flats have significant effects on both humans and the climate.

What are salt flats?

- A salt flat is a natural landscape in which a large area of flat land is covered by salt. Perhaps the world's most well-known salt flat is the Salar de Uyuni in Bolivia. It is the largest in the world of its kind, and also contains more than half of the planet's lithium reserves.
- A salt flat forms from a natural water body whose recharge rate is lower than the evaporation rate. Over time, all the water evaporates, leaving behind the dissolved minerals, usually salts.
- They reflect sunlight strongly and thus appear bright. The underlying soil is highly saline: even if the water table is shallow, the groundwater is too salty for humans to drink.

How do the shapes form?

- The researchers found that the salt penetrated deeper into the soil exactly below the ridges, and remained shallow under the flat areas.

- That is, if you removed the topmost layer and looked directly down at the soil, you would see that the salty groundwater is flowing deeper into the soil along vertical sheets, not throughout.

What explains this finding?

- The surface of a salt flat has a layer of salt that has been deposited over time. So just under the surface, the groundwater is highly saline and denser than the groundwater further below.
- If any water reaches and rises above the surface, it evaporates to leave more salt behind. The researchers found that if the rate of evaporation is sufficiently high, i.e. if the rate of salt deposition on the surface is sufficiently high, the denser groundwater will sink down and the less-saline, less-dense groundwater will rise to the top. This body of descending and ascending water is called a convection cell.
- Over time, there will be more saline groundwater rising up towards the surface through the convection cells than through other parts of the soil – simply because the less-dense water within the column is being displaced upwards. As a result, the salt this water carries will accumulate on the surface, forming the narrow ridges that make up the polygons.

Why do the results matter?

- Since at least the early 1960s, scientists have offered different explanations for why the surface of dried salt lakes becomes covered with this pattern of polygonal shapes. Most of them have either considered above-the-surface dynamics or below-the-surface dynamics, whereas the new study shows that the polygons are formed when these two realms interact.
- The theory and the results matter because when winds blow over salt flats, they carry some of the salt with them as particulate matter. When this air mass reaches the ocean, it deposits the salts there. Such sea salt can enter the atmosphere and go on to swirl at the centre of cyclones.
- When a salt-bearing air mass reaches an inhabited area, the particles cause significant respiratory problems. A 1996 study characterised the salt flat of what was once Owens Lake in California the "single greatest source of particulate matter in North America".

Way Forward:

- To mitigate the deleterious effects of salt flats, experts have recommended covering them in a shallow layer of water, so that the salt is deposited on the surface more uniformly and less salt is carried away by winds.
- Salt suspensions are also an important group of aerosols (suspensions of fine solids in air) that reflect sunlight.
- The saline lakes around the world are shrinking, including due to agriculture. So more accurate climate

models will need to better understand the sources of salt, and the new findings describe one such source.

FOREST CERTIFICATION



Context:

- The forest certification industry offers a multi-layer audit system that seeks to authenticate the origin, legality, and sustainability of forest-based products such as timber, furniture, handicraft, paper and pulp, rubber, and many more.
- There are two major standards, FSC and PEFC. Both operate in India, but the Government is also working on its own national standards.

Why it matters?

- Large-scale destruction of forests has always been a concern for the environment, but with climate change, deforestation has become a critically sensitive issue globally in recent years.
- Forests absorb large amounts of carbon dioxide that is emitted in various economic activities, keeping a check on global warming. At the Glasgow climate meeting in 2021, more than 100 countries took a pledge to stop, and start reversing, deforestation by 2030.
- Europe and the United States have passed laws that regulate the entry and sale of forest-based products in their markets.

Sustainability & Certifications:

- Stopping deforestation does not mean forests cannot be harvested in a sustainable manner for the products. In fact, periodic harvesting of trees is necessary and healthy for forests. Trees have a life span, beyond which they die and decay.
- Also, after a certain age, the capacity of trees to absorb carbon dioxide gets saturated. Younger and fresher trees are more efficient at capturing carbon dioxide. The problem arises only when trees are felled indiscriminately, and the cutting of forests outpaces their natural regeneration.
- The approximately three-decade-old global certification industry began as a way to establish, through independent third-party audits, whether forests were being managed in a sustainable manner.

Over the years, a range of certifications have come to be offered for various activities in the forestry sector.

International Standards:

- There are two major international standards for sustainable management of forests and forest-based products. One has been developed by Forest Stewardship Council (FSC); the other by Programme for Endorsement of Forest Certifications (PEFC). FSC certification is more popular and in demand, and also more expensive.
- Organisations like FSC or PEFC are only the developers and owners of standards, like, for example, the International Organisation of Standardisation (ISO) or Bureau of International Standards (BIS).
- They are not involved in the evaluation and auditing of the processes being followed by the forest managers or manufacturers or traders of forest-based products. That is the job of certification bodies authorised by FSC or PEFC.
- The certification bodies often subcontract their work to smaller organisations. PEFC does not insist on the use of its own standards.
- Two main types of certification are on offer: forest management (FM) and Chain of Custody (CoC). CoC certification is meant to guarantee the traceability of a forest product like timber throughout the supply chain from origin to market.

Forest certification in India:

- The forest certification industry has been operating in India for the last 15 years. Currently, forests in only Uttar Pradesh are certified. Forty one divisions of the UP Forest Corporation (UPFC) are PEFC-certified, meaning they are being managed according to standards endorsed by PEFC.
- These standards have been developed by the New Delhi-based nonprofit Network for Certification and Conservation of Forests (NCCF).
- Some other states too obtained certification, but subsequently dropped out. The Bhamragad forest division in Maharashtra was the first to obtain FSC certification for forest management. Later, two divisions in Madhya Pradesh and one in Tripura also obtained FSC certification. UPFC too had FSC certification earlier. However, all of these expired over time.

India-specific standards:

- India allows the export of only processed wood, not timber. In fact, the timber harvested from Indian forests is not enough to meet the domestic demand for housing, furniture, and other products.
- India's forests contribute just about five million cubic metres of wood every year. Almost 85 per cent of the demand for wood and wood products is met by trees outside forests (ToF). About 10 per cent is imported. India's wood import bill is Rs 50,000-60,000 crore per year.

⇒ Since ToF are so important, new certification standards are being developed for their sustainable management. Environment Minister launched the FSC's India standards in June 2022.

The Govt's own standards:

- ⇒ The role of private certification agencies, especially with regard to forest management certification, has come under sustained criticism from a group of influential retired forest officials.
- ⇒ In response to this criticism, and also to the increasing complaints about corruption in the private certification space, the Ministry has restarted efforts to develop official national forest standards.
- ⇒ The government says the "indigenous system of certifications" will be simple, transparent, and easy to adopt, even by small farmers and tree growers. The benchmarks will adhere to internationally accepted norms, but will take into account India's national circumstances. The purpose is to make available sustainably grown and managed forest products in the domestic market.

WITH OVERFISHING, GREAT SEAHORSES BOLT FROM COROMANDEL



Why in news?

⇒ Extensive fishing off the Coromandel Coast could be forcing the great seahorse to migrate laboriously toward Odisha.

Details:

- ⇒ Fishing is less intense in the Bay of Bengal off the Odisha coastline. However, the shallow coastal ecosystem of the eastern Indian State may not be the new comfort zone for the fish with a horse-like head, according to a recent study.
- ⇒ The study was based on a specimen of a juvenile great seahorse, or *Hippocampus kelloggi*, caught in a ring net and collected from the Ariyapalli fish landing centre in Odisha's Ganjam district.

Vulnerable species:

⇒ There are 46 species of seahorses reported worldwide. The coastal ecosystems of India house nine out of 12 species found in the Indo-Pacific, one of the hotspots of seahorse populations that are distributed across

diverse ecosystems such as seagrass, mangroves, macroalgal beds, and coral reefs.

- ⇒ These nine species are distributed along the coasts of eight States and five Union Territories from Gujarat to Odisha, apart from Lakshadweep and the Andaman and Nicobar Islands.
- ⇒ The population of the great seahorse, which is among the eight species tagged 'vulnerable', is declining due to its overexploitation for traditional Chinese medicines and as an ornamental fish, combined with general destructive fishing and fisheries bycatch.

Threat:

- ⇒ Despite the ban on fishing and trading activities on seahorses from 2001, clandestine fishing and trading still take place in India.
- ⇒ This creates immense pressure on the seahorse populations that have a high dependence on local habitats to maintain their extensive and long-life history traits.

Long migration:

- ⇒ Seahorses are poor swimmers but migrate by rafting, clinging to floating substrata such as macroalgae or plastic debris for dispersal by ocean currents to new habitats for successful maintenance of their population.
- ⇒ However, the 1,300-km northward migration of the great seahorse from the Palk Bay and the Gulf of Mannar to Odisha is likely a response to extensive fishing activities around the southern coast of India.
- ⇒ The species is abundant off the Coromandel Coast (Andhra Pradesh and Tamil Nadu), but is under extensive fishing pressure, with 13 million individuals caught a year.

Way Forward:

- ⇒ This calls for increased monitoring of the coastal ecosystems of India on the east coast for better conservation and management of the remaining seahorse populations.

NATIONS SECURE PACT TO PROTECT MARINE LIFE IN THE HIGH SEAS



Why in news?

- ⇒ For the first time, United Nations (UN) members have agreed on a unified treaty to protect biodiversity in

the high seas. The treaty agreement concluded in New York.

- An updated framework to protect marine life in the regions outside national boundary waters, known as the high seas, had been in discussions for more than 20 years, but previous efforts to reach an agreement had repeatedly stalled.

Why it matters?

- The ocean supplies half the planet's oxygen, absorbs more than a third of carbon dioxide emissions from the burning of fossil fuels and feeds billions of people.
- If ratified, the UN high seas biodiversity treaty could build in new hurdles for corporations operating on the high seas; defined as the 60% of the ocean beyond any nation's jurisdiction including for those companies proposing to remove carbon dioxide from the ocean.

Key Highlights:

- The treaty does not regulate overfishing, a prime threat to ocean biodiversity, as fishing in international waters is managed by other organizations. But it does allow for the establishment of marine protected areas on the high seas, where fishing could be banned. That would enable the UN to move toward a target of conserving 30% of the ocean by 2030.
- The treaty also requires environmental impact assessments for potentially harmful activities, such as proposals to conduct geoengineering experiments in the ocean to combat climate change.
- Another main provision requires sharing with all nations any bounty from harvesting marine genetic resources, which includes marine molecules, bacteria and algae that could be used in pharmaceuticals and other products. The treaty also provides for the transfer of marine technology to developing countries.

Shortcomings in UNCLOS:

- Disputes over those issues, particularly the sharing of marine genetic resources, had stymied treaty talks since 2018, when negotiations were authorized to draft a legally binding high seas biodiversity treaty under the UN Convention of the Law of the Sea (UNCLOS). That 1982 agreement regulates activities in international waters, including seabed mining.
- But the word "biodiversity" does not appear in UNCLOS, nor does the agreement provide any mechanisms to assess the environmental impact of industrial activities on ocean life or provide for its conservation through marine protected areas. The drafting of a high seas biodiversity treaty has been a decades-long effort to resolve those deficiencies.

What's next?

- Delegates will reconvene at a later date to formally adopt the text of the treaty, which will then go to the UN General Assembly for approval.
- After the UN General Assembly approves the treaty, 60 nations must ratify the agreement for it to go

into effect. The US has never ratified UNCLOS due to opposition from the Republican Party, but the Biden administration has supported the high seas biodiversity treaty.

MUGGERS OF RAPTI: ANTHROPOGENIC THREATS POSE RISK TO SAURIANS IN NEPAL'S CHITWAN NATIONAL PARK, SAYS STUDY



Why in news?

- Anthropogenic threats like illegal fishing and sand mining pose a threat to the mugger crocodiles (*Crocodylus plaustris*) of the Rapti river flowing along the Chitwan National Park (CNP) in south-central Nepal, contiguous to the Valmiki Tiger Reserve in Bihar, according to a recent study.
- A win-win conservation situation between vulnerable muggers and the local community is necessary for the viable and long-term conservation of muggers in the Rapti River.
- The scientists urged the authorities of CNP "to prioritise integrating local ethnic and river-dependent communities into effective conservation and management programmes with livelihood opportunities".

About Mugger:

- The mugger or marsh crocodile is one of the 24 extant species of crocodylians found globally. It is found India, Pakistan, Nepal and Iran.
- The species is listed as 'Vulnerable' in the International Union for Conservation of Nature's Red List.
- It has been enlisted on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora since 1975.
- In Nepal, muggers are found in the Terai lowlands near the border with India. The species has become extinct locally in many parts of Nepal due to habitat loss despite being protected by law.

About Rapti River:

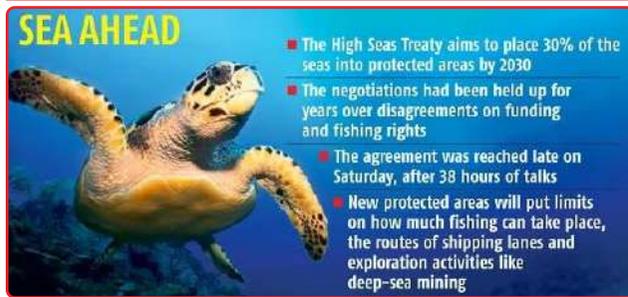
- The Rapti originates in the Mahabharat Hills and lower range of the Himalayas and flows westward along the northern border of the CNP.
- The surveys were conducted along a 52 km river stretch from Jindagani Ghat (the eastern side) to

Golaghat (Rapti-Narayani confluence) on the western side.

Way Forward:

- The study has highlighted the urgent need for effective conservation and management of the remaining mugger population in the Rapti River against emerging anthropogenic threats.

HOW DID THE TREATY ON THE HIGH SEAS COME THROUGH?



Why in news?

- Recently, the UN member states agreed on a historic treaty for protecting marine life in international waters that lie outside the jurisdiction of any country.
- The 'breakthrough' followed talks led by the UN during the Intergovernmental Conference (IGC) on Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ). The treaty is yet to be formally adopted as members are yet to ratify it.

What are the high seas?

- Parts of the sea that are not included in the territorial waters or the internal waters of a country are known as the high seas, according to the 1958 Geneva Convention on the High Seas.
- No country is responsible for the management and protection of resources on the high seas.

How important are the high seas?

- The high seas account for more than 60% of the world's ocean area and cover about half of the Earth's surface, which makes them a hub of marine life. They are home to around 2.7 lakh known species, many of which are yet to be discovered. The high seas are fundamental to human survival and well-being.
- However, these oceans absorb heat from the atmosphere, are affected by phenomena like the El Nino, and are also undergoing acidification, all of which endanger marine flora and fauna. Several thousand marine species are at a risk of extinction by 2100 if current warming and acidification trends continue.
- Anthropogenic pressures on the high seas include seabed mining, noise pollution, chemical spills and fires, disposal of untreated waste (including antibiotics), overfishing, introduction of invasive species, and coastal pollution.

- Despite the alarming situation, the high seas remain as one of the least-protected areas, with only about 1% of it under protection.

How long did the process take?

- In 1982, the UN Convention on the Law of the Sea, or UNCLOS was adopted. The Convention delineated rules to govern the oceans and the use of its resources. But there was no comprehensive legal framework that covered the high seas.
- As climate change and global warming emerged as global concerns, a need was felt for an international legal framework to protect oceans and marine life. After years of informal discussions, the UNGA decided in 2015 to develop a legally binding instrument within the framework of UNCLOS.
- Subsequently, the IGC was convened to frame a legal instrument on BBNJ. There were several hold-ups due to the COVID pandemic, hampering a timely global response. In 2022, the European Union launched the High Ambition Coalition on BBNJ to finalise the agreement at the earliest.

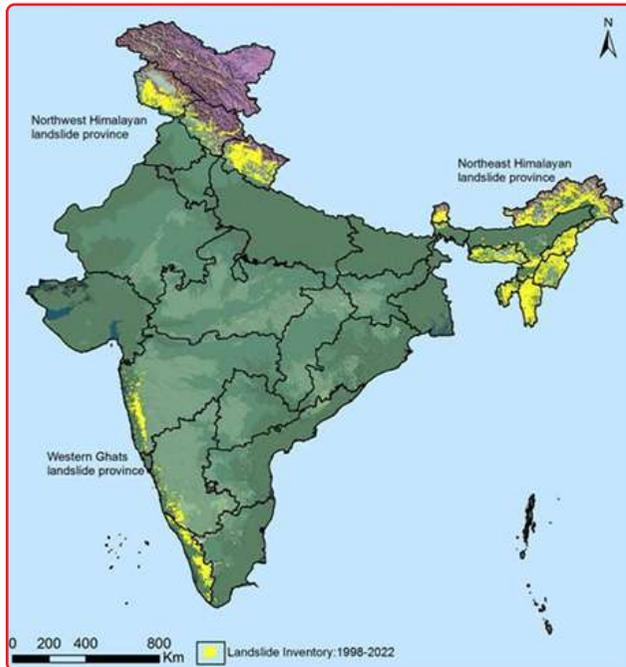
What is the treaty?

- The draft agreement of the 'High Seas Treaty' recognises the need to address biodiversity loss and degradation of ecosystems of the ocean.
- It places "30% of the world's oceans into protected areas, puts more money into marine conservation and covers access to and use of marine genetic resources," as per the United Nations.
- An important negotiating point, and source of tension during the talks, was developing countries' access to benefits reaped from the commercialisation of resources (especially genetic resources) extracted from the ocean. The treaty has agreed to setup an access- and benefit-sharing committee to frame guidelines.
- It was also underlined that activities concerning marine genetic resources of areas on high seas should be in the interests of all States and for the benefit of humanity. They have to be carried out exclusively for peaceful purposes.

LANDSLIDE ATLAS OF INDIA

Why in news?

- In 2022, heavy rain, floods and landslides claimed 835 lives in the country, according to the Statement of Climate of India 2022 released by the India Meteorological Department.
- With a steady rise in the number of extreme weather events, especially heavy rainfall capable of triggering landslides and floods, the Indian Space Research Organisation (ISRO) recently released the Landslide Atlas of India, a detailed guide identifying landslide hotspots in the country.



What causes landslides?

- Landslides are natural disasters occurring mainly in mountainous terrains where there are conducive conditions of soil, rock, geology and slope. A sudden movement of rock, boulders, earth or debris down a slope is termed as a landslide.
- Natural causes that trigger it include heavy rainfall, earthquakes, snowmelting and undercutting of slopes due to flooding. Landslides can also be caused by anthropogenic activities such as excavation, cutting of hills and trees, excessive infrastructure development, and overgrazing by cattle.
- Some of the main factors that influence landslides are lithology, geological structures like faults, hill slopes, drainage, geomorphology, land use and land cover, soil texture and depth, and weathering of rocks. All these are factored in when a landslide susceptibility zone is earmarked for planning and making predictions.

How are landslides classified and mapped?

- Landslides are broadly classified based on the type of materials involved (rock, debris, soil, loose mud), type of movement of the material (fall, topple, slide, rotational slide or translational slide), and type of flow of the material.
- Another category is of landslides that spread laterally. Landslides mapped in the ISRO atlas are mainly event-based and season-based.
- ISRO's National Remote Sensing Centre (NRSC), Hyderabad, has created a database of landslide-prone regions of India based on events during 1998 – 2022, primarily along the Himalayas and the Western Ghats.
- In addition to aerial images, high resolution satellite images captured using cameras Indian

Remote Sensing (IRS-1D) PAN + LISS-III, satellites ResourceSat-1 and 2, etc., were used to study the landslides over the past 25 years.

How prone is India to landslides?

- India is considered among the top five landslide-prone countries globally, where at least one death per 100 sq km is reported in a year due to a landslide event. Rainfall variability pattern is the single biggest cause for landslides in the country, with the Himalayas and the Western Ghats remaining highly vulnerable.
- Excluding snow covered areas, approximately 12.6 per cent of the country's geographical land area (0.42 million sq km) is prone to landslides. As many as 66.5 per cent of the landslides are reported from the North-western Himalayas, about 18.8 per cent from the North-eastern Himalayas, and about 14.7 per cent from the Western Ghats.
- Nearly half of the country's landslide-prone area (0.18 sq km) is located in the states of Assam, Arunachal Pradesh, Sikkim, Meghalaya, Mizoram, Manipur, Tripura and Nagaland. Uttarakhand, Himachal Pradesh, Jammu and Kashmir cover 0.14 million sq km of the total landslide-prone areas, whereas Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu account for 0.09 million sq km.
- A relatively small area (0.01 million sq km) of the Araku region in Andhra Pradesh along the Eastern Ghats, too, reports landslide events.
- In the Western Ghats, despite fewer events, landslides were found to be making inhabitants significantly vulnerable to fatalities, especially in Kerala.

What does the landslide atlas suggest?

- Uttarakhand, Kerala, Jammu and Kashmir, Mizoram, Tripura, Nagaland and Arunachal Pradesh reported the highest number of landslides during 1998 – 2022.
- Mizoram topped the list, recording 12,385 landslide events in the past 25 years, of which 8,926 were recorded in 2017 alone. Likewise, 2,071 events of the total 2,132 landslides reported in Nagaland during this period occurred during the 2017 monsoon season.
- Manipur, too, showed a similar trend, wherein 4,559 out of 5,494 landslide events were experienced during the rainy season of 2017. Of the total 690, Tamil Nadu suffered 603 landslide events in 2018 alone.
- Among all these states, an alarming situation is emerging from Uttarakhand and Kerala.

Maximum landslide:

- While Uttarakhand's fragility was recently exposed during the land subsidence events reported from Joshimath since January, this Himalayan state has experienced the second highest number (11,219) of landslides since 1998, all events since occurring post 2000.
- The number of districts with the maximum landslide exposure are in Arunachal Pradesh (16), Kerala (14),

- Uttarakhand and Jammu and Kashmir (13 each), Himachal Pradesh, Assam and Maharashtra (11 each), Mizoram (8) and Nagaland (7).
- Kerala has been consistently reporting massive landslides since it suffered the century's worst floods in 2018.
 - From the events and images obtained, the NRSC ranked Rudraprayag in Uttarakhand at the top of 147 vulnerable districts. It has the highest landslide density in the country, along with having the highest exposure to total population and number of houses.

THE EVIL EFFECTS OF DEFORESTATION



Why in news?

- The World Health Organization (WHO) points out that since 1990, 420 million hectares of forests have been lost through conversion to other land uses; agriculture, industrial use and biofuels in order to feed 11 billion humans by the end of this century.
- This will, in particular, affect the tropical regions such as India, China and Africa.

Causes of global warming:

- The Food and Agricultural Organisation (FAO) has published the Global Forest Resources Assessment, and points out that 31% of the land on earth is covered by forests.
- When trees are felled, they lead to the accumulation of carbon dioxide in the atmosphere and hence, global warming. Deforestation increases 11% of the global greenhouse gas emissions (CO₂, CH₄, N₂O, SO₂, and chlorofluorocarbons).
- The deforestation leads to spikes in infectious germs such as those causing diseases such as malaria and dengue, which can adversely affect humans.

Soil & Water elements:

- Not just trees but soil and water too must be saved. A 1% increase in deforestation leads to a 0.93% decrease in the availability of clean drinking water in rural communities that depend on open wells and flowing streams.
- Also, trees release water into the atmosphere during transpiration, and this comes down as rainfall. Thus, deforestation has double effects. About 30% of the

earth's land area (3.9 billion hectares) is covered by forests.

- Yet, in the name of food supply, land use for developmental activities and technology, a lot of deforestation occurs in many countries.

Situation in India:

- The total forest cover in India is about 8 lakh sq km, which is 22% of the total geographic area of the country. Of these, the twin islands of Andaman and Nicobar have 87% of the total area.
- The Colonial British set up a port there, in order to export timber elsewhere. The present government is also targeting these islands in order to expand its navy and also to attract more mainlanders to not just visit but even settle down here. So much for saving these islands.
- The Himalayan States of Jammu and Kashmir, Uttarakhand, and Himachal Pradesh have about 21,000, 24,000 and 16,000 sq km of forest area, respectively. Yet, the government of India has removed a significant fraction of trees in order to build underpass and overpass highways in these regions.
- Likewise, Goa has about 2,219 sq km forestation. Yet, the government there has cut trees with the idea of connecting Mumbai to Goa by a four-lane highway. Around 31,000 trees are being cut by local authorities.

Giant banyan trees:

- Likewise, the National Highways Authority of India (NHAI) is set to start the expansion of the 45-km stretch of NH163, from two to four lanes. Towards this, they want to destroy 9,000 banyan trees in Chevella Mandal in Telangana.
- These giant banyan trees are centuries old, established by the Nizams and other forest-loving groups.

Conclusion:

- In sum, these are some of the evil effects of deforestation, and people should protest.

WHY DO LANDFILLS CATCH FIRE DURING SUMMERS?



Why in news?

- The Kochi landfill site around Brahmapuram that caught fire Recently is a stark reminder that Indian

cities need to be prepared for more such incidents as summer approaches.

- Preventing such fires require long-term measures, including thorough and sustained interventions from municipalities.

How do landfills catch fire?

- India's municipalities have been collecting more than 95% of the waste generated in cities but the efficiency of waste-processing is 30-40% at best.
- Municipal solid waste consists of about 60% biodegradable material, 25% non-biodegradable material and 15% inert materials, like silt and stone. Municipalities are expected to process the wet and dry waste separately and to have the recovered by-products recycled.
- This openly disposed waste includes flammable material like low-quality plastics, which have a relatively higher calorific value of about 2,500-3,000 kcal/kg, and rags and clothes.
- In summer, the biodegradable fraction composts much faster, increasing the temperature of the heap to beyond 70-80°C. A higher temperature coupled with flammable materials is the perfect situation for a landfill to catch fire.

Is there a permanent solution?

- There are two possible permanent solutions to manage landfill fires. The first solution is to completely cap the material using soil, and close landfills in a scientific manner. This solution is unsuitable in the Indian context, as the land can't be used again for other purposes. Closed landfills have specific standard operating procedures, including managing the methane emissions.
- The second solution is to clear the piles of waste through bioremediation; excavate old waste and use automated sieving machines to segregate the flammable refuse-derived fuel (RDF) (plastics, rags, clothes, etc.) from biodegradable material.
- The recovered RDF can be sent to cement kilns as fuel, while the bio-soil can be distributed to farmers to enrich soil. The inert fraction will have to be landfilled.
- However, implementing a bioremediation project usually takes up to two or three years, necessitating a short-term solution for summertime landfill fires.

What are some immediate measures?

- Landfill sites span 20-30 acres and have different kinds of waste. The first immediate action is to divide a site into blocks depending on the nature of the waste. At each site, blocks with fresh waste should be separated from blocks with flammable material.
- Blocks that have been capped using soil are less likely to catch fire, so portions like these should also be separated out. The different blocks should ideally

be separated using a drain or soil bund and a layer of soil should cap each block. This reduces the chance of fires spreading across blocks within the same landfill.

- Next, the most vulnerable part of the landfill; the portion with lots of plastics and cloth should be capped with soil. The fresh-waste block shouldn't be capped but enough moisture should be provided by sprinkling water and the material should be turned regularly for aeration, which helps cool the waste heap.
- Once a site has been divided into blocks, the landfill operator should classify incoming waste on arrival to the site, and dispose them in designated blocks rather than dumping mixed fractions.
- Already segregated non-recyclable and non-biodegradable waste should be sent to cement kilns instead of being allowed to accumulate. Dry grass material and dry trees from the site should also be cleared immediately.

Way Forward:

- While these measures can help reduce the fires' damage, they're far from ideal and not long-term solutions.
- The permanent and essential solution is to ensure cities have a systematic waste-processing system where wet and dry waste are processed separately and their byproducts treated accordingly.

40 LIONS TO BE MOVED TO BARDA FROM OVERFLOWING GIR



Why in news?

- Recently, the Gujarat government has planned to translocate 40 adult and sub-adult lions to the Barda Wildlife Sanctuary in the state.
- Barda sanctuary, about 100 kilometres away from Gir National Park, has been identified as a potential site to accommodate the Asiatic Lions, said the report entitled 'Lion@2047: A vision for Amrutkal'.

Why relocation?

- As per the last count in 2020, there are 674 lions in the state and Gir has long been overflowing with the big cats.

- ⇒ Experts have demanded translocation of lions in India for the past two decades as the big cats have been geographically isolated in Gir.
- ⇒ A second home would protect the lion population from extinction in case of diseases like the Canine Distemper Virus leads to their deaths.
- ⇒ The Supreme Court of India in 2013 had also ordered relocating some lions to Madhya Pradesh; however, 10 years later, the transfer has not yet happened.

Extinction threat:

- ⇒ Carnivore populations restricted to single sites face various extinction threats from genetic and stochastic environmental factors.
- ⇒ Catastrophes such as an epidemic, an unexpected decline in prey, natural calamities or retaliatory killings could result in their extinction when they are restricted to single populations.

Habitat:

- ⇒ Asiatic lions are currently found in nine districts of Gujarat, including Junagadh, Gir-Somnath, Amreli, Bhavnagar, Rajkot, Botad, Porbandar, Jamnagar and Surendranagar, falling under the Saurashtra region. They are spread across an area of 30,000 square kilometres.

Why Barda WLS?

- ⇒ The new report vouched for the relocation of 40 lions to Barda Wildlife Sanctuary (WLS). However, the 2014 report stated that the WLS can only hold 26 lions due to several factors like low prey base and small size of the Bardas WLS (192 sq km), which is not big enough for 40 lions.
- ⇒ The old report also identified habitat refuge patches in the Barda landscape of 410 sq km, which is critical for supporting breeding lion nuclei in future.

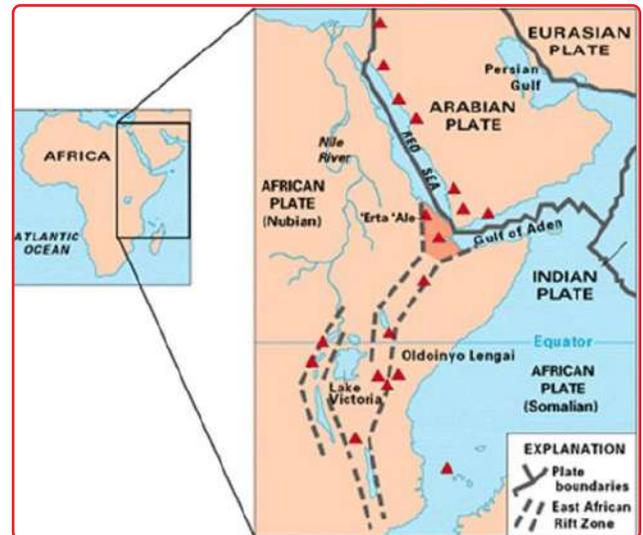
Ex-situ conservation efforts:

- ⇒ The Gujarat Forest Department has made centres such as Barda, Rampara Wildlife Sanctuary and Sakkarbaug Zoological Garden to diversify the gene pool.
- ⇒ The centres will be "strengthened and the objective of maintaining a pool of heterozygous genetically diverse individual lions will be served."
- ⇒ The state forest department may identify more sites for the rehabilitation of the lions. The Sakkarbaug Zoo shall be upgraded and developed further for breeding programmes, maintaining stud book records for the reproduction registry.
- ⇒ There would be further encouragement of ex-situ conservation efforts of lions in other parts of the country as well.
- ⇒ The report also talks about creating groves by making small patches of evergreen trees like Vad (Banyan or *Ficus benghalensis*), Jamun (*Syzygium jambolanum*) and Karamada (*Carissa carandas*) and augmentation of water works in Barda.

Maldhari community:

- ⇒ Members of the Maldhari community will also have to be relocated along with the big cats as it is important to restore around 1,000 km of 'exclusive lion habitat' under Project Lion through incentivised voluntary relocation of forest villages.
- ⇒ Maldharis are local pastoral communities settled within Gir Protected Areas and the Barda WLS.

THE GREAT RIFT: AFRICA'S SPLITTING PLATES



Context:

- ⇒ Scientists in 2020, predicted a new ocean would be created as Africa gradually splits into two separate parts.

Details:

- ⇒ The division of the continent is connected to the East African Rift, a crack that stretches 56 kilometres and appeared in the desert of Ethiopia in 2005, triggering the formation of a new sea.
- ⇒ This geological process will inevitably divide the continent, resulting in currently landlocked countries, such as Uganda and Zambia, obtaining their own coastlines in due time, which would take five to 10 million years.

Pros & Cons:

- ⇒ The necessary evacuation of people and the potential loss of lives will be an unfortunate cost of this natural phenomenon. However, on the upside, the emergence of new coastlines will unlock a myriad of opportunities for economic growth.
- ⇒ These countries will have access to new ports for trade, as well as fishing grounds and sub-sea internet infrastructure, which will undoubtedly transform their economic potential.

New formations:

- ⇒ As the Somali and Nubian tectonic plates continue to pull apart from each other, a smaller continent will be

- created from the rift, which will include present-day Somalia and parts of Kenya, Ethiopia, and Tanzania.
- The Gulf of Aden and the Red Sea will eventually flood into the Afar region in Ethiopia and the East African Rift Valley, leading to the formation of a new ocean.
 - This new ocean will result in East Africa becoming a separate small continent with its own unique geographic and ecological characteristics.
 - The three plates; the Nubian African Plate, Somalian African Plate and Arabian Plate are separating at different speeds. The Arabian Plate is moving away from Africa at a rate of about an inch per year, while the two African plates are separating even slower, between half an inch to 0.2 inches per year.

What is rifting?

- The Earth's lithosphere, comprised of the crust and upper part of the mantle, is divided into several tectonic plates that are not stationary but rather move in relation to each other at varying speeds.
- Tectonic forces not only move the plates but also have the potential to cause them to rupture, resulting in the formation of a rift and potentially leading to the creation of new plate boundaries.
- Rifting refers to the geological process in which a single tectonic plate is split into two or more plates separated by divergent plate boundaries.
- This process leads to the emergence of a lowland region known as a rift valley, which can occur either on land or at the bottom of the ocean. These rift valleys occur due to the movement of Earth's tectonic plates.
- The phenomenon of rifting can be traced back at least 138 million years, when South America and Africa were divided into separate continents.

Challenges & consequences:

- Africa is the most impacted region when it comes to displacement, with a larger number of countries affected than any other continent or region. As of 2015, more than 15 million people were internally displaced in Africa, according to the United Nations Environment Programme report on displacement and environment.
- As the plates continue to split in the future, this phenomenon will result in the displacement of communities, settlements and various flora and fauna.
- These changes will impact their habitats due to climate change, resulting in environmental degradation. Rapid urbanisation and increased settlements will put pressure on natural resources, leading to a scarcity of water, energy and food.
- Uncontrolled waste disposal will also be a significant concern. Furthermore, some species will disappear, while others will become endangered due to habitat changes.

Natural Hazards:

- Rifts showcase a unique topography, distinguished by a chain of depressions bounded by faults and enclosed by elevated terrain.
- While the process of rifting may often go unnoticed, the separation of the Nubian and Somali plates can result in the formation of new faults, fissures and cracks or the reactivation of pre-existing faults, leading to seismic activity.
- Additionally, the close proximity of the hot molten asthenosphere to the surface causes volcanism, further displaying the ongoing process of continental breakup.
- Several planetary transformations are occurring, primarily as a result of climate change. Devastating weather patterns owing to global warming are altering landscapes and raising sea levels.
- Although human displacement is not new, climate change exacerbates gradual and abrupt environmental crises by increasing their intensity, frequency and scope.

CLIMATE CRISIS 6 KEY MESSAGES FROM IPCC SYNTHESIS REPORT



Why in news?

- Recently, the Intergovernmental Panel on Climate Change (IPCC) published its Synthesis Report (SYR).
- It summarises the findings of six reports released during its Sixth Assessment Cycle – the 1.5 C report of 2018, the Special Reports on Land and Oceans of 2019, and the three Assessment Reports published between 2021 and 2022.

Details:

- The SYR is presented in the wake of major global upheavals brought about by the COVID-19 pandemic, the Russian invasion of Ukraine and the subsequent global energy crisis.
- It also follows notable deliberations at the 27th Conference of Parties (COP27) to the United Nations Framework Convention on Climate in Egypt 2022, where a loss and damage fund for climate victims was written into existence, and discourse on issues such as fossil fuel phasedown and global financial system reform, was elevated.

Six key messages from Summary for Policymakers (SPM) of the SYR:

- Excess emissions from human activities have raised global temperature by 1.1°C above 1850-1900:
- Human activities have 'unequivocally' caused global warming, with global net anthropogenic greenhouse gas (GHG) emissions clocking in at 59 gigatonnes of carbon dioxide equivalent (GtCO₂e), 54 per cent higher than the level in 1990.
- This has warmed the land and oceans by 1.1°C as observed for the period of 2011-2020, compared with the period 1850-1900. Contributions have varied by country and income group, with around 35 per cent of the global population living in countries emitting more than 9 tCO₂e per capita, while 41 per cent live in countries emitting less than 3 tCO₂e.

Current policy action will lead to further temperature rise, and the impacts on human and other forms of life will become more severe:

- Nationally Determined Contributions (NDC) announced by countries till October 2021 make it likely that warming will exceed 1.5°C during the 21st century and make it harder to limit warming below 2°C.
- With every increment of global warming, climatic extremes will become more widespread and pronounced. The CO₂ absorption capacity of land and ocean sinks is likely to decrease, ocean acidification is likely to increase, and compound heatwaves and droughts are projected to become more frequent.
- There may be some irreversible changes in the climate system when tipping points are reached, such as the loss of the Greenland and West Antarctic ice sheets. Adaptation options may reach their limits of feasibility, leading to greater losses and damages.

At current emissions levels, the remaining carbon budget will be depleted:

- It is estimated that from the beginning of 2020, we were left with about 500 GtCO₂ of the carbon budget for a 50 per cent likelihood of limiting global warming to 1.5°C.
- This is likely to be depleted if the annual CO₂ emissions between 2020 and 2030 stayed, on average, at the same level as 2019.

Need to cut GHG emissions across all sectors urgently, within this decade and no later:

- To achieve the 1.5°C goal with a 50 per cent likelihood, we need rapid and deep and, in most cases, immediate GHG emissions reductions in all sectors this decade.
- GHG emissions must be cut by 43 per cent by 2030 compared to 2019 levels, and CO₂ emissions must be cut by 48 per cent.

- This must be accompanied by reaching global net zero CO₂ emissions in the early 2050s.
- Carbon dioxide removal (CDR) technologies can be deployed to reduce temperatures in case 1.5°C is overshoot, but they come with "feasibility and sustainability concerns, and social and environmental risks" when deployed at large scales.

Need to shift to low-carbon economic systems:

- There is need for deep systemic changes across all economic sectors to reduce emissions on a sustained basis.
- Some of these include widespread electrification, diversifying energy generation to include more wind, solar, and small-scale hydropower, deploying more battery-powered electric vehicles, and conserving and restoring forests while also reducing tropical deforestation.
- The good news is that feasible, effective, and low-cost options for mitigation and adaptation are already available, with some differences across systems and regions.

Political commitment and equity are key to enabling this shift:

- Equity is central to climate resilient development. Adaptation and mitigation actions, that prioritise equity, social justice, climate justice, rights-based approaches, and inclusivity, lead to more sustainable outcomes, reduce trade-offs, support transformative change and advance climate resilient development.
- High income groups contribute disproportionately to emissions, and thereby have the highest potential for emissions reduction. Developing countries need technology development, transfer, capacity building and financing to 'leapfrog' to low-emissions systems and reap the co-benefits.
- This can be enabled by political commitment. Particularly for sectoral mitigation, regulatory instruments driven by governments can support deep emissions reductions; carbon pricing instruments on the other hand, which are market-based, have been less effective.

Significance:

- The SPM is a document prepared by IPCC scientific and technical experts in discussion with government representatives. As a result, the messages included in it are those considered politically palatable for all. The main text of the six underlying reports presents a more vast set of recommendations based on evidence and research.
- Yet, despite the political nature of the SPM, it provides an overview of where global climate system is at, and the broad policy-relevant measures that need to be taken to avert the worst of the crisis.

WIND ENERGY GENERATION CAN SURGE 4-5 TIMES ON POLICY TAILWINDS, ADD 6-8 GW ANNUALLY: REPORT



Why in news?

- Positive policy moves by the New and Renewable Energy Ministry can crank up the annual wind capacity addition by 6-8 gigawatt (GW) from fiscal 2026, around 4 times more than 1.6 GW of growth clocked in the past five fiscals.

Reverse auction:

- According to a CRISIL analysis, the aggressive tariff bids in reverse auctions since fiscal 2018 has been one of the key drivers of the wind energy growth.
- The process led to discovery of irrationally low tariffs that were favoured by state distribution companies, but compromised returns left little incentives for developers to complete the projects. There were also delays in land acquisition and setting up of evacuation infrastructure.
- Under reverse auction, bidders compete on an open e-platform, adjust tariffs within timeframes with their quotes visible to all participants.

Background:

- Prior to FY18, wind projects were awarded under the feed-in-tariff regime, where payments at fixed tariffs were made by discoms to producers under long-term contracts without competitive bids.
- Only 41 per cent of projects awarded by the Solar Energy Corporation of India (SECI) during fiscals 2018-21 got commissioned till December 2022, while 23 per cent were cancelled and the remaining projects are delayed due to issues in land acquisition, and evacuation and supply-side constraints.

Key policy measures introduced:

- While the annual solar capacity addition averaged 8.3 GW in the five fiscals through 2022, wind capacities grew a meagre 1.6 GW per annum during this period. All that can change now with the ministry introducing four key policy measures in January.
- The first of these four major policy changes include setting a goal to award 8 GW of wind tenders per annum. This is significant because wind tendering

has been low at just 3.3 GW per annum in the past five fiscals. This can propel capacity growth at a faster rate if executed well.

- Secondly, the Ministry has replaced the reverse auction process with a single stage, two-envelope closed bidding, which will curb irrational bidding. The agency now expects tariffs to rise 20-30 per cent over the recent Rs 2.89-2.94 per unit, which provides more than 10 per cent internal rate of return, due to the change in bidding process, resource variability at newer sites etc.
- Thirdly, to ensure that higher wind power tariffs are conducive for state discoms, the Ministry mandated that all discovered renewable tariffs for each state will be pooled and offered to discoms at an average pooled tariff by an intermediary such as the SECI. This will lower the risk for wind projects because the SECI fares significantly better than state discoms in terms of payments.
- Finally, to ensure discipline in terms of timely project completion, the Ministry notified that bank guarantees of developers will be revoked if they delayed project completion by more than a year beyond the scheduled commissioning date. Also, the developers delaying projects beyond 18 months will be barred for five years.

Way Forward:

- According to CRISIL, considering 8 GW of bidding in fiscal 2024 and 20-24 months to commission, around 6-8 GW capacity can be installed every year starting FY26, provided the policy push continues at the same pace.
- The step-up in wind power generation is crucial to the country's energy transition goals despite it being costlier than solar.
- That's because wind projects can provide electricity even during the night to meet peak power requirements, which balances out day-centric solar generation on the grid. Hence, it forms an important part of round-the-clock power supply set-up as desired by discoms.

HOUSE PANEL SUGGESTS PREPAID CARDS FOR POWER TO SAVE GROUNDWATER



Why in news?

- Recently, a Parliamentary Standing Committee on Water Resources tabled its report titled, "Groundwater: A Valuable but Diminishing Resource", in the Parliament.

Restriction on power subsidy:

- The committee observed that while restricting free electricity to the farmers will certainly reduce the misuse of groundwater, both the Department of Water Resources, River Development and Ganga Rejuvenation and Department of Agriculture and Farmers Welfare "have expressed inability to persuade states to reduce/stop subsidy for power given in agriculture as electricity is a concurrent subject and SERCs determine the electricity tariff for retail supply of electricity to end consumers under the extant provisions of Electricity Act, 2003".
- It said that States like Punjab, Haryana, Telangana and Tamil Nadu offer completely free power, while other states have provision for collection of token charges.
- It said that use of electric pumps needs to be further discouraged by introducing measures such pre-paid cards for power supply and restricting power supply to few hours a day.
- It has recommended that the Department of Water Resources, River Development and Ganga Rejuvenation under Jal Shakti Ministry should take the initiative by urging both the Power Ministry and Department of Agriculture and Farmers Welfare along with state governments to take measures on the suggested lines.

Positive Initiatives:

- The Committee, however, note that Punjab introduced a scheme by way of which farmers were refunded money if they consumed less electricity.
- They further note that under Deendayal Upadhyay Gram Jyoti Yojana of Ministry of Power, separate component of agriculture and non-agriculture feeders have been created for facilitating judicious rostering of supply to agriculture & non-agriculture consumers in rural areas.

Over-extraction of groundwater:

- The Committee notice that over-extraction of groundwater for meeting irrigation needs is prevalent mainly in northern states, particularly in Punjab, Haryana and Rajasthan, which are extracting 97%, 90% and 86% of groundwater, respectively, for this purpose.
- Other states such as Karnataka, Tamil Nadu and Uttar Pradesh are also significant users of groundwater for irrigation as they are using approximately 89%, 92% and 90%, respectively, of their total groundwater extraction for agricultural purposes.
- Main reason for such over exploitation of ground water is due to wide cultivation of water guzzler paddy

and sugarcane crops which are heavily incentivized by way of highly subsidized pricing of water, power, fertilizers on one hand and assured markets for their outputs through procurement of rice in Punjab-Haryana belt and of sugarcane by sugar factories at government determined prices.

Recommendations:

- The Committee recommended devising integrated measures for adoption in agriculture, to reduce dependence on Ground water in agriculture.
- The committee also said that there is a need for shift in focus from 'land productivity' to 'water productivity'.
- The Committee recommended the Ministry of Jal Shakti to work out a policy to ensure judicious water use not only to reduce dependence on groundwater but to reduce its footprint in agriculture.
- In this regard, the Committee emphasised that in addition to land productivity, water productivity i.e. production per cubic meter of water should be a major criteria in decisions relating to crop production.

Way Forward:

- The Ministry of Jal Shakti should engage with Agriculture Ministry to enable formulation of appropriate policy decisions relating to crop production in the country.

GUIDELINES FOR HUMAN-WILDLIFE CONFLICT MITIGATION PROMOTING HARMONIOUS COEXISTENCE BETWEEN HUMANS AND WILDLIFE



Why in news?

- Recently, Union Minister for Environment, Forest and Climate Change released 14 guidelines to address Human-Wildlife Conflict (HWC), which aim to facilitate a common understanding among key stakeholders, on what constitutes effective and efficient mitigation of HWC in India.
- The guidelines are advisory in nature, and will facilitate in further development of site-specific HWC mitigation measures.
- These guidelines are developed under the Indo-German cooperation project on HWC Mitigation, which is being implemented by Ministry of

Environment, Forest and Climate Change (MoEFCC) together with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and state forest departments of Karnataka, Uttarakhand and West Bengal.

The 14 guidelines released include:

10 species-specific guidelines-

- Guidelines for Mitigating Human -Elephant, -Gaur, -Leopard, -Snake, -Crocodile, -Rhesus Macaque, -Wild Pig, -Bear, -Blue Bull and -Blackbuck Conflict; and

4 guidelines on cross-cutting issues-

- Guidelines for Cooperation between the Forest and Media sector in India: Towards effective communication on Human-Wildlife Conflict Mitigation
- Occupational Health and Safety in the Context of Human-Wildlife Conflict Mitigation
- Crowd Management in Human-Wildlife Conflict Related Situations
- Addressing Health Emergencies and Potential Health Risks Arising Out of Human-Wildlife Conflict Situations: Taking a One Health Approach.

Holistic approach:

- The development and intended implementation of these guidelines is driven by a harmonious-coexistence approach to ensure that both humans and wild animals are protected from the negative impacts of HWC. These guidelines are strongly driven by field experiences, and take into consideration the existing guidelines and advisories issued by various agencies and state forest departments, as well as their good practices, and build on them.
- The guidelines provide a framework to take a holistic approach, viz., not only addressing the emergency situations arising due to immediate HWC situations but also addressing the drivers and pressures that lead to HWC, guidance on establishing and managing prevention methods, and reducing the impact of conflict both on humans and wild animals.

Way Forward:

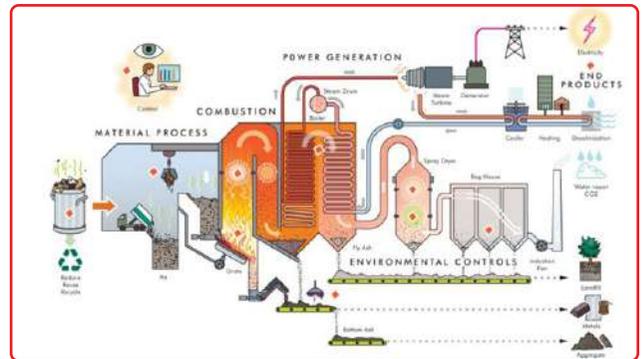
- This set of guidelines is not a static document; rather, it is a living document, where feedback from field practitioners and other wildlife experts is planned to be analysed to assess the specific elements and sections that need to undergo changes.
- A review of these guidelines is planned to take place every five years from 2023 onwards.

UNDERSTANDING WASTE-TO-ENERGY PLANTS

Why in news?

- The Kerala government recently announced the State's first waste-to-energy project in Kozhikode. The planned facility is expected to be built in two years and generate about 6 MW of power.

- There are around 100 waste-to-energy projects around the country but only a handful of them are operational, due to various production and operational challenges.



What do waste-to-energy projects do?

- Waste-to-energy projects use non-recyclable dry waste to generate electricity. The process increases the State's power generation capacity and eases the solid waste management (SWM) burden.
- Generally, solid waste in India is 55-60% biodegradable organic waste, which can be converted into organic compost or biogas; 25-30% non-biodegradable dry waste; and around 15% silt, stones, and drain waste.
- Of the non-biodegradable dry waste, only 2-3% including hard plastics, metals, and e-waste is recyclable. The remainder consists of low-grade plastic, rags, and cloth that can't be recycled.
- This fraction of the non-recyclable dry waste is the most challenging portion of the present SWM system; the presence of these materials also reduces the efficiency of recycling other dry and wet waste.
- It is this portion that waste-to-energy plants use to generate power. The waste is combusted to generate heat, which is converted into electricity.

What is the Kozhikode project?

- Kozhikode has a population of about 6.3 lakh and generates approximately 300 tonnes per day (TPD) of waste. Of this, around 205 TPD is biodegradable and 95 TPD is non-biodegradable.
- The municipality is currently using the biodegradable material to generate organic compost in various composting plants.
- Of the non-biodegradable waste, only about 5 TPD out of the 95 TPD is recycled; the remaining non-recyclable dry waste could be used to generate power at the waste-to-energy plant.

Why do waste-to-energy plants fail?

- While waste-to-energy plants seem like a simple solution, they have several challenges en route to becoming feasible.

Improper segregation:

- First is the low calorific value of solid waste in India due to improper segregation. The calorific value of mixed Indian waste is about 1,500 kcal/kg, which is

not suitable for power generation. (Coal's calorific value is around 8,000 kcal/kg.)

- Biodegradable waste has high moisture content and cannot be used for power generation. The calorific value of segregated and dried non-recyclable dry waste is much higher, at 2,800-3,000 kcal/kg, sufficient to generate power.
- However, segregation (ideally at the source) should be streamlined to ensure the waste coming to the facility has this calorific value.

Cost Factor:

- The cost of generating power from waste is around ₹7-8/unit, while the cost at which the States' electricity boards buy power from coal, hydroelectric, and solar power plants is around ₹3-4/unit.
- While State electricity boards are considering purchasing power from newer renewable energy sources like waste-to-energy, the price of the power generated needs to halve.

Other conditions:

- Finally, many waste-to-energy projects have failed because of improper assessments, high expectations, improper characterisation studies, and other on-ground conditions.
- Waste-to-energy projects can consume only non-recyclable dry waste, which is about 25% of the waste; they are expected to only use segregated non-recyclable dry waste as well, which is the only type of waste with a sufficiently high calorific value.
- But often these projects are expected to manage all types of waste generated in the city which is not good.

Way Forward:

- Setting up waste-to-energy projects is complex and needs the full support of the municipality, the State and the people. To overcome its various challenges, the municipality must ensure that only non-biodegradable dry waste is sent to the plant and separately manage the other kinds of waste.
- Importantly, the municipality or the department responsible for SWM should be practical about the high cost of power generation, and include the State electricity department, perhaps as a tripartite agreement between the municipality, the plant operator, and the power distribution agency.
- It is also crucial to conduct field studies and learn from the experience of other projects.

WHY IS INDIA CAMPA AT ODDS WITH NEW IPCC REPORT?

Why in news?

- A recent report that originates in the Synthesis Report of the Intergovernmental Panel on Climate Change (IPCC), a U.N. expert body, states that not degrading existing ecosystems in the first place will do more to

lower the impact of the climate crisis than restoring ecosystems that have been destroyed.

- It is a finding that speaks to an increasingly contested policy in India that has allowed forests in one part of the country to be cut down and 'replaced' with those elsewhere.



Why is afforestation contested?

- India has committed to adding "an additional (cumulative) carbon sink of 2.5-3 GtCO₂e through additional forest and tree cover by 2030", as part of its climate commitments to the U.N.
- Afforestation is also codified in the Compensatory Afforestation Fund Management and Planning Authority (CAMPA), a body chaired by the environment minister.
- When forest land is diverted to non-forest use, such as building a dam or a mine, that land can no longer provide its historical ecosystem services nor host biodiversity.
- According to the Forest (Conservation) Act, 1980, the project proponent that wishes to divert the land must identify land elsewhere to afforest, and pay for the land value and the afforestation exercise. That land will, thereafter, be stewarded by the forest department.

Why does CAMPA matter?

- The money paid sits in a fund overseen by the CAMPA. As of 2019, the fund had ₹47,000 crore.
- The CAMPA has come under fire for facilitating the destruction of natural ecosystems in exchange for forests to be set up in faraway places.

Why do natural ecosystems matter?

- Research has found that nature ecosystems sequester more carbon.
- Creating single-species plantations in, say, Haryana does not really come close to a natural sal forest lost to a development project in, say, Central Indian forests in terms of biodiversity, local livelihoods, hydrological services, and sequestered carbon.
- Of these, sequestered carbon recovers fastest under fast-growing plantations, but even then, it will take many decades before it approaches the level of carbon sequestered in a natural forest.

How do ecosystems compare to renewable energy?

- The IPCC report also found that the sole option (among those evaluated) with more mitigating potential than “reducing conversion of natural ecosystems” was solar power and that the third-highest was wind.
- But many solar parks in India have triggered conflicts with people living nearby because they limit land-use and increase local water consumption.
- A 2018 study also found that wind farms in the Western Ghats had reduced the “abundance and activity of predatory birds, which consequently increased the density of lizards”.
- However, the IPCC report also noted that “reducing conversion of natural ecosystems” could be more expensive than wind power, yet still less expensive than “ecosystem restoration, afforestation, and restoration”, for every GtCO₂e.

ARAVALLI GREEN WALL PROJECT



Why in news?

- Recently, the Union Minister for Environment, Forest and Climate Change, launched the Aravalli Green Wall Project, a major initiative to green the 5 km buffer area around the Aravalli Hill Range in four states at a function organised to celebrate the International Day of Forests at Tikli Village in Haryana.
- He also unveiled the 'National Action Plan to Combat Desertification and Land Degradation through Forestry Interventions' and a FAQ on Agro-forestry published by Indian Council of Forestry Research and Education.

Key Highlights:

- In the initial phase, 75 water bodies will be rejuvenated under the project, starting with five waterbodies each in every district of Aravalli landscape on March 25th.
- The project will also include large-scale plantation drives and conservation of water resources in the Aravalli region.
- The project will cover degraded land in Gurgaon, Faridabad, Bhiwani, Mahendergarh and in Rewari districts of Haryana.

- Voluntary organization, Society for Geo informatics and Sustainable Development and NGO, IMGurgaon are being engaged to mobilize people for Shramdaan for revival of water bodies at Bandhwadi and Ghata Bundh respectively.

The Aravalli Green Wall Project has the following objectives:

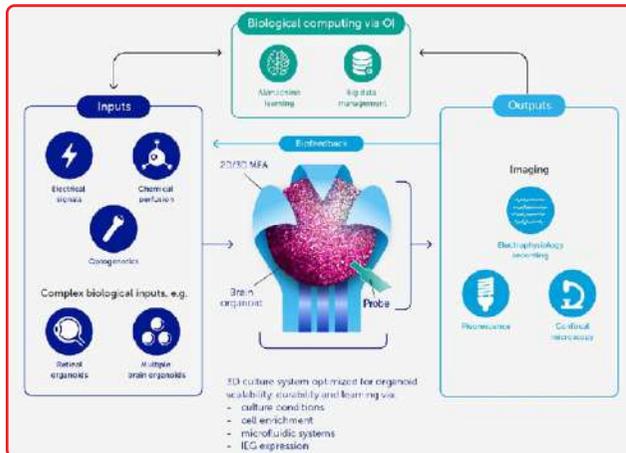
- Improving the ecological health of the Aravalli range
- To prevent eastward expansion of Thar Desert and to reduce land degradation by creating green barriers that will prevent soil erosion, desertification and dust storms
- This green wall will help in carbon sequestration and mitigating climate change to enhance the biodiversity and ecosystem services of the Aravalli range by planting native tree species in the Aravalli region, providing habitat for wildlife, improving water quality and quantity.
- Promote sustainable development and livelihood opportunities by involving local communities in afforestation, agro-forestry and water conservation activities that will generate income, employment, food security and social benefits.
- The project will be executed by various stakeholders such as central and state governments, forest departments, research institutes, civil society organisations, private sector entities and local communities. Adequate funding, technical skills, policy coordination and public awareness will be called upon to ensure the success of the project.
- Contribute to India's commitments under various international conventions such as UNCCD (United Nations Convention to Combat Desertification), CBD (Convention on Biological Diversity) and UNFCCC (United Nations Framework Convention on Climate Change).
- Enhancing India's image as a global leader in environmental protection and green development.

About Aravalli Green Wall Project:

- The Aravalli Green Wall Project is part of the Union Environment Ministry's vision to create green corridors across the country to combat land degradation and desertification.
- The project covers states of Haryana, Rajasthan, Gujarat and Delhi - where the Aravalli hills landscape span over 6 million hectares of land.
- The project will involve planting native species of trees and shrubs on scrubland, wasteland and degraded forest land, along with rejuvenating and restoring surface water bodies such as ponds, lakes and streams.
- The project will also focus on agroforestry and pasture development to enhance the livelihoods of local communities.

SCIENCE & TECHNOLOGY

BIO COMPUTERS

**Why in news?**

- Scientists at Johns Hopkins University (JHU) recently outlined a plan for a potentially revolutionary new area of research called “organoid intelligence”.
- It aims to create “biocomputers”, where brain cultures grown in the lab are coupled to real-world sensors and input/output devices.
- The scientists expect the technology to harness the processing power of the brain and understand the biological basis of human cognition, learning, and various neurological disorders.

What is the premise of this technology?

- Understanding how the human brain works has been a difficult challenge. Traditionally, researchers have used rat brains to investigate various human neurological disorders.
- In a quest to develop systems that are more relevant to humans, scientists are building 3D cultures of brain tissue in the lab, also called brain organoids.
- These “mini-brains” (with a size of up to 4 mm) are built using human stem cells and capture many structural and functional features of a developing human brain. Researchers are now using them to study human brain development and test drugs to see how they respond.
- However, the human brain also requires various sensory inputs (touch, smell, vision, etc.) to develop into the complex organ it is, and brain organoids developed in the lab aren't sophisticated enough. The organoids currently also don't have blood circulation, which limits how they can grow.

Aren't there other ways to study the human brain?

- Recently, scientists transplanted these human brain organoid cultures into rat brains, where they formed connections with the rat brain, which in turn provided circulating blood.

- Since the organoids had been transplanted to the visual system, when the scientists showed the experimental rats a light flash, the human neurons were activated, too, indicating that the human brain organoids were also functionally active.
- Scientists have touted such a system as a way to study brain diseases in a human context. However, human brain organoids are still nested in the rat-brain microenvironment, including the non-neuronal cells that play a critical role in some neurological diseases.
- The effects of drugs in this model will also have to be interpreted through various behavioural tests in rats, which could be insufficiently representative. So there is need to address the limitations of lab-grown organoids and develop a more human-relevant system.

What is the new 'bio-computer'?

- The JHU researchers' scheme will combine brain organoids with modern computing methods to create “bio-computers”. They have announced plans to couple the organoids with machine learning by growing the organoids inside flexible structures affixed with multiple electrodes (similar to the ones used to take EEG readings from the brain).
- These structures will be able to record the firing patterns of the neurons and also deliver electrical stimuli, to mimic sensory stimuli. The response pattern of the neurons and their effect on human behaviour or biology will then be analysed by machine-learning techniques.
- Recently, scientists were able to grow human neurons on top of a microelectrode array that could both record and stimulate these neurons.
- Using positive or negative electric feedback from the sensors, they were able to train the neurons to generate a pattern of electrical activity that would be generated if the neurons were playing table tennis.

What are the opportunities for 'bio-computers'?

- While human brains are slower than computers at, say, simple arithmetic, they outshine machines at processing complex information.
- Brain organoids can also be developed using stem cells from individuals with neurodegenerative diseases or cognitive disorders. Comparing the data on brain structure, connections, and signalling between 'healthy' and 'patient-derived' organoids can reveal the biological basis of human cognition, learning, and memory.
- They could also help decode the pathology of and drug development for devastating neurodevelopmental and degenerative diseases such as Parkinson's disease and microcephaly.

Are 'bio-computers' ready for commercial use?

- Currently, brain organoids have a diameter of less than 1 mm and have fewer than 100,000 cells (both on

- average), which make it roughly three-millionth the size of an actual human brain. So scaling up the brain organoid is key to improving its computing capacity – as will incorporating non-neuronal cells involved in biological learning.
- Second, researchers will also have to develop microfluidic systems to transport oxygen and nutrients, and remove waste products. These hybrid systems will generate very large amounts of data (i.e. of neural recordings from each neuron and connection), which researchers will need to store and analyse using 'Big Data' infrastructure.
 - They will also need to develop and use advanced analytical techniques (with help from machines) to correlate the structural and functional changes in the brain organoids to the various output variables.
 - There is also a proposal to have an ethics team to parallelly identify, discuss, and analyse ethical issues as they arise in the course of this work.

LOW-COST PAPER MICROSCOPE'S WIDER APPLICATION IN RESEARCH



Why in news?

- Researchers from the Indian Institute of Science (IISc) have reported that a cheap microscope connected to a smartphone camera could find wider application in many areas, and in some cases potentially replace more expensive equipment.
- The Foldscope is a handheld microscope made mostly of paper that can be connected to a smartphone camera.
- It has a magnification of around 140x and can identify objects just 2 micrometres wide. It was created by the Stanford University researchers in 2014 and costs around ₹400.

Applications of foldscope:

- The researchers found that foldscopes could capture the roundness and aspect ratio of an object to within 5% of those captured by state-of-the-art instruments called scanning electron microscopes (SEM), which cost more than ₹50 lakh each.
- The foldscopes can be used in pharmaceuticals (to inspect drug products), environmental science

(pollutants), and cosmetics (powders and emulsions), among other areas.

Soil particles morphology:

- The foldscopes can be used to study "soil particles' morphology", which can "help understand soil structure, nutrient availability, and plant growth" in agriculture. Their focus was on the shape of soil grains.
- India's soil classification scheme doesn't include grain shape because measuring it accurately is "complex" and due to "the limited availability of affordable image capturing instruments". The scheme classifies soil based on size, consistency, and susceptibility to deformation.
- Yet, shape matters because it influences how much water some soil can hold and how the soil responds to physical stresses.

How research was conducted?

- The classification schemes work around the difficulties of assessing shape by using other measures. They collected sand from four places in 2018: the beds of the Manu and the Brahmaputra rivers, sand unearthed by an earthquake in Tripura in 2017, and sand from a metre underground in Kalpakkam, Tamil Nadu. All four were coarse-grained soil with particles 0.32-0.47 mm wide.
- They used two instruments ; a foldscope attached to a 64MP smartphone camera and a SEM to measure three attributes: roundness (the extent to which a particle is spherical), aspect ratio (how wide it is compared to how tall it is), and circularity (the extent to which it is circular in two dimensions). In each case, they captured an image with an instrument and analysed it using a software called ImageJ.

Outcome:

- They found that the foldscope-based and the SEM-based readings differed by around 5% for roundness and aspect ratio for all sands, except the Tripura sand, whose measures differed by 9%. But the circularity readings differed by 50%.
- The researchers attribute this to the foldscope's resolution and future studies could find a solution, including by enhancing the software.
- The researchers found that each foldscope couldn't be used to image more than "150-200 particles" at a time because its focusing mechanism wears out. But this was balanced by the instrument's portability and affordability.

MEGHA TROPIQUES 1

Why in news?

- The Indian Space Research Organisation (ISRO) is set to crash a satellite, marking the end of life for the mission. The Megha-Tropiques-1 (MT1) will re-enter Earth's atmosphere and burn in the skies after serving for over a decade.



Background:

- Megha-Tropiques-1 was launched into Low Earth Orbit (LEO) on October 12, 2011, as a joint mission developed by ISRO and the French space agency, CNES, for tropical weather and climate studies.
- The mission was initially planned to operate for three years, but it was extended later as it continued to deliver key data about the climate for a decade.

What is Megha-Tropiques-1?

- Megha-Tropiques-1 is a joint programme between the ISRO and CNES. Megha in Sanskrit is 'cloud' and Tropiques in French means 'tropics'.
- The spacecraft was constructed by ISRO, based around the IRS bus developed for earlier Indian satellites, and carried four instruments to study the Earth's atmosphere.
- According to the Meteorological & Oceanographic Satellite Data Archival Centre, the tropical belt receives more energy from the Sun than it radiates back into space.
- The excess energy is transported to temperate regions by the motion of the atmosphere and oceans. Variation in the energy budget of the tropics has the potential to affect the whole planet, making it important for scientists to understand.

Why is ISRO crashing Megha-tropiques-1?

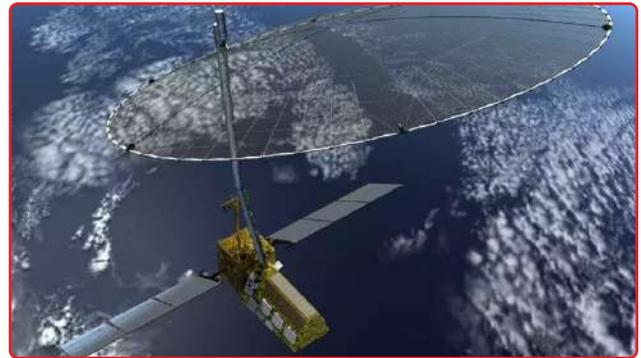
- ISRO is crashing the satellite as part of its commitment to the United Nations Inter-Agency Space Debris Coordination Committee (UNIADC) following the end of the mission life. The UN guidelines state that at its end-of-life the satellite should be deorbited, preferably through controlled re-entry to a safe impact zone, or by bringing it to an orbit where the orbital lifetime is less than 25 years.
- The other option was to leave it for good in its orbit as it continued to decay. However, in that case, the orbital lifetime of MT1, weighing about 1000 kg, would have been more than 100 years in its 20 deg inclined operational orbit of 867 km altitude.
- The spacecraft still has about 125 kg of onboard fuel that could pose risks for accidental break-up, making it critical for ISRO to de-orbit it.
- The leftover fuel is estimated to be sufficient to achieve a fully controlled atmospheric re-entry.

Controlled re-entries involve deorbiting to very low altitudes to ensure impact occurs within a targeted safe zone.

Where will Megha-tropiques-1 crash?

- ISRO has performed 18 orbit maneuvers since August 2022 to progressively lower the orbit of the defunct spacecraft. The final two orbit maneuvers will put it on a course to re-enter Earth and burn up in the atmosphere.
- It has selected an uninhabited area in the Pacific Ocean as the targeted re-entry zone for MT1.

ISRO RECEIVES SATELLITE NISAR, JOINTLY DEVELOPED BY INDIA AND US



Why in news?

- The Indian Space Research Organisation (ISRO) has received the NASA-ISRO SAR (NISAR) satellite. NISAR is a Low Earth Orbit observatory jointly developed by NASA and ISRO.
- The NASA-ISRO Synthetic Aperture Radar (NISAR) has arrived in India after being developed in the US.

Details:

- The spacecraft landed in Bengaluru and has been moved to the UR Rao Satellite Centre for further testing and assembly with ISRO's satellite bus, moving the Earth science mission a step closer to its 2024 launch from Sriharikota.
- The spacecraft has been designed to have the most advanced radar system ever launched on a science mission to better study natural hazards melting sea ice, groundwater supply, and other environmental factors that are a triggering force behind the rising pace of climate change across the world.

What is NISAR Mission?

- NISAR is a joint Earth observation mission developed by India and the US to better understand the vast climatic changes unfolding on the planet that could cause serious damage in the coming years. The two countries are providing two different radar systems for the mission.
- As part of the mission, NASA is providing the mission's L-band Synthetic Aperture Radar (SAR), reflector antenna, deployable boom, a high-rate

communication subsystem for science data, GPS receivers, a solid-state recorder, and payload data subsystem.

- Meanwhile, India is providing the spacecraft bus, the S-band SAR, the launch vehicle, and associated launch services and satellite mission operations.

What will NISAR do in Space?

- NISAR will be the first such satellite to operate beyond Earth that can systematically map Earth using two different radar frequencies. The spacecraft will observe nearly all of Earth's land and ice surfaces twice every 12 days, measuring movements with finer details than ever.
- The probe will survey forests and agricultural regions to help scientists understand carbon exchange between plants and the atmosphere.
- It will focus on better analysing natural hazards from small movements building up under the surface of the planet to massive volcanic eruptions. The spacecraft could further help in improved forecasting and mitigation of these hazards.

How does NISAR work?

- NISAR consists of two synthetic aperture radars, which will cover the length and breadth of the planet during its movement in space.
- This system uses a unique way to produce fine-resolution images moving in a straight line. The radar emits an electromagnetic signal toward a surface and records the amount of signal that bounces/echoes back, or "backscatters," and its time delay.
- The resulting radar imagery is built up from the strength and time delay of the returned signal, which depends primarily on the roughness and electrical conducting properties of the observed surface and its distance from the orbiting radar.
- The spacecraft takes advantage of the fact that it is moving in space to synthesize a virtual 10-km-long antenna from the physical 10-m antenna in the direction of flight.
- NISAR has a 240 km swath, 7-meter resolution along the track and 2-8 metre resolution cross-track, which beats the resolution limits of what can physically be put in space to provide images and science of much higher quality than would be possible if the antenna size was used as is.
- The spacecraft will be launched onboard India's Geosynchronous Satellite Launch Vehicle Mark II (GSLV-MkII) rocket from Satish Dhawan Space Centre in a near-polar Earth orbit.

SCIENTISTS DEVISE 'GLOWSCOPE' TO BRING FLUORESCENT MICROSCOPY TO SCHOOLS

Why in news?

- In 2014, a group of scientists at the Stanford University released Foldscope, a handheld microscope made

almost entirely out of paper, which takes 30 minutes to put together, and which could capture images of cells.

- Now, researchers at the Winona State University, Minnesota, have created a design for a 'glowscope', a device that could democratise access to fluorescence microscopy, at least partly so.



What is fluorescence microscopy?

- An optical microscope views an object by studying how it absorbs, reflects or scatters visible light. A fluorescence microscope views an object by studying how it re-emits light that it has absorbed, i.e. how it fluoresces. This is its basic principle.
- The object is illuminated with light of a specific wavelength. Particles in the object absorb this light and re-emit it at a higher wavelength (i.e. different colour). These particles are called fluorophores; the object is infused with them before being placed under the microscope.
- There are versions of fluorescent microscopes with more sophisticated abilities, such as epifluorescence and confocal laser-scanning microscopes.

Fluorophores:

- When the fluorophores fluoresce, a fluorescent microscope can track them as they move inside the object, revealing the object's internal shape and other characteristics.
- For example, a fluorophore called the Hoechst stain binds to the DNA and is excited by ultraviolet light. So, a tissue sample collected from a person could be injected with the Hoechst stain and placed under a fluorescent microscope.
- When the sample is illuminated by ultraviolet light, the stain absorbs the light and re-emits it at a higher wavelength. The microscope will point out where this is happening: in the nuclei of cells, where DNA is located. This way, the nuclei in the tissue can be labelled for further study.
- Scientists have developed different fluorophores to identify and study different entities, from specific parts of the DNA to protein complexes.

How does the new device improve access?

- In the new study, their set-up consists of two plexiglass surfaces, an LED flashlight, three theatre

stage-lighting filters, a clip-on macro lens, and a smartphone. The smartphone (with the lens attached) is placed on one surface that is suspended at a height (say, a foot above). The second sheet is placed below and holds the object.

- In their study, the objects were zebrafish embryos in a petri dish, prepared according to well-established guidelines to ensure they aren't harmed. They were injected with different fluorophores depending on which part of the embryos were of interest. The sources of illumination were also LED flashlights emitting light of correspondingly different wavelengths.
- One of the stage-lighting filters was held between the flashlight and the object and the other two were held between the object and the smartphone.
- The role of these filters was to ensure that light of the right frequency reached the object and that fluoresced light of a suitable frequency reached the camera.

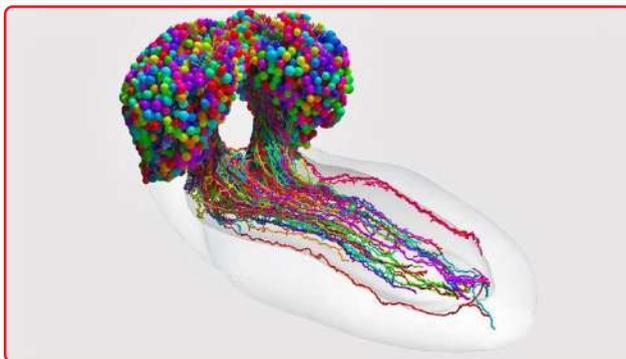
Outcome:

- With this setup, the researchers were able to image the creatures' brain, spinal cord (using a fluorophore called DsRed), heart (mCherry), and head and jaw bones (mRFP).
- They were able to zoom in and out using the smartphone camera and the clip-on lens, and by adjusting the distance between the sample and the smartphone platforms.

Way Forward:

- Using a 'glowscope' still requires access to fluorophores, suitable biological samples, the know-how to combine the two, and some knowledge of physics to work out which LED flashlight to buy.
- Students as well as researchers in resource-poor labs can also use foldscopes and 'glowsopes' together to learn more about the microscopic world.

SCIENTISTS MAKE THE FIRST COMPLETE MAP OF INSECT BRAIN



Why in news?

- Recently, the researchers have for the first time created a detailed map of an insect's brain, which shows every single neuron and how they're wired together. The brain is of the fruit fly larva.

Details:

- Research into brain mapping has been going on for decades and it's a difficult task since it requires slicing the brain into hundreds or thousands of individual tissue samples, all of which have to be imaged with electron microscopes before the painstaking process of reconstructing all those pieces.
- Led by Johns Hopkins University, researchers from UK, US, and Germany, produced the first detailed neural diagram of an insect's brain that could enhance future brain research and develop new ways to learn its architecture.

How was the research conducted?

- The study targeted *Drosophila melanogaster* larva, which shares much of its fundamental biology with humans, including a comparable genetic foundation. The insect has rich learning and decision-making behaviors as well.
- Researchers mapped 3,016 neurons and every connection between them, which came to nearly 5, 48,000.
- Researchers at Cambridge University created high-resolution images of the brain and manually studied them to find individual neurons. While the research was spanned over 12 years, imaging alone took about a day per neuron.
- The data was then handed to researchers at Johns Hopkins, who spent more than three years using the original code they created to analyze the brain's connectivity.
- They also developed techniques to find groups of neurons based on shared connectivity patterns. The team then came together to chart every neuron and every connection and categorized each neuron by the role it plays in the brain.

Way Forward:

- The fruit fly larva work showed circuit features that were strikingly reminiscent of prominent and powerful machine learning architectures.
- The neuroscience breakthrough has brought scientists closer to understanding the mechanism of thought.

WHY IS WHATSAPP THREATENING TO LEAVE U.K.?



Why in news?

- Recently, the WhatsApp's head Will Cathcart said that WhatsApp would not comply with U.K.'s proposed Online Safety Bill (OSB) which will in effect outlaw end-to-end (E2E) encryption.
- He said that it was the first time a "liberal democracy" was attempting to block a "secure product".

What is end-to-end encryption?

- E2E encryption ensures that a message can only be decrypted by the intended recipient using a secure decryption key that is unique to each sender-recipient pair and to each of their messages.
- Decryption, even by the messaging service provider, is impossible. Even if the platform's servers are compromised, without the intended recipient's decryption key, only a garbled string of characters will be available.
- Over the last few years, E2E encryption has been steadily gaining ground. It is offered by default on WhatsApp, Signal, Apple's iMessage and FaceTime and is an option on Meta's Messenger and Telegram.

What is the Online Safety Bill?

- The Online Safety Bill is a proposed British legislation that seeks to improve online safety by placing certain "duty of care" obligations on online platforms.
- Most of the criticism is directed against clause 110 of the OSB which empowers the British telecommunications regulator, the Office of Communications, to issue notices to most kinds of internet service providers, including private messaging apps and search engines, to identify and take down terrorism content that is communicated "publicly" and Child Sex Exploitation and Abuse (CSEA) content that is communicated "publicly or privately", and to prevent such content from being communicated in the first place.
- Although the OSB does not mandate removal of E2E encryption, it would de facto mean breaking it as messaging apps would have to scan all messages that are sent on their platform to flag and take down terrorist and CSEA content.
- Since the clause also requires the platforms to "prevent" terrorism and CSEA content from being communicated using the platforms, it would mean that WhatsApp would have to implement a client-side scanning mechanism to scan content on users' devices before it is even encrypted.
- For this, they would need to rely on algorithms that are not very sophisticated and do not understand context.

What if the platforms don't comply?

- If platforms do not comply, they may face penalties of up to £18 million or 10% of the platform's global revenue of the preceding accounting year, whichever is higher.
- Currently, the Bill has been passed by the House

of Commons and a House of Lords committee is examining the Bill. Once the committee's report is ready, it will go back to House of Lords for a third reading.

Did India enact a similar law?

- Through the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, the Indian government made it mandatory for messaging platforms with more than five million users in India to "enable the identification of the first originator" of a message, or what is commonly called traceability.
- This is not the same as asking for scanning and flagging of all encrypted content; it is about getting to the first person who sent a message that may have been forwarded multiple times.
- In India, WhatsApp did not threaten to leave the market. It instead, sued the Indian government over the traceability requirement.
- This is mainly because India, with 487.5 million WhatsApp users, is home to 22% of the platform's 2.24 billion monthly active users. WhatsApp's penetration rate in India is over 97% while in the U.K., it is at about 75%. Moreover, the U.K., with 40.4 million users accounts for little less than 2% of global users.

ACTIVITY DEEP IN EARTH AFFECTS THE GLOBAL MAGNETIC FIELD: RESEARCH



Why in news?

- Researchers have recently found reasons that cause anomalies in the Earth's magnetic field.

How Earth's magnetic field is created?

- Some of the issues brought on by anomalies in the Earth's magnetic field include compass readings that do not indicate true north and interference with satellite operations.
- The activities that take place deep inside the Earth's core, when temperatures reach 5,000 degrees Celsius, are what creates the magnetic field, which radiates out into space and around the globe.
- According to a recent geophysical study, the Earth's magnetic field depends on how this super-hot core is cooled.

- In the extremely hot temperatures found deep in the Earth, the core is a mass of swirling, molten iron which acts as a dynamo. As the molten iron moves, it generates the Earth's global magnetic field.
- Convective currents keep the dynamo turning as heat flows out of the core and into the mantle, a rock layer that extends 2900 kilometres up to the Earth's crust.
- Research has found that this cooling process does not happen in a uniform way across the Earth' and these variations cause anomalies in the Earth's magnetic field.

Hot zones:

- Seismic analysis has identified that there are regions of the mantle, under Africa and the Pacific for instance, that are particularly hot.
- Computer simulations by the researchers have revealed that these hot zones reduce the cooling effect on the core and this causes regional or localised changes to the properties of the magnetic field.
- For example, where the mantle is hotter, the magnetic field at the top of the core is likely to be weaker.
- And this results in a weaker magnetic field which is projected into space above the South Atlantic, which causes problems for orbiting satellites.
- One of the things that the magnetic field in space does is deflect charged particles emitted from the sun. When the magnetic field is weaker, this protective shield is not so effective. So, when satellites pass over that area, these charged particles can disrupt and interfere with their operations.

Observations:

- Scientists have known about the anomaly over the South Atlantic since they started monitoring and observing the magnetic field, but it is not known if it is a long-lived feature or something that has happened more recently in the history of the Earth.
- The anomalies are likely to be caused by differences in the rate at which heat is flowing from the Earth's core into the mantle. Whereabouts in the Earth's inner structure these heat flow differences happen is likely to dictate how long they could last.

BACKGROUND RADIATION HIGHER IN KERALA, BUT NO RISK: STUDY



Why in news?

- As per a recent pan-India study by scientists at the Bhabha Atomic Research Centre (BARC) background radiation levels, or that emitted from natural sources such as rocks, sand or mountains, are nearly three times more than assumed in parts of Kerala.
- This does not, however, translate to an elevated health risk.

Gamma radiations:

- Radiation results from the disintegrating nucleus of an unstable element and these can be from anywhere, including from inside our bodies to the constituents of matter.
- Gamma rays are a kind of radiation that can pass unobstructed through matter. Though extremely energetic, they are harmless unless present in large concentrated doses. It's similar to heat from a fire feeling pleasant until a sustained, concentrated burst can scald or worse, ignite.
- Especially around nuclear plants, gamma radiation levels are monitored as also the average quantity of radiation that plant workers are exposed to.

Safe levels:

- The International Atomic Energy Agency (IAEA) specifies maximum radiation exposure levels and this has also been adopted by India's atomic energy establishment.
- Public exposure should not exceed 1 milli-Sievert every year, those who work in plants or are by virtue of their occupation shouldn't be exposed to over 30 milli-Sievert every year.

Exposure levels in India:

- The present study found that average natural background levels of gamma radiation in India was 94 nGy/hr (nano Gray per hour) (or roughly 0.8 milli sievert/year).
- The last such study, conducted in 1986, computed such radiation to be 89 nGy/hr. 1 Gray is equivalent to 1 Sievert, though one unit refers to radiation emitted and the other to biological exposure.
- However, the 1986 study measured the highest radiation exposure at Chavara, Kerala at 3,002 nGy/year.
- The present study found that the levels in Kollam district (where Chavara is situated) were 9,562 nGy/hr, or about three times more. This computes to about 70 milliGray a year, or a little more than what a worker in a nuclear plant is exposed to.

Why higher radiation levels in South India?

- The higher radiation levels in Kollam are attributed to monazite sands that are high in thorium, and this for many years, is part of India's long-term plan to sustainably produce nuclear fuel.
- In southern India, because of the presence of granite and basaltic, volcanic rock has higher levels of radiation from uranium deposits.

INDIA PUSH FOR SEMICONDUCTORS



Why in news?

- The Union Government has disbursed around ₹1,645 crore in performance-linked incentives (PLI) for electronics manufacturers so far, as part of its efforts to bring in more of the electronics supply chain to India.
- The push for semiconductors, or integrated circuits, is far more pressing now, as these chips are found in practically every modern electrical appliance and personal electronics devices.

Why is the government encouraging semiconductor manufacturing?

- Semiconductor fabrication units, or fabs, turn raw elements such as silicon into integrated circuits that are fit to be a part of practically all electronic hardware in the world. Fabs are highly capital-intensive undertakings, costing billions of dollars for large facilities.
- Semiconductor fabs of today may still be building circuits, but they require highly reliable and high-quality supply of water, electricity, and insulation from the elements, reflecting the high degree of precision, cost and capital needed to make the sophisticated circuits.
- Countries have spotted strategic value in cornering segments of the value chain for fabs, even as the sophistication and capital needed to run them have climbed to historic highs.
- China pulled ahead of Taiwan in 2022, in terms of share of global sales from fabs, according to a report by the Semiconductor Industry Association (SIA).
- The U.S. passed the CHIPS Act in August 2022, providing upwards of \$280 billion in subsidies and investments to manufacturers opening fabs and making semiconductors in the U.S. This has been combined with restrictions on the Chinese semiconductor industry.

Are fabs opening in India?

- The government's Invest India agency estimates that electronics manufacturing as a whole will be worth \$300 billion by the financial year 2025–26.

- While facilities for assembling finished products have been steadily growing in number, fabs for making chipsets and displays, which are crucial parts of the manufacturing process for many electronics, are rarer.

Can semiconductors and finished products both be made in India?

- The SIA, which represents the bulk of semiconductor manufacturers in the U.S. and elsewhere, said in a report with APCO Worldwide in February that India should lean on its strength in the electronics manufacturing value chain.
- So-called "foundry companies", which turn silicon into semiconductors, require investments upwards of 35% of revenues and entry costs run into billions of dollars.
- But companies that specialise in Outsourced Semiconductor Assembly and Test (OSAT) are less expensive to set up, and generate better margins.
- The OSAT set-ups take care of the less capital-intensive parts of chipmaking, such as assembling the precise components that have already been manufactured, and running specialised tests to approve them.
- A problem with many chip facilities in the traditional sense is that they tend to be captive units of large companies.
- While Foxconn's assembly facilities are being touted as creating several jobs and inviting investment into India, some of its most valuable facilities globally are dedicated to building Apple devices, which account for a fraction of handsets sold in India.

What other advantage does India have?

- A large part of semiconductor manufacturing involves design and intellectual labour. India has an advantage here, as a large portion of semiconductor design engineers globally are either Indian or Indian-origin; chipmaking firms such as Intel and NVIDIA have large facilities in India that are flush with Indian talent working on design problems.
- This is an advantage as China is losing control over in the face of sanctions and an ageing population.

Will India's semiconductor ambition be limited?

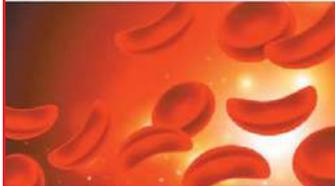
- The opening of display and semiconductor fabs is one of the strategic and economic goals of India's electronics manufacturing incentive programmes, and breaking new ground on ambitious plans connected to popular brands such as Apple is something that the Union government and States are equally eager to accomplish.
- The government appears to be developing the parts of the ecosystem that have promise for sustainable growth and fiscal feasibility.
- At the Raisina Dialogue in March 2023 it was held that the electronics value chain would have to be an international undertaking among nations with common values to be effective.

HEALTH

SICKLE CELL SCREENING MEETS
ONLY 1% OF TARGET

Massive exercise

Sickle cell disease is a genetic condition that affects an estimated 15 lakh people in India



■ The Health Ministry is working on maintaining a central registry of SCD patients

■ The Ministry plans to screen 7 crore persons in 17 highly affected States by 2025-26. One crore screenings had been scheduled for 2022-23

■ So far, a little over one lakh persons have been screened

■ India seeks to eliminate the sickle cell disease by 2047

Why in news?

- The Health Ministry has completed a minuscule 1% of its ambitious target to scan one crore people for sickle cell disease in 2022-23.

Details:

- The Ministry is starkly behind schedule, having screened just a little over one lakh people in 2022, according to the National Health Mission's portal for sickle cell disease.
- The minutes of a meeting of the seventh Mission Steering Group convened by the NHM reveal that the target set for 2022-23 was to screen one crore people. However, only 1,05,954 people have been screened so far, out of which 5,959 people (5.62%) were found to be carrying the traits.

Eliminating sickle cell disease:

- In her Budget speech, Union Finance Minister had said that India aims to eliminate sickle cell anaemia by 2047. This means that the incidence of the disease will be reduced to a specified level, with continuous efforts to prevent recurrence.
- Achieving this would involve screening at least seven crore people under the age of 40 years in multiple phases by 2025-26.
- A budget of ₹542 crore has been proposed by NHM for the massive exercise.
- The Health Ministry has now written to the States and assigned tentative State-wise screening targets for timely completion of the exercise.

Central registry:

- The fear of a large number of these patients slipping through the cracks is real. This would mean that their access to diagnosis and treatment is scarce.
- The Health Ministry is now working to create and maintain a central registry for all screened persons. This will be the first such registry to be maintained at

the central level. The Ministry has now developed a portal and an app to capture the screening data.

- One priority group for immediate screening is pregnant women.

About Sickle cell disease:

- Sickle cell disease is a genetic disorder in which the red blood cells of the patient turn into a sickle-shaped crescents, become rigid and sticky, and get clogged in the blood vessels.
- The capacity of these cells to carry oxygen reduces, which leads to excruciating pain and organ damage in the affected patients. For those born with the disease, the Ministry has indicated that administering pneumococcal vaccination to newborns is critical.
- Once the patients develop sickle cell disease, there is currently no definitive cure.

26% OF WORLD LACKS CLEAN DRINKING
WATER, 46% SANITATION, SAYS UN REPORT

Why in news?

- A new report launched on the eve of the first major UN conference on water in over 45 years says 26 per cent of the world's population doesn't have access to safe drinking water and 46 per cent lack access to basic sanitation.
- The UN World Water Development Report 2023 painted a stark picture of the huge gap that needs to be filled to meet UN goals to ensure all people have access to clean water and sanitation by 2030.



Demand of water:

- According to the report, water use has been increasing globally by roughly 1 per cent per year over the last 40 years and is expected to grow at a similar rate through to 2050, driven by a combination of population growth, socio-economic development and changing consumption patterns.
- Actual increase in demand is happening in developing countries and emerging economies where it is driven by industrial growth and especially the rapid increase in the population of cities. It is in these urban areas that you're having a real big increase in demand.
- With agriculture using 70 per cent of all water globally irrigation for crops has to be more efficient

as it is in some countries that now use drip irrigation, which saves water. That allows water to be available to cities.

Water stress:

- As a result of climate change, seasonal water scarcity will increase in regions where it is currently abundant such as Central Africa, East Asia and parts of South America and worsen in regions where water is already in short supply, such as the Middle East and the Sahara in Africa.
- On average, 10 per cent of the global population lives in countries with high or critical water stress and up to 3.5 billion people live under conditions of water stress at least one month a year.
- Since 2000, floods in the tropics have quadrupled while floods in the north mid-latitudes have increased 2.5-fold.
- Trends in droughts are more difficult to establish, it said, although an increase in intensity or frequency of droughts and 'heat extremes' can be expected in most regions as a direct result of climate change.

Water pollution:

- The biggest source of pollution is untreated wastewater.
- Globally, 80 per cent of wastewater is released to the environment without any treatment and in many developing countries it's pretty much 99 per cent.

Way Forward:

- The estimated cost of meeting the goals is somewhere between USD 600 billion and USD 1 trillion a year.
- But equally important, is forging partnerships with investors, financiers, governments and climate change communities to ensure that money is invested in ways to sustain the environment and provide potable water to the 2 billion people who don't have it and sanitation to the 3.6 million in need.

UN Water Conference:

- The UN 2023 Water Conference formally known as the 2023 Conference for the Midterm Comprehensive Review of Implementation of the UN Decade for Action on Water and Sanitation (2018-2028) will take place at UN Headquarters in New York, 22-24 March 2023, co-hosted by Tajikistan and the Netherlands.
- It will result in a summary of proceedings from the UNGA President that will feed into the 2023 session of the UN High-level Political Forum on Sustainable Development (HLPF).

FSSAI RECONSTITUTES ITS SCIENTIFIC PANELS (SP) AND SCIENTIFIC COMMITTEE

Why in news?

- Recently, the FSSAI reconstituted its Scientific Panels (SP) and empanelled about 200 scientific experts from different scientific organisations such as ICMR, CSIR,

ICAR, NIFTEM, IIT's and various institutes working in the area of food safety and nutrition.

- These scientists will work with FSSAI for next three years and suggest FSSAI about the scientific aspects of food safety. This will further make way to notify food standards and regulations.



About FSSAI:

- Food Safety and Standards Authority of India (FSSAI) was established under the Food Safety and Standards Act, 2006 for laying down science-based standards for articles of food for ensuring availability of safe and wholesome food for human consumption in the country.
- The Scientific Committee and the twenty-one Scientific Panels are principal scientific arms of the food authority in the standard development process.

Scientific Panels:

- FSSAI has reconstituted 21 Scientific Panels, each comprising of 09 members and the Scientific Committee comprising of chair of 21 scientific panels & 06 independent members.
- The Scientific Panels are constituted by the Food Authority under Section 13 of the Food Safety and Standards Act, 2006 (FSS Act) for the purpose of developing standards, and also to provide scientific opinion/inputs to the food authority, as and when sought.

Scientific Committee (SC):

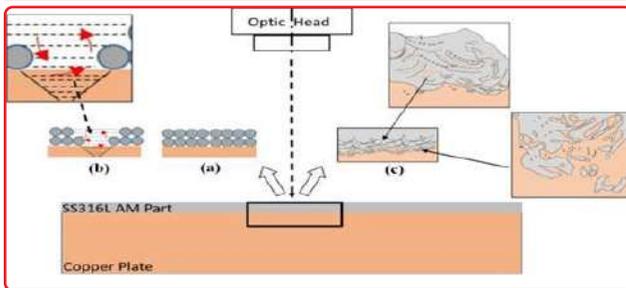
- The Scientific Committee (SC) is constituted by the food authority under Section 14 of the Food Safety and Standards Act, 2006 (FSS Act) and is a body consisting of six independent experts (nominated by the Food Authority and not belonging to any of the SPs) and Chairpersons of all the SPs, as members. Currently, it has a strength of 27 Members.
- The SC, as a statutory body, acts as the link between SPs and the Food Authority.
- SC mainly examines the recommendations made by each of the panel and further recommends for approval by the Food Authority. This is the highest body that is responsible for providing scientific opinion to the Food Authority.
- At the point of inception of FSSAI, Food Authority commissioned only 8 SPs. Currently, there are a total

- of 21 SPs that comprise 11 vertical and 10 horizontal panels.
- Each of these SPs are numbered for ease of coordination with different other bodies.

Horizontal & Vertical Scientific Panels

- The process of development of a standard is driven by the principle of food safety and assessment of risks associated therein. A standard could be of general nature that applies to all product categories, and are often referred to as horizontal Standards.
- The horizontal standards prescribe safety requirements of food products. These standards include food additives, contaminants, toxins, antibiotic residues, pesticide residues, microbiological parameters, packaging and labelling requirements.
- Similarly, the standards that are specific to a product or a product category are referred to as vertical standards.
- The vertical standards mainly prescribe identity and quality to a product/product category. The standard development mainly involves SPs who deliberate and develop the base standard; and, these are further validated by the SC before being finally approved by the Food Authority.

NOVEL BI METALLIC JOINING PROCESS CAN CREATE A COMPOSITE FROM COPPER AND STEEL FOR ENGINEERING APPLICATIONS



Why in news?

- Recently, researchers have developed a novel bi-metallic joining process to create a bimetallic composite made from copper and steel.
- It has high thermal and electrical conductivity for engineering applications, such as heat exchangers, hydraulic pump components, cooling staves, guide plates, and hot-work tooling applications.

Applications:

- The bimetallic structures offer a unique combination of individual material properties, making them highly customizable for a range of applications.
- Research in this area has significant implications for various engineering applications where the thermal conductivity and strength of the components play a critical role.

Copper & steel:

- One such bimetallic composite, made from copper and steel, has high thermal and electrical conductivity, exceptional corrosion resistance, and mechanical properties.
- However, welding copper and steel together can be challenging due to the differences in their melting points, thermal conductivity, and thermal expansion properties. This has made it difficult to join copper and stainless-steel bimetallic structures without defects.

New research:

- To address this challenge, researchers at the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI) have developed a novel bi-metallic joining process using a technique called laser powder bed fusion (L-PBF) or selective laser melting (SLM) technique of metal 3D printing.
- This technique involves layer deposition by metal powder melting, which creates a small melt pool of stainless-steel powder with subsequent high cooling rates, limiting the intermixing of the stainless-steel melt on copper surface.
- The laser beam interaction with metal during the L-PBF process creates an impact on the degree of intermixing of both copper and steel.
- The researchers have successfully demonstrated the formation of the interfacial microstructure and bonding mechanism and investigated the reason for achieving a strong interfacial bond.

Outcome:

- Tensile behavior studies were conducted, which convinced the researchers of the strong copper-steel bimetallic bond at the interface.
- The micrographs obtained through high magnification imaging facility showed the limited intermixing of the copper and steel-rich regions across the interface.
- The diffusion of Fe, Cr, and Ni elements from the steel to the copper side led to solid solution strengthening of copper near the interface, with a gradient drop in hardness from the interface on the copper alloy side.

Way Forward:

- The bi-metallic joining process between stainless steel and copper alloy, using laser powder bed fusion (L-PBF) technique, has the potential to revolutionize the engineering industry by offering customizable and strong bimetallic structures with enhanced properties.

ONE WORLD TB SUMMIT 2023 IN VARANASI

Why in news?

- Recently, Prime Minister of India inaugurated the One World TB Summit 2023 in Varanasi.



Vision:

- The event reiterated India's commitment to eliminate the high-burden infectious disease by 2025, five years ahead of the global goal of 2030.
- This vision was first articulated by the Prime Minister at the Delhi End TB Summit in March 2018.

New launches at the event:

- The Prime Minister unveiled the "Annual India TB Report 2023" which is a compilation of the country's efforts towards making India TB-free by 2025.
- He launched a Training module on Extra Pulmonary Tuberculosis. The module is developed for training the healthcare workers of secondary and tertiary levels of public and private sector in India.
- He also launched the TB-Mukt Panchayat initiative to leverage the support of over 2.5 lakh Gram Panchayats to raise awareness about TB, eliminate the stigma attached to the disease and help monitor and improve uptake of services.
- A new Treatment Preventive Therapy was also launched to prevent the development of active TB – thereby stemming the spread of the disease. Alongside, a family-centric care model was also announced to ensure the wellbeing of families affected by TB.
- He also laid the foundation stone of the National Centre for Disease Control & High Containment Laboratory and inaugurated the site for the Metropolitan Public Health Surveillance Unit in Varanasi.

Awards:

- States and districts were also awarded by the Prime Minister for making significant progress on key programmatic indicators.
- Karnataka and the Union Territory of Jammu & Kashmir were awarded in the category of states/UTs and the Nilgiris (Tamil Nadu), Pulwama (J&K) and Anantnag (J&K) were given the district level awards.

Health priorities under India's G20 presidency:

- He appealed healthcare workers to continue the good work and asked them to adopt the same 5T approach (Trace, Test, Track, Treat & Technology) for TB as was done during the COVID pandemic.
- India identified concerns of global importance as health priorities under its G20 presidency. These include improving effectiveness and reach of health

services using digital solutions; strengthening cooperation to enhance pharmaceutical development and manufacturing capabilities; dealing with anti-microbial resistance; focusing on "One Health" – and all of these have strong resonance with India's and the world's fight against TB".

What is being done to try to achieve TB elimination target?

- India is the only country in the world to implement a Sub-National Certification (SNC) exercise, a novel scientific method through which districts are verified for their progress of elimination.
- An online Ni-kshay portal has been set up to track the notified TB cases. It is a community engagement programme where Ni-kshay mitras can adopt TB patients and provide them monthly nutritional support.
- Ni-kshay Mitras provided additional nutritional and emotional support to patients for overcoming TB, by contributing over Rs 1,000 Cr, making it possibly the world's largest community initiative for TB."

Background:

- In March 2018, the Prime Minister, made a commitment to eliminate tuberculosis (TB) from India by 2025, as the rest of the world aimed to achieve the TB-related Sustainable Development Goals (SDGs) targets by 2030.
- Soon thereafter, the National TB Elimination Programme (NTEP) revised its strategy and introduced various patient-centric schemes and initiatives.
- In 2022, India achieved its highest ever notification of TB patients; in 2022, over 24.22 lakh TB cases were notified, compared to 14 lakh patients in 2013, indicating the effectiveness of India's programme in reaching every patient.
- Strategies such as private sector engagement, active case finding, decentralization of services through Health and Wellness Centres, community engagement and Ni-kshay Poshan Yojana have transformed India's TB management efforts and made it patient centric.

Way Forward:

- The One World TB Summit, organized by the Ministry of Health and Family Welfare (MoHFW) and Stop TB Partnership, provided an opportunity to showcase India's TB learnings for the world at a time when the country leads the G20 nations.

WHY DID INDIA REJECT J&J'S PATENT ON TB DRUG?

Why in news?

- Recently, the Indian Patent Office rejected an application by pharmaceutical giant Johnson & Johnson (J&J) to extend its patent on the drug bedaquiline beyond July 2023.

- Bedaquiline is a drug in tablet form used to treat drug-resistant tuberculosis (TB).
- This opens the door for drug manufacturers to produce generic versions of bedaquiline, which are expected to be more affordable and to contribute to India's goal of eliminating TB by 2025.

Vital intervention

Bedaquiline, manufactured by J&J, is a crucial anti-TB drug



- India has rejected J&J's appeal to extend its patent beyond July 2023
- Currently priced at

around \$400 for a six-month treatment regimen, the prices are likely to fall

- After July, generic producers like Lupin and Macleods are likely to manufacture the drug
- Over 55,000 patients, in whom other drugs have stopped working, may benefit from Bedaquiline access
- Till March 2020, only a little over 10,000 patients received the drug

What is drug-resistant TB?

- As of 2017, India accounted for around one-fourth of the world's burden of multi-drug-resistant (MDR) TB and of extensively-drug-resistant (XDR) TB.
- MDR TB resists treatment by at least two frontline drugs in TB treatment, isoniazid and rifampicin.
- XDR TB resists these two drugs as well as fluoroquinolones and any second-line injectable drug. XDR TB is rarer than MDR TB – there were 1,24,000 cases of the latter in India (2021) versus 2,650 cases of the former (2017).
- TB incidence in India has been on the decline, but MDR TB and XDR TB endanger initiatives to locally eradicate the disease. In the first two years of the pandemic, there were reports that TB treatment was hit by disrupted supply chains, availability of healthcare workers for non-pandemic work, and access to drug-distribution centres.

How is drug-resistant TB treated?

- TB is an infection of the bacterium *Mycobacterium tuberculosis* in the lungs, but often in other organs as well.
- It can be treated by strictly adhering to the doses and frequencies of drugs prescribed by a physician. Deviations from this schedule can lead the bacteria to become drug-resistant. Yet they happen because the drugs often have side effects that diminish the quality of life and/or because patients haven't been afforded access to the requisite drugs on time.
- Drug-resistant TB is harder to treat. One important option for those diagnosed with pulmonary MDR TB is bedaquiline.
- In 2018, the World Health Organization replaced two injectable drugs for MDR TB with an oral regimen that included bedaquiline.

How effective is bedaquiline?

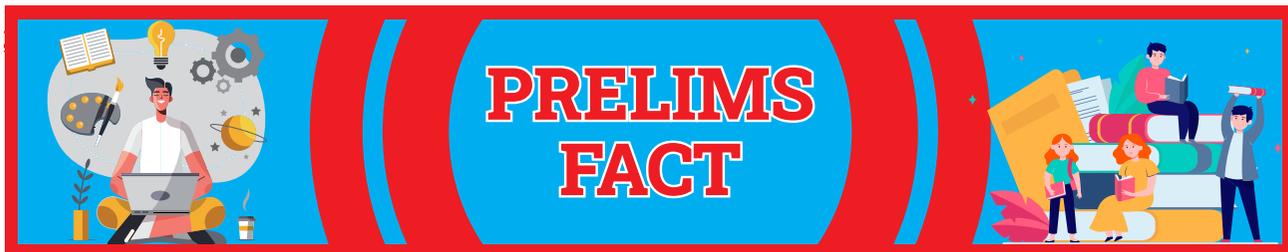
- Typically, bedaquiline needs to be taken for six months: at a higher dose in the first two weeks followed by a lower dosage for 22 weeks. This period is shorter than other treatment routines for pulmonary MDR TB, which can last 9-24 months.
- One phase II clinical trial observed that culture conversion (turning a patient's sputum culture from positive to negative) "at 24 weeks was durable and associated with a high likelihood of response at 120 weeks", due to bedaquiline.
- Unlike second-line treatment options that are injected and can have severe side effects, like hearing loss, bedaquiline is available as tablets and is less harmful, although it has potential side effects of its own.

Why was the patent application rejected?

- J&J's patent application was for a fumarate salt of a compound to produce bedaquiline tablets. Two groups opposed the patent: 1) Network of Maharashtra people living with HIV and 2) Nandita Venkatesan and Phumeza Tisile, both TB survivors, supported by Médecins Sans Frontières.
- Both groups argued that J&J's method to produce a "solid pharmaceutical composition" of bedaquiline is "obvious, known in the art" and doesn't require an "inventive step".
- According to the Indian Patent Act 1970 Section 2(1) (ja), an 'inventive step' is an invention that is "not obvious to a person skilled in the art".
- The latter also contended that the current application drew significantly from a previous patent, WO 2004/011436, which discussed a similar compound on which bedaquiline is based and whose priority date (2002) well preceded the new application.
- The Patent Office rejected the application on these and other grounds, including Sections 3d and 3e of the Act.
- These pertain to "mere discovery of a new form of a known substance which does not result in the enhancement of the known efficacy of that substance" and "a substance obtained by a mere admixture resulting only in the aggregation of the properties of the components thereof", respectively, which are not patentable.

Why is the rejection notable?

- India has the largest population of people living with drug-resistant TB. J&J's patent on bedaquiline meant the drug cost \$400 (revised to \$340 in 2020) per person, plus the cost of other drugs. The rejection is expected to lower the cost of bedaquiline by up to 80%.
- So far, the Indian government has directly procured the drug and distributed it through State-level TB programmes. After July 2023, manufacturers of generic drugs such as Lupin will be able to produce generic versions of bedaquiline.



POLITY & GOVERNANCE

PORTAL OPENED FOR COMPLAINTS AGAINST DECISIONS OF SOCIAL MEDIA PLATFORMS



Why in news?

- The Ministry of Electronics and Information Technology recently launched the Grievance Appellate Committee (GAC) portal under the IT Rules, 2021.

Details:

- It allows people dissatisfied with resolution of complaints to social media companies on content takedown requests, to be heard by one of the three committees constituted by the government.
- This marks a shift in how social media content is moderated in India.
- The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 were amended in 2022 to require social media companies to “respect all the rights accorded to the citizens under the Constitution, including in the articles 14, 19 and 21,” signalling that social media platforms may now have to allow speech that is not allowed on their platforms, but are otherwise legal to express in public.

Background:

- Three committees were formed in January to receive complaints to put these amendments into action. The website of the GACs is now accepting appeals from the public.
- The IT Rules already require platforms to have a process for accepting complaints against content and appeals against takedowns from users; companies’ decisions in response to these appeals, though, will

now ultimately be subject to the GACs’ orders. India is not the only country moving away from treating platforms such as Facebook and Twitter as mere private “intermediaries”.

Way Forward:

- The IT Ministry has indicated that it is working on a “Digital India Bill” to give a firmer statutory backing to the IT Rules.

SCHEDULED TRIBES PANEL REQUISITIONS FRA ACTION REPORTS FROM SC



Why in news?

- In the middle of a face-off with the Environment Ministry over the new Forest Conservation Rules (2022) potentially diluting the Forest Rights Act, 2006, the National Commission for Scheduled Tribes has now secured FRA implementation reports of all States and Union Territories by invoking its Constitutional powers to approach the Supreme Court directly.

Background:

- After the Union government introduced the new FCR, the panel wrote to the Environment Ministry in September, asking that they be put on hold because they would violate provisions of the FRA, which ensures that ownership of forest land remained with tribespeople and other traditional forest dwellers, who live off the forest and its resources.
- In response, Environment Minister insisted that the rules were framed under the Forest (Conservation) Act, 1980 and that the panel’s apprehension was “not legally tenable”.
- The commission recently wrote to the Supreme Court Registrar, invoking powers under Clause 8d of Article 338A, to seek all materials filed before the court in connection with a batch of petitions challenging the constitutionality of the FRA.

Claim over forest land:

- According to data tabled in Rajya Sabha in December 2022, title rights had been issued against just 50% of the claims over forest land made under the FRA as of June 2022, with maximum pendency and rejection seen in cases of individual claims, a little over half of which had been rejected or left pending. However, in community claims, titles were given to 60% of the claimants.
- Among the documents that the panel has now requisitioned from the Supreme Court are FRA implementation reports filed by all States and Union Territories, the number of claims rejected, the process and reasons for rejection, and the action taken against claimants whose applications were rejected.
- While hearing the case, the three-judge Bench of the Supreme Court had in 2019 noted that in thousands of cases, eviction had not been carried out despite rejection of claims and ordered all State governments to carry out evictions as soon as possible.
- But later, the SC stayed its earlier order and called for all rejection records of claims under FRA.

What's next?

- The Commission was looking to review the overall implementation of the FRA at the ground level, examine rejection of titles and encroachments on forest land. It will propose recommendations to further secure the rights of tribespeople, under its Constitutional mandate.

COMMITTEE TO OVERSEE TRANSFER AND IMPORT OF CAPTIVE WILD ANIMALS: SC

**Why in news?**

- Recently, the Supreme Court has increased the jurisdiction and powers of a high-powered committee led by its former judge, Justice Deepak Verma.

Mandate:

- It has been allowed to conduct necessary checks and undertake fact-finding exercises concerning the import, transfer, procurement, rescue and rehabilitation of wild animals, including those in captivity, across India.

- The ambit of the committee was earlier restricted to Tripura and Gujarat.
- Now, the Chief Wildlife Wardens of the States would be co-opted as members of the committee. The panel would look into all pending and future complaints on the issue.
- The Committee may also consider the request for approval, dispute or grievance, concerning transfer or import into India or procurement or welfare of wild animals by any rescue or rehabilitation centre or zoo, by taking assistance and cooperation whenever needed from all departments and authorities across India.

Supreme authority:

- The court directed that State and Central authorities should "forthwith report seizure of wild animals or abandonment of captive wild animals to the committee and the committee shall be at liberty to recommend transfer of ownership of captive animals or of seized wild animals to any willing rescue centre or zoo for their immediate welfare, care and rehabilitation".

Other Members:

- The other designated members of the committee include the Director General of Forests (Union of India), Head of Project Elephant Division (MoEF) and Member Secretary (Central Zoo Authority of India).

CENTRE RELEASES GUIDELINES FOR CELEBRITIES, INFLUENCERS, AND VIRTUAL INFLUENCERS ON SOCIAL MEDIA PLATFORM

**Why in news?**

- The Department of Consumer Affairs, under the Ministry of Consumer Affairs, Food and Public Distribution, has released a set of guidelines called 'Endorsements Know-hows!' for celebrities, influencers, and virtual influencers on social media platforms.
- The guidelines aims to ensure that individuals do not mislead their audiences when endorsing products or services and that they are in compliance with the Consumer Protection Act and any associated rules or guidelines.

Key Highlights:

- The guidelines state that endorsements must be made in simple, clear language, and terms such as 'advertisement', 'sponsored', "collaboration" or 'paid promotion' can be used.
- Individuals must not endorse any product or service that they have not personally used or experienced or in which due diligence has not been done by them.
- The department has observed that there is confusion regarding which disclosure word to use for what kind of partnership. Therefore, for paid or barter brand endorsement, any of the following disclosures may be used: "advertisement," "ad," "sponsored," "collaboration," or "partnership." However, the term must be indicated as hashtag or headline text.
- The guidelines specify that individuals or groups who have access to an audience and the power to affect their audiences' purchasing decisions or opinions about a product, service, brand, or experience, because of the influencer's/celebrity's authority, knowledge, position, or relationship with their audience, must disclose.

Disclosure:

- The guidelines state that the disclosure must be placed in the endorsement message in a manner that is clear, prominent, and extremely hard to miss. Disclosures should not be mixed with a group of hashtags or links.
- For endorsements in a picture, disclosures should be superimposed over the image enough for viewers to notice. For endorsements in a video or a live stream, disclosures should be made in both audio and video format and displayed continuously and prominently during the entire stream.
- The guidelines advise celebrities and influencers to always review and satisfy themselves that the advertiser is in a position to substantiate the claims made in the advertisement. It is also recommended that the product and service must have been actually used or experienced by the endorser.

Way Forward:

- In conclusion, the guidelines aim to ensure that individuals do not mislead their audiences when endorsing products or services, and that they are in compliance with the Consumer Protection Act and any associated rules or guidelines.
- It is essential for celebrities, influencers, and virtual influencers to adhere to these guidelines to maintain transparency and authenticity with their audience.

5-JUDGE CONSTITUTION BENCH TO DECIDE LEGAL VALIDATION OF SAME-SEX MARRIAGE

Why in news?

- Recently, the Supreme Court referred the pleas seeking legal validation of same-sex marriages to a

five-judge constitution bench for adjudication, saying the issue is of 'seminal importance'.

- A bench headed by Chief Justice D Y Chandrachud said the submissions on the issue involve an interplay between constitutional rights on the one hand and special legislative enactments, including the Special Marriage Act, on the other.

GOVT: ONLY PARL CAN DEBATE & DECIDE

<p>SG TUSHAR MEHTA: SC is shouldering a very heavy responsibility of deciding how society will develop. The moment same-sex marriage is recognised, question of adoption will come... Parliament has to debate the psychological impact on a child who has parents of same sex</p> <p>CJI DY CHANDRACHUD: The adopted child of a lesbian or gay couple needn't necessarily be lesbian or gay. It depends on the child's perception</p> <p>SG: It may be CJI's personal view or my personal view. It may not be a</p>	<p>proper reflection of the child's psychology, which again can only be debated in Parliament before it takes a call on whether to recognise such marriages</p> <p>SC BENCH: This is a matter important enough to refer to a 5-judge constitution bench. Besides relying on decisions of the court in K Puttaswamy (right to privacy) & Navtej Johar (decriminalisation of gay sex) cases, petitioners have asserted broader constitutional entitlements arising out of right to life and liberty & right to dignity</p>
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TUSHAR MEHTA



CJI CHANDRACHUD

Petitioners claim:

- In an affidavit filed before the apex court, the government submitted that despite the decriminalisation of Section 377 of the Indian Penal Code, the petitioners cannot claim a fundamental right for same-sex marriage to be recognised under the laws of the country.
- The petitioners argued that the court's judgment in the Navtej Singh Johar case in 2018, while decriminalising homosexuality, had also upheld the individual right to family and choice of partners.
- Right to love and marry cannot be withheld from a class of persons solely on the basis of their sexual orientation or gender identity. Right to marry is the natural consequence of the decriminalisation judgment.

Key Highlights:

- Chief Justice said the case involved an "interplay" between constitutional rights of life, liberty, dignity, equal treatment of members of the LGBTQ+ community on one side and specific statutory enactments that consider only a married union between a biological man and woman on the other.
- The three-judge Bench, also comprising Justices P.S. Narasimha and J.B. Pardiwala, invoked Article 145(3) of the Constitution to refer the case to a five-judge Bench.
- The Centre has opposed in the top court a batch of petitions seeking legal validation of same-sex marriages, claiming they will cause a complete

havoc with the delicate balance of personal laws and accepted societal values.

- Growing up with lesbian or gay parents will not necessarily make a child lesbian or gay, the Supreme Court observed, as it confronted the government's concern about the "psychological" impact same-sex marriages may have on children.

What's next?

- The court posted the matter for arguments on April 18 and said the proceedings will be live-streamed as is done in case of hearings before the constitution benches.

CHHATTISGARH CABINET APPROVES ANTI-NAXAL POLICY CHANGES, JOURNALISTS SAFETY BILL



Why in news?

- Recently, the Chhattisgarh government made changes in its anti-Naxalite policy related to compensation and other facilities.

Details:

- Earlier, there was no provision for compensation to the kin of anyone who comes from other state to Chhattisgarh and gets killed in Maoist violence. But under the amended policy, provision for compensation has been made in such cases.
- A key change in the policy will enable the family of a person from outside Chhattisgarh to receive compensation in case of death in Naxalite violence in the insurgency-affected state.

'Chhattisgarh Mediapersons Protection Bill 2023':

- The draft of the 'Chhattisgarh Mediapersons Protection Bill 2023' was approved in the meeting.
- The bill that aims to enshrine protection of mediapersons in law.

Other decisions:

- The Chhattisgarh Goods and Service Tax (Amendment) Bill 2023 and the Salary, Allowance and Pension of Members of Chhattisgarh Assembly (Amendment) Bill 2023 were among other bills approved by the cabinet.
- The cabinet also decided to appoint badminton player Akarshi Kashyap, a silver medallist in the 2022

Commonwealth Games and a resident of Durg district, as a Deputy Superintendent of Police.

SC BENCH SEEKS DATA ON ALTERNATIVES TO HANGING



Why in news?

- Recently, the Supreme Court asked the Centre to provide data that may point to a more dignified, less painful and socially acceptable method of executing prisoners other than death by hanging.

Details:

- A Bench of Chief Justice D.Y. Chandrachud and Justice P.S. Narasimha even mooted the setting up of an expert committee to relook India's method of putting to death its criminals.
- The Chief Justice said such a committee would have experts from the national law universities, professors of law, doctors and scientific persons.
- The court indicated to the Centre, that it needed some underlying data based on which it could examine if there was a more "humane" method of execution, which would render death by hanging unconstitutional.
- The Bench explained that it also needed to know what strides the fields of science and technology have made in suggesting "any other method of execution consistent with human dignity".

Petition before SC:

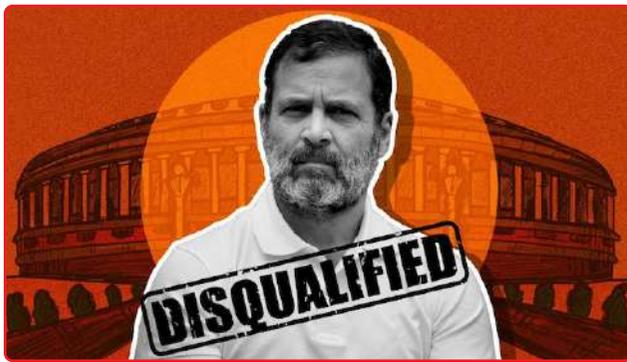
- The court was hearing a petition filed by advocate Rishi Malhotra challenging the constitutionality of death by hanging as a mode of execution.
- Section 354 (5) of the Code of Criminal Procedure mandates that a person sentenced to death shall "be hanged by the neck till he is dead".
- He said there is a need to evolve a "humane, quick and decent alternative". He termed hanging as "cruel and barbarous" compared to lethal injection, as used in the United States.

Background:

- In 2018, the Centre filed an affidavit supporting death by hanging. It had not found the method of execution "barbaric, inhuman and cruel" compared to firing squads and lethal injections.

- The government had traced statistics of “botched-up” administration of lethal injections to condemned prisoners in the United States for 110 years to prove its point that this mode of State execution was only “designed to create an appearance of serenity and painless death”.
- Likewise, the government had graphically detailed the horrors of death by firing squad. How, if the shots missed the heart, the prisoners slowly bled to death.
- The Centre had also said the mode of execution is a “matter of legislative policy”.
- The government said the death penalty is awarded only in the rarest of rare cases. The court had earlier clarified that it was not questioning the constitutionality of the death penalty.

DISQUALIFICATION OF RAHUL GANDHI



Why in news?

- Recently, Wayanad MP Rahul Gandhi's membership of Parliament has been cancelled following his conviction and sentencing by a local court in Surat.
- A notification issued by the Lok Sabha Secretariat said Rahul “stands disqualified from the membership of Lok Sabha from the date of his conviction i.e. 23 March, 2023 in terms of the provisions of Article 102(1)(e) of the Constitution of India read with Section 8 of the Representation of the People Act, 1951”.

Why has the Lok Sabha Secretariat issued this notification?

- It is part of the procedure. In a note on October 13, 2015, the Election Commission of India had asked state chief secretaries to issue appropriate instructions to the department dealing with prosecutions to ensure that cases of conviction of sitting MPs or MLAs were brought to the notice of the Speaker or Chairman of the House, and to the Chief Electoral Officer of the state, along with the order of conviction within seven days of the order.
- Section 8(3) of the Representation of the People Act, 1951 states that “a person convicted of any offence and sentenced to imprisonment for not less than two years shall be disqualified from the date of such conviction and shall continue to be disqualified for a further period of six years since his release.”

- Thus, the disqualification is triggered by the conviction itself, and not by the Lok Sabha notification. The notification is merely a formal notice to Rahul, who was in Lok Sabha on Friday before the House was adjourned.
 - In the case of a disqualified MLA, the notice is issued by the Vidhan Sabha concerned.
 - For example, in the case of Samajwadi Party MLA Azam Khan, the Uttar Pradesh Legislative Assembly Secretariat issued the notice of disqualification in October 2022.
- #### Is the authority of the Speaker final in this regard?
- The Supreme Court in its ruling in Lok Prahari v Union of India (2018) clarified that a disqualification triggered by a conviction will be reversed if the conviction is stayed by a court.
 - Once the conviction has been stayed during the pendency of an appeal, the disqualification which operates as a consequence of the conviction cannot take or remain in effect.
 - The notification by the House Secretariat regarding Rahul will cease to be in effect if and when his conviction is stayed.

What are Article 102(1)(e) of the Constitution and Section 8 of the RP Act?

- Article 102 of the Constitution deals with grounds for disqualification of a parliamentarian.
- Sub-clause (e) of Article 102(1) says an MP will lose his membership of the House “if he is so disqualified by or under any law made by Parliament”. The law in this case is the RP Act.
- Section 8 of the RP Act deals with disqualification of a lawmaker for conviction in certain offences. The provision is aimed at “preventing criminalisation of politics and keeping ‘tainted’ lawmakers from contesting elections.”

What options are available to Rahul Gandhi here onward?

- His disqualification can be reversed if a higher court grants a stay on the conviction or decides the appeal in his favour. His first appeal would have to be before the Surat Sessions Court, and then before the Gujarat High Court.
- If he does not get relief from the courts, he will be disqualified from contesting elections for eight years; two years of his sentence, plus six years under the provisions of the RP Act.
- His lawyer Kirit Panwala moved an application before the Surat court seeking time to file an appeal.

MEMBERSHIP OF BANNED OUTFIT IS CRIME UNDER UAPA, SAYS SC

Why in news?

- Recently, a three-judge Bench of the Supreme Court clarified that a person who “is or continues to be” even

a “mere member” of a banned organisation is liable to be found criminally liable under the Unlawful Activities (Prevention) Act (UAPA) for acting against the sovereignty and integrity of India.

 **In 2011, SC had said mere membership of a banned organisation would not make a person a criminal, unless the person resorted to violence or incited people to violence, or created public disorder**

Bench did not agree that the top court in 2011 had placed reliance on US court judgements



 **Articles 19(1)(a) and 19(2) of the Constitution deal with freedom of speech and expression and the government's power to impose reasonable restrictions**

Details:

- With this judgment, the Supreme Court has set aside a series of its own judgments which had concluded that “mere membership” unlike “active membership” of an unlawful association or organisation did not make a person criminal or a terrorist.
- The judgment was based on an intra-court reference made in 2014.

Highlights of the judgement:

- The Bench led by Justice M.R. Shah reasoned that an organisation is declared unlawful and banned only after the Centre is “satisfied that it is indulging in unlawful activities against the sovereignty and integrity of India”.
- The declaration of an organisation or association as unlawful is publicly notified by the Centre under Section 3 of the UAPA. This naturally leads to the conclusion that every member of the organisation would know about the ban.

- But a person choosing to continue as a member despite knowing about the ban is acting against the sovereignty of the nation.
- Such a person cannot later claim that the law has a chilling effect on his fundamental right of association by imposing criminal liability on him.
- The court referred to Article 19(4), which mandated that the citizens’ right to form unions or associations was subject to the power of the state to make laws to impose “reasonable restrictions” in the interests of the sovereignty and integrity of India or public order or morality.

Section 10(a)(i) of the UAPA:

- The judgment referred to Section 10(a)(i) of the UAPA which deals with membership of an unlawful association.
- The provision says that “where an association is declared unlawful by a notification issued under Section 3 which has become effective under sub-section (3) of that section, (a) a person, who, (i) is and continues to be a member of such association shall be punishable with imprisonment for a term which may extend to two years, and shall also be liable to fine”.
- The court clarified that persons who had left the organisation and were not members at the time it was declared unlawful, cannot be held liable under Section 10(a)(i) of the UAPA.

Background:

- The three-judge Bench said the earlier judgments in the cases of Arup Bhuyan, Sri Indra Das and Raneef, which had “read down” Section 10(a)(i) to exclude mere membership of an organisation from criminal liability, followed the American law blindly.
- These judgments had not heeded the restraints stitched into Article 19(4) on the right of citizens to form associations.
- Just following the American law without noticing differences between Indian and U.S. laws is not agreeable.

INTERNATIONAL RELATION

INDIA, ITALY ELEVATE TIES, SIGN MOU ON DEFENCE COOPERATION



Why in news?

- Recently, Italian Prime Minister Giorgia Meloni chose India as her inaugural international visit as a matter of strategic choice. Her visit is the first high level bilateral visit from Italy in the past 5 years.
- India and Italy are celebrating the 75th anniversary of their bilateral relations in 2023.

Key Highlights:

- Ending the chill in the bilateral relationship in the past few years, India and Italy announced the elevation of the bilateral relationship to the level of strategic partnership while also concluding a memorandum of understanding (MoU) on defence cooperation.
- Indian PM announced the establishment of a 'Startup Bridge' between India and Italy, and said that both countries have laid special emphasis on increasing cooperation in areas like Renewable Energy, Green Hydrogen, IT, semiconductors, telecom and space.
- The two countries also concluded a Declaration of Intent (DOI) on migration and mobility.

Ukraine-Russia conflict:

- On the occasion, the Indian PM mentioned the Ukraine-Russia conflict and said India is fully prepared to contribute to any peace process.

Indo-Pacific:

- He also welcomed Italy's active participation in the Indo-Pacific, saying the move will help in identifying concrete themes for enhancing our cooperation in Indo-Pacific.
- Italy has decided to join the Indo-Pacific Ocean Initiative (IPOI).

Economic front:

- On the economic front, the two leaders expressed their intention to further advance India-Italy cooperation, including in the framework of the respective Make in India and Made in Italy frameworks.
- PM Modi invited Italian defence companies to actively participate in Make in India initiative.

Other issues:

- Both countries also agreed on working shoulder to shoulder on issues such as terrorism and separatism.
- In the context of COVID-19 and future global health challenges, the two countries agreed to enhance bilateral cooperation in the fields of disease control.

SOUTH KOREA PUSHES TO END DISPUTES WITH JAPAN OVER WARTIME FORCED LABOUR

Why in news?

- Recently, South Korea announced plans to compensate victims of Japan's forced wartime labour, aiming to end a "vicious cycle" in the Asian powers' relations and boost ties to counter the nuclear-armed North.
- The move to resolve the forced labour issue follows years of disputes over Second World War sex slaves, which had soured Japan-South Korea ties.

Background:

- South Korea and Japan have already ramped up security cooperation in the face of growing threats from Kim Jong Un's regime, but bilateral ties have long been strained over Tokyo's brutal 1910-45 colonial rule of the Korean peninsula.
- Around 780,000 Koreans were conscripted into forced labour by Japan during the 35-year occupation, according to data from Seoul, not including women forced into sexual slavery by Japanese troops.
- Seoul's plan is to take money from major South Korean companies that benefited from a 1965 reparations deal with Tokyo and use it to compensate victims.

Japan's response:

- Tokyo insists the 1965 treaty which saw the two countries restore diplomatic ties with a reparations package of about \$800 million in grants and cheap loans settled all claims between the two relating to the colonial period.
- But Tokyo's Foreign Minister welcomed the new plan as it would help to restore "healthy" ties after years of tensions.

What's next?

- Japan and the U.S. immediately welcomed the announcement, but victims have criticised the proposal because it falls far short of their demand for a full apology from Tokyo and direct compensation from the Japanese companies involved.

FRENCH SENATE APPROVES RAISING RETIREMENT AGE TO 64

**Why in news?**

- Recently, the Senate voted in favour of article 7 of the reform legislation while the remaining articles will be approved soon.

Details:

- The French Senate voted 201-115 to raise the retirement age by two years to 64 even as protests continue across the country.
- The Senate, dominated by the conservative Les Republicains party voted in favour of the motion, giving President Emmanuel macron his first mini-victory in the ongoing saga.

⇒ The passing of the bill comes a day after fuel deliveries from refineries across the country were blocked by striking workers.

Why is the government extending the age limit?

- ⇒ The government is of the view that extending the pension age will prevent the French service system from collapsing under the weight of deficits.
- ⇒ Notably, the workers in France tend to retire much earlier than their European Union (EU) counterparts. The direct repercussion is that the French exchequer has to foot a bigger pension bill than most countries in the bloc.
- ⇒ The French pensioners also receive 54.4 per cent of their last pay slip as pension on average. Comparatively, the average EU pension amount stands at 46.2 per cent.
- ⇒ Despite the resistance, the Macron government has remained steadfast that it will pass the legislation, having failed to do so on previous occasions.

What's next?

- ⇒ The Senate voted in favour of article 7 of the reform legislation while the remaining articles are expected to be approved soon.
- ⇒ The proposal then will be sent to a mediation committee comprising lawmakers from the Senate and the National Assembly.

INDIA AND AUSTRALIA JOIN FORCES TO DRIVE INNOVATION IN AREAS OF NATIONAL CHALLENGES AND SHARED PRIORITIES



Why in news?

- ⇒ Atal Innovation Mission (AIM), NITI Aayog and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia's national science agency, have joined hands by signing a Letter of Intent to encourage joint cooperation to drive innovation activities in areas of national challenges and shared priorities of both countries.
- ⇒ The move comes during the India visit of the Australian Prime Minister.

India Australia Innovation and Technology Challenge (IA-ITC):

- ⇒ The Letter of Intent between AIM and CSIRO calls for a greater collaboration in areas of mutual interest and

strategic priorities and serves as a general framework for cooperation intended to facilitate the development of more program specific interventions.

- ⇒ The core of the bilateral engagement is the India Australia Innovation and Technology Challenge (IA-ITC) - a program envisioned to bring together the innovation ecosystems of India and Australia to address shared environmental and economic challenges by supporting cohorts of start-ups and SMEs on their commercialisation pathways and bring to market innovative tech-based solutions spanning across circular economy, energy transition and food system resilience etc.
- ⇒ The program intends to leverage the complementary capabilities and resources of the innovation ecosystem of both the countries.

Background:

- ⇒ The IA-ITC builds on the success of the India Australia Circular Economy (IACE) hackathon 2021, which witnessed university students, start-ups, and SMEs from both India and Australia develop innovative tech-based solutions for circularity in food system value chain.

Way Forward:

- ⇒ AIM and CSIRO are currently working on the design and development of the IA-ITC program delivery model to ensure the IA-ITC is sustainable, innovative, impactful and aligns with the strategic interests of both India and Australia.
- ⇒ The official launch of the program is expected to be in July 2023.

INTERNATIONAL CRIMINAL COURT ISSUES ARREST WARRANT AGAINST PUTIN OVER UKRAINE



Why in news?

- ⇒ Recently, the International Criminal Court (ICC) issued an arrest warrant against Russian President Vladimir Putin for the "unlawful deportation" of Ukrainian children.
- ⇒ It had also issued a warrant against Maria Lvova-Belova, Russia's presidential commissioner for children's rights.

⇒ Russia is not a member of the ICC. It was unclear how the ICC planned to enforce the warrant.

Allegations against Russian President:

- ⇒ As per the ICC, Vladimir Putin "is allegedly responsible for the war crime of unlawful deportation of population (children) and that of unlawful transfer of population (children) from occupied areas of Ukraine to the Russian Federation."
- ⇒ The ICC said the crimes dated from February 24, 2022, when Russia invaded Ukraine.
- ⇒ He was allegedly responsible both directly by committing the acts and for "failure to exercise control properly over civilian and military subordinates who committed the acts, or allowed for their commission".

Russia's stand:

- ⇒ It said that the ICC's decision to issue an arrest warrant for President Vladimir Putin was legally "void" since Russia does not recognise the court's jurisdiction.

About ICJ:

- ⇒ ICJ was established in 1945 by the United Nations charter and started working in April 1946.
- ⇒ It is the principal judicial organ of the United Nations, situated at the Peace Palace in The Hague (Netherlands).
- ⇒ The Court is composed of 15 judges, who are elected for terms of office of nine years by the United Nations General Assembly and the Security Council.

Jurisdiction:

- ⇒ ICJ acts as a world court with two fold jurisdiction i.e. legal disputes between States submitted to it by them (contentious cases) and requests for advisory opinions on legal questions referred to it by United Nations organs and specialized agencies (advisory proceedings).
- ⇒ Only States which are members of the United Nations and which have become parties to the Statute of the Court or which have accepted its jurisdiction under certain conditions, are parties to contentious cases.

JOINT STATEMENT OF 18TH INDIA-AUSTRALIA JOINT MINISTERIAL COMMISSION (JMC)



Why in news?

- ⇒ Recently, India's Minister of Commerce and Industry,

and Australia's Minister for Trade and Tourism, discussed next steps for further enhancing the bilateral economic relationship.

Details:

- ⇒ They discussed implementation of the Economic Cooperation and Trade Agreement (ECTA), negotiations for the India-Australia Comprehensive Economic Cooperation Agreement (CECA) and further developing two-way investment.
- ⇒ They also discussed engagement in the G20, the Indo-Pacific Economic Framework (IPEF) and the World Trade Organization (WTO).

CECA:

- ⇒ The Prime Minister of both countries look forward to swift progress in negotiations and for an early conclusion of an ambitious Comprehensive Economic Cooperation Agreement (CECA), which will build on the foundation laid by the ECTA, including new areas of trade, investment and cooperation.
- ⇒ CECA will create new employment opportunities, raise living standards and improve the general welfare in both countries. They look forward to concluding CECA as soon as possible, are pleased with the progress resolving various bilateral technical market access issues and look forward to continuing engagement.

Clean Energy & SDGs:

- ⇒ They highlighted the importance of a smooth and timely clean energy transition as both countries work towards achieving their respective net zero goals.
- ⇒ Australia reiterated its strong support for India's G20 Presidency. They agreed that the G20 needs to help the world navigate a pathway back to strong, sustainable and inclusive growth, including accelerating progress to achieve the Sustainable Development Goals.

Multilaterals:

- ⇒ Australia and India share high ambition for the IPEF, as evidenced at the special round of IPEF negotiations in New Delhi, and would continue to work together through IPEF on areas of mutual interest, including the clean economy and resilient supply chains.
- ⇒ They reaffirmed the importance of the multilateral trading system, with the WTO at its core. They agreed to build on the success of the 12th WTO Ministerial Conference in Geneva and reaffirmed their commitment towards improving WTO functions and having a fully functioning dispute settlement system by 2024.
- ⇒ They agreed to work towards a productive engagement in the run up to the 13th WTO Ministerial Conference to be held in Abu Dhabi in 2024.

Bilateral trade:

- ⇒ They acknowledged that Australia and India are important trading partners. India-Australia bilateral trade exceeded US\$31 billion last financial year.

- Both agreed that given the trade complementarities between the two countries, there is considerable potential for significantly enhancing bilateral trade within the next 5 years.

SEOUL MOVES TO 'NORMALISE' MILITARY PACT WITH TOKYO



Why in news?

- South Korea will fully implement a key military intelligence-sharing pact with Japan, as the two countries move to renew diplomacy to counter North Korea.
- Confronted with North Korea's growing aggression and flurry of missile tests, the neighbours have increasingly sought to bury the hatchet.

Fence-mending summit:

- South Korean President Yoon Suk Yeol, who has been keen to end the spat and present a united front against the nuclear-armed North, had flown to Japan to meet Prime Minister Fumio Kishida, the first such summit in 12 years.
- At a fence-mending summit, they agreed to turn the page on a bitter dispute over Japan's use of war-time forced labour.

GSOMIA:

- South Korea wanted a "complete normalisation" of a 2016 military agreement called the General Security of Military Information Agreement (GSOMIA), which enables the two U.S. allies to share military secrets, particularly over Pyongyang's nuclear and missile capacity.
- It had threatened to scrap GSOMIA in 2019 as relations with Japan soured over trade disputes and a historical row stemming from Japan's 35-year colonial rule over the peninsula. In response, an alarmed U.S. said that calling off the pact would only benefit North Korea and China.
- Hours before it was set to expire, South Korea agreed to extend GSOMIA "conditionally", but warned it could be "terminated" at any moment.

What's the background?

- The two countries share a complicated history. They have fought on and off since at least the 7th

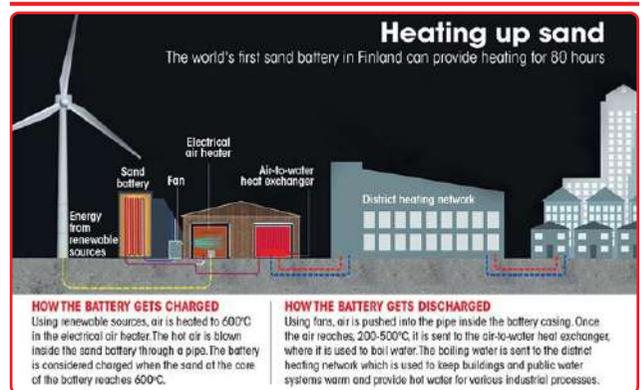
Century, and Japan has repeatedly tried to invade the peninsula since then.

- In 1910, it annexed Korea, turning the territory into a colony. Resentment over this period, when many South Korean workers were forced to work for Japanese firms, continues today.
- The issue was recently brought to the fore by a 2018 South Korean supreme court ruling that ordered Japanese firms to compensate Koreans it used as forced labour.
- The decisions drew condemnation from Japan, which argues the dispute was settled in 1965 when diplomatic ties were normalised between the neighbouring countries.
- The row has since escalated and has impacted their modern trade relationship, threatening industries such as technology.

About GSOMIA:

- The intelligence pact, known as GSOMIA (General Security of Military Information Agreement), allowed the two countries to share information about North Korea's military and nuclear activities directly with each other.
- Without it, information would have had to go through their joint-allies in Washington, slowing the process down.

FINLAND'S INSTALLATION OF THE WORLD'S 1ST SAND BATTERY



Why in news?

- Recently, Finland has installed the world's first sand battery that can store heat from renewable energy sources for months.
- The battery, made of sand collected from construction sites, can solve the problem of round-the-year energy supply, a known limitation of renewable energy sources that can be harnessed intermittently.

Details:

- This is a major breakthrough, as heat alone accounts for half of the world's energy use, followed by transport (30 per cent) and electricity (20 per cent), as per International Energy Agency (IEA). Currently, 80

per cent of the world's energy comes from dirty fossil fuels.

- The battery, a massive steel silo, 7 m tall and 4 m wide with 100 tonnes of sand, was installed in Finland's Kankaanpää town in June 2022. It is connected to the town's centralised heating network that keeps buildings and public water systems warm.
- Owing to the cold temperature, all municipalities and cities in Finland have centralised heating networks, and 70 per cent of them use renewable sources.

Advantages of opting sand:

- The renewable sector has several water-based storage systems that can heat buildings for short durations. But the Finnish researchers decided to replace water with sand because of its advantages.

How it works?

- Sand can be heated up to 600 degrees Celsius (°C), whereas water starts to boil at 100°C. It also has low heat conductivity, which reduces energy loss.
- The storage system has three main components: the sand silo, an electrical air heater and an air-to-water heat exchanger. For charging the sand silo, air is heated to 600°C in the electrical air heater.
- The hot air is then circulated inside the silo using a heat-exchange pipe and blowers to raise the temperature of the sand at the silo's core to 600°C. When the storage enters the discharging stage, the blowers are used to pump air into the pipe inside the sand silo.
- Once the air reaches 200°C, it is transferred to the air-to-water heat exchanger, where it is used to boil water. It is then sent to the heating network.
- The storage system requires electricity at all times. It is needed to charge the battery, monitor the temperature during standby and run the blowers when the battery is used.

Storage capacity:

- The installed battery can store 8 megawatt-hours (MWh) of energy and release heat at 0.1 MW; enough to provide heating and hot water for about 100 homes and a public swimming pool in Kankaanpää for 80 hours on a full charge.
- They are developing a 200 MWh battery that can discharge heat at the rate of 2 MW (enough to meet the heating need of 100 Kankaanpää houses), with a discharge time of 100 hours.
- The technology is promising, but its current capacity is not enough to meet the heating needs of an entire season.

Way Forward:

- The Finnish company believes that the battery has a huge potential, even in countries without district heating networks.
- In India, for instance, the battery provides big opportunities for process heating in industries, or

heating municipal building complexes. It can be set up for any industry that requires more than 10,000 MWh heating in a year.

IMF APPROVES \$3 BILLION IN FINANCIAL ASSISTANCE FOR DEBT-RIDDEN SRI LANKA



Why in news?

- Recently, the International Monetary Fund (IMF) has approved a USD 3 billion bailout programme to help debt-ridden Sri Lanka overcome its economic crisis and catalyse financial support from other development partners.

Details:

- International Monetary Fund's Executive Board approved a 48-month extended arrangement under its Extended Fund Facility (EFF) with an amount of SDR 2.286 billion (about USD 3 billion).
- Special Drawing Rights (SDR) are supplementary foreign exchange reserve assets defined and maintained by the International Monetary Fund (IMF).

Background:

- Earlier, Sri Lanka received IMF-compatible financing assurances from its official creditors, including Paris Club members, India and China, allowing the IMF to convene an Executive Board and consider Sri Lanka's request for a loan.
- The Paris Club is an informal group of official creditors whose role is to find coordinated and sustainable solutions to the payment difficulties experienced by debtor countries.

How it will help Sri Lanka?

- The EFF-supported programme aims to restore Sri Lanka's macroeconomic stability and debt sustainability, mitigate the economic impact on the poor and vulnerable, safeguard financial sector stability, and strengthen governance and growth potential.
- It will enable an immediate disbursement equivalent to SDR 254 million (about USD 333 million) and catalyse financial support from other development partners.

➤ The programme will allow Sri Lanka to access financing of up to USD 7 billion from the IMF, International Financial Institutions (IFIs) and multilateral organisations.

Economy of Sri Lanka:

- Sri Lanka has been hit hard by a catastrophic economic and humanitarian crisis.
- The economy is facing significant challenges stemming from pre-existing vulnerabilities and policy missteps in the lead-up to the crisis, further aggravated by a series of external shocks.
- Sri Lanka in April 2022 declared its first-ever debt default in its history as the worst economic crisis since independence from Britain in 1948 triggered by forex shortages sparked public protests.
- Months-long street protests led to the ouster of the then-president Gotabaya Rajapaksa in mid-July. Rajapaksa had started the IMF negotiations after refusing to tap the global lender for support.
- Sri Lanka has introduced painful economic measures such as tax hikes and utility rate hikes to unlock the programme. Trade unions and opposition groups have organised protests against such measures.

RUSSIA, CHINA VOW TO DEEPEN RELATIONS, TAKE AIM AT WEST



Why in news?

- Recently, China and Russia unveiled a broad long-term blueprint for their deepening relations, pledging to work together to push back against the U.S. Indo-Pacific strategy as well as attempts to “politicise” multilateral platforms.

Highlights of joint statement:

- A joint statement, said both sides “firmly condemn the politicisation” of multilateral platforms and “attempts of certain countries to fill the agenda of multilateral platforms with unrelated issues and dilute the primary mission of the relevant mechanisms.”
- This reference pointed to sharp divisions in the G-20 ahead of 2023 summit to be hosted by India. China and Russia earlier in March opposed references to the Ukraine war leading to the failure of the G-20 Foreign Ministers’ meeting in New Delhi to issue a collective statement.

➤ It also expressed “serious concern over NATO’s continued strengthening of military-security ties with Asia-Pacific countries” and said both sides “oppose the cobbling together of a closed and exclusive bloc structure in the Asia-Pacific region, creating bloc politics and camp confrontation”.

➤ China have previously referred to the India-U.S.-Australia-Japan Quad as an “exclusive bloc”.

Indo-Pacific strategy:

- The statement accused the U.S. of following “a Cold War mentality” and said its Indo-Pacific strategy “has a negative impact on peace and stability in the region.”
- Instead, China and Russia were “committed to building an equal, open and inclusive security system in the Asia-Pacific region that does not target third countries”, pointedly using the term “Asia-Pacific” and not Indo-Pacific.

Position on Ukraine:

- China once again referenced its’s position paper on the Ukraine crisis, but the visit didn’t appear to suggest any major breakthrough in Chinese efforts to broker a peace in Ukraine.
- The joint statement criticised the West over Ukraine, saying both sides “oppose the practice by any country or group of countries to seek advantages in the military, political and other areas to the detriment of the legitimate security interests of other countries.”

Pledges:

- Both pledged to work together in multilateral groupings including BRICS, and also to take forward collaboration in the recently dormant Russia-India-China grouping.
- The two sides also said they would “support each other firmly in safeguarding their core interests, first and foremost sovereignty, territorial integrity, security and development interests.”
- Russia said it supports China on Taiwan and also “firmly supports China’s initiatives to safeguard its sovereignty and territorial integrity.”

Economic cooperation:

- Both sides announced a “Plan to Promote the Key Elements of Russian-Chinese Economic Cooperation until 2030.”
- Russia said both sides had agreed a package of 80 important and promising bilateral projects in various fields worth around \$165 billion.
- “Russia is a strategic supplier of oil, natural gas, including LNG, coal, and electricity to China. Russian gas supplies to China are to reach at least 98 billion cubic metres by 2030, plus 100 million tonnes of liquefied natural gas.
- They have just discussed a good project, the new Power of Siberia-2 gas pipeline across Mongolia. Russia will export 50 billion cubic metres of gas from reliable, stable supplies.

ECONOMY

GOVERNMENT E-MARKETPLACE (GEM) COMMEMORATES THE SUCCESS OF "SWAYATT"



Why in news?

- Recently, a function was held to commemorate the success of "SWAYATT", an initiative to promote Start-ups, Women and Youth Advantage Through eTransactions on Government eMarketplace (GeM) in New Delhi.

Achievements:

- The progress made so far in promoting social and financial inclusion is by way of registering more than 8.5 lakh Micro and Small Enterprises (MSEs) on GeM portal who have been able to get business of over Rs. 1.87 lakh crore spread across 68 lakh+ orders.
- More than 1.45 lakh women MSEs have fulfilled 7.32 lakh orders worth 15, 922 Crore and approx. 43K SC/ST MSEs have delivered 1.35 lakh+ order worth 2,592 Crore on the GeM portal so far.
- GeM ramped up the presence of the underserved seller groups such as MSEs, women, Divyangjan and tribal entrepreneurs, Startups, self-help groups, artisan and weavers etc. and giving them direct access to the Government Procurement.

SWAYATT:

- The initiative to promote "Start-ups, Women and Youth Advantage Through eTransactions" (SWAYATT) on GeM was first launched in February 2019.
- The intent of SWAYATT 2019 was to promote inclusiveness of various categories of sellers and service providers on the portal, by taking proactive steps to facilitate their training and registrations of such specific category of manufacturers and sellers, develop women entrepreneurship and encourage participation of MSME sector and Start-ups in public procurement.

Government e Marketplace (GeM):

- GeM is a Section 8 company setup under the administrative control of the Department of Commerce, Ministry of Commerce and Industry, for procurement of goods and services by Central

Ministries, State Departments, PSEs and Autonomous Bodies.

- Social inclusion is a core value at GeM and we are focused on increasing participation from underserved sellers who face challenges in public procurement.

ORNAMENTAL FISH AQUACULTURE TO HELP WOMEN IN LAKSHADWEEP ISLANDS



Why in news?

- Community-based ornamental fish aquaculture, using local resources, is expected to help women in the Lakshadweep islands to take the first step towards self-reliance through concerted activities.

Initiative by NBFGR:

- In what is being described as the first-of-its-kind experiment, as many as 82 islanders, 77 of them women, were selected and underwent intensive training.
- They have formed groups for ornamental fish aquaculture with technical support from the ICAR-National Bureau of Fish Genetic Resources (NBFGR).
- The NBFGR maintains a germplasm resource centre for marine ornamental organisms on Agatti Island for conservation as well as boosting livelihood sources for the islanders.
- To expand the activity, in addition to the two species of ornamental shrimps, captive-raised clownfish seeds were also supplied.

Way Forward:

- The NBFGR project team will monitor the units and provide technical inputs till the organisms reach the marketable size.

INDIA SCORES 74.4 IN WORLD BANK INDEX

Why in news?

- Indian women have 74.4% of the rights that men have, according to latest World Bank index on the life cycle of a working woman. Globally, the score is 77.1%.

Details:

- Indian laws made little progress in removing possible gender inequities in 2022, with women in the country

possessing only 74.4% of the rights that men have on several parameters related to their freedom at the workplace.

- Globally, women have 77.1% of the legal rights that men have, up just half a percentage point from the 2021 score. India's score was unchanged as no new reforms were enacted.



Key Highlights:

- India scored higher than the 63.7 average for the South Asian region, though lower than Nepal which had the region's highest score of 80.6.
- Of the 190 economies covered in the Index, only 14 scored a perfect 100: Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Latvia, Luxemburg, The Netherlands, Portugal, Spain and Sweden.
- Only 14 economies, all of which are high-income, have laws granting women the same rights as men, and progress has been uneven across regions and over time. Thirteen of them are in Europe, while Canada is the 14th.
- Globally, more than 90 million women of working age (age 18-64) have gained legal equality in the last decade, but nearly 2.4 billion women of this age group live in countries that do not grant them the same rights as men.
- While gender laws have come a long way, the pace of new reforms to address gender inequity globally hit a 20-year low in 2022.

Findings related to India:

- While India has a score of 100 on the "workplace" parameter, it continues to lag in terms of parental reform (score of 40).
- India also lags far behind in terms of equal pay, with a score of 25 compared to the global average of 70. India is one of the 93 countries out of the 190 that still do not mandate equal remuneration for work of equal value.
- About 53% of countries, including India, do not have laws prohibiting gender discrimination in credit access. Nonetheless, in terms of overall progress, India has come a long way from 63.75 index points in 2000 to 74.4 points in 2022. The global score was 60.0 in 2000.

Parameters:

- The report, titled, "Women, Business, and the Law" evaluates laws and regulations affecting women's economic participation in 190 economies based on eight indicators: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension.
- It identifies and advocates for the reform of discriminatory laws.
- A score of 100 on the Index means that women are on an equal standing with men on all the eight indicators being measured.

WORLD FIRST 200-METER-LONG BAMBOO CRASH BARRIER



Why in news?

- Recently, an extraordinary accomplishment towards achieving Aatmanirbhar Bharat has been made with the development of the world's first 200-meter-long Bamboo Crash Barrier which has been installed on the Vani-Warora Highway, Vidarbha, Maharashtra.

Key Highlights:

- This Bamboo Crash Barrier, which has been christened Bahu Balli, underwent rigorous testing at various government-run institutions such as the National Automotive Test Tracks (NATRAX) in Pithampur, Indore and was rated as Class 1 during the Fire Rating Test conducted at the Central Building Research Institute (CBRI) in Roorkee.
- Additionally, it has also been accredited by the Indian Road Congress.
- The recycling value of the bamboo barrier is 50-70% whereas that of steel barriers is 30-50%.
- The bamboo species used in the making of this barrier is Bambusa Balcoa, which has been treated with creosote oil and coated with recycled High-Density Poly Ethylene (HDPE).

Significance:

- This achievement is remarkable for the bamboo sector and India as a whole, as this crash barrier offers a perfect alternative to steel and addresses environmental concerns and their aftermath.
- Furthermore, it is a rural and agriculture-friendly industry in itself making it an even more significant milestone.

MSME COMPETITIVE (LEAN) SCHEME UNDER MSME CHAMPIONS SCHEME LAUNCHED



Why in news?

- Recently, Ministry of Micro, Small & Medium Enterprises launched the MSME Competitive (LEAN) Scheme.

Key Highlights:

- This Scheme is an extensive drive to create awareness amongst MSMEs about LEAN Manufacturing practices and motivate and incentivize them to attain LEAN levels while also encouraging them to become MSME Champions.
- Under the scheme, MSMEs will implement LEAN manufacturing tools like 5S, Kaizen, KANBAN, Visual workplace, Poka Yoka etc under the able guidance of trained and competent LEAN Consultants to attain LEAN levels like Basic, Intermediate and Advanced.
- Through the LEAN journey, MSMEs can reduce wastages substantially, increase productivity, improve quality, work safely, expanding their markets, and finally becoming competitive and profitable.

Implementation:

- To support MSMEs, Government will contribute 90% of implementation cost for handholding and consultancy fees. There will be an additional contribution of 5% for the MSMEs which are part of SFURTI clusters, owned by Women/SC/ST and located in NER.
- In addition to the above, there will be an additional contribution of 5% for MSMEs which are registering through Industry Associations/ Overall Equipment Manufacturing (OEM) organizations after completing all levels.
- There is a unique feature to encourage Industry Associations and OEMs for motivating their supply chain vendors to participate in this scheme.

Way Forward:

- LEAN will not only attempt to improve quality, productivity & performance, but also the capability to change the mind-sets of manufacturers and transform them into a world class manufacturers.

NITI AAYOG RELEASES TASK FORCE REPORT ON GAUSHALAS



Why in news?

- Recently, NITI Aayog released the Task Force report titled "Production and Promotion of Organic and Bio fertilisers with Special Focus on Improving Economic Viability of Gaushalas".
- The Task Force was constituted by NITI Aayog to suggest measures to make gaushalas economically viable, address problem of stray and abandoned cattle and effective utilization of cow dung and cow urine in agriculture and energy sectors.

Details:

- Task force members and representatives of Gaushalas shared their experiences and views about the role of gaushalas in promotion of sustainable farming and waste to wealth initiative.
- The report provide factual estimates of operating costs and fixed costs and other issues in respect of gaushalas and cost and investments involved in setting up Bio-CNG plant and PROM plant in Gaushalas.
- It provides suggestions and recommendations for improving financial and economic viability of Gaushalas, channelizing potential of stray, abandoned and uneconomic cattle wealth for promoting natural and organic farming.

Role in economy:

- Cattle were an integral component of the traditional farming system in India and Gaushalas can be of great help in promoting natural farming and organic farming.
- The agri-inputs developed from cattle wastes- cow dung and cow urine can reduce or replace agro chemicals, serving as plant nutrients and plant protection, on economic, health, environmental and sustainability reasons.
- The effective utilization of the cattle waste is an ideal example of circular economy that harness waste to wealth concept.

Sustainable farming:

- The unique strength of south Asian agriculture is the integration of livestock with crops. In last 50 years,

serious imbalance emerged in the use of inorganic fertilizer and livestock manure. This is adversely affecting soil health, food quality, efficiency, environment and human health.

- Recognising this, the Govt of India is promoting sustainable agriculture practices such as organic farming and natural farming.
- Gaushalas can become an integral part in scaling up natural and sustainable farming by acting as a resource centres for supply of bio and organic inputs.

Way Forward:

- The Union Budget 2023 has given special importance to natural farming and the recommendations of the taskforce report will further augment these efforts.

MOU SIGNED FOR SKILLING OF RURAL YOUTH AND EMPOWERING WOMEN



Why in news?

- In a historic step to make Lakhpati Didis (Women with annual earnings of Rs. 1 lakh and more) from the Self Help Groups (SHGs), the Ministry of Rural Development signed an Memorandum of Understanding with the Ministry of Ayush to collaborate in developing skilled personnel by imparting training to rural poor youth and women's for Ayush healthcare system under the Deen Dayal Upadhyaya-Grameen Kaushalya Yojana (DDU-GKY).

Key Highlights:

- Through this MoU it is expected to create synergy and convergence between both ministries, and enable fulfilment of larger goal of community development and poverty alleviation in rural areas.
- The collaboration will also ensure the training of 22000 rural poor youth under NSQF compliant courses namely Panchakarma Technician, Panchkarma Assistant, Ayurvedic Masseur, Kshara Karma Technician, Cupping Therapy Assistant etc., under DDU-GKY and their placement in 1st phase.
- To facilitate this, Ministry of Rural Development will ensure funding i.e., Central Government and State Government on the basis of the criteria given for the DDU-GKY for training as per the DDU-GKY Norms and ensure monitoring of the program outcome as per DDU-GKY Guidelines.

- Both Ministries of Rural Development and Ministry of AYUSH will also form a Joint Working Group in which officers of both the ministries will participate and will identify such other subjects on which work can be done under the whole of Government Approach and take the program forward.
- They will ensure that a nodal agency responsible is deputed for implementing these trainings to Rural Poor Youth under NSQF compliant courses and ensure their assessment, certification and placement and reporting of the same on DDU-GKY Kaushal Bharat Portal along with proof of placements.

DDU-GKY:

- Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) is one of the flagship poverty alleviation programs which was launched on 25th September 2014 under National Rural Livelihoods Mission, Ministry of Rural Development which is aimed at skilling the poorest of the poor youth between the ages of 15 and 35 years from Rural India.
- It is critical for the country to develop itself as the skill hub of the nation as well as the world. As a part of the Skill India campaign, it plays an instrumental role in supporting the social and economic programs of the government like the Make in India, Digital India, Smart Cities and Start-Up India, Stand-Up India campaigns to position India as the globally preferred manufacturing hub, while dovetailing its efforts to significantly contribute in other flagship programs of the nation.
- A total of 13.88 lakh candidates have been trained and 8.24 lakh candidates have been placed under DDU-GKY so far.

JINDAL STEEL GETS INDIA'S FIRST BIS LICENCE TO MAKE FIRE-RESISTANT STEEL



Why in news?

- Recently, Jindal Steel and Power (JSP) has received Bureau of Indian Standards (BIS) certification to manufacture India's first fire-resistant steel structures at its rail mill and special profile mill in Raigarh, Chhattisgarh.

Key Highlights:

- The hot rolled structural steel, manufactured as per IS 15103, can be used for high-temperature or fire-prone areas and can withstand temperatures up to 600 degrees Celsius for a maximum duration of three hours.
- Fire protection has been a challenge in the design of steel structures. The availability of fire-resistant steel will result in more efficient designs of structures.
- The new BIS 15103 grade will be used to manufacture steel structures for infrastructure projects such as industrial structures, refineries, bridges, metro projects, and steel and power plants as well as in hospitals, and commercial and residential buildings.

About JSP:

- JSP is an industrial powerhouse with a dominant presence in the steel, mining and infrastructure sectors.
- With an investment of USD 12 billion across the globe, the company said it was continuously scaling its capacity utilisation and efficiencies to capture opportunities for building a self-reliant India.

SECOND INDO-PACIFIC ECONOMIC FRAMEWORK (IPEF) NEGOTIATING ROUND

**Why in news?**

- Recently, an Inter-Ministerial delegation from India led by Department of Commerce participated in the second Indo-Pacific Economic Framework for Prosperity (IPEF) negotiating round in Bali, Indonesia.

Participants:

- Negotiators from 13 other countries, including, the United States, Australia, Brunei Darussalam, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, and Vietnam also participated in the Bali negotiating round.

Four pillars:

- During the Bali Round, discussions covered all the four pillars of the IPEF:
 - a) Trade (Pillar I);
 - b) Supply Chains (Pillar II);
 - c) Clean Economy (Pillar III); and

- d) Fair Economy (Taxation & Anticorruption) - (Pillar IV).

India participated in the discussions related to Pillars II to IV.**Key Highlights:**

- Building on the discussions that took place during the previous rounds; First IPEF Round held in Brisbane, Australia, in December 2022, and the Special negotiating round held in New Delhi, India in February 2023, in Bali, IPEF Partners undertook in-depth text-based discussions and conducted follow-up conversations as they work to advance a shared vision for an open, connected, prosperous and resilient Indo-Pacific region.
- During the negotiations, the Chief Negotiator of India reiterated India's belief that IPEF will deepen the economic engagement and promote inclusive development through enhancement in trade and investment in the region.
- On the side-lines of the negotiating round, the Chief Negotiator and the Pillar Leads also held bilateral meetings with IPEF countries and other concerned stakeholders.

Way Forward:

- IPEF Partners have committed to an aggressive negotiating schedule throughout 2023 with the objective of realizing concrete benefits to enhance a shared vision for economic competitiveness and prosperity in their respective economies.

INDIA'S FIRST CABLE-STAYED RAILWAY BRIDGE NEARING COMPLETION

**Why in news?**

- Twenty years on, the delayed construction of the Anji Khad Bridge in Reasi district of Jammu is a major chink in the Indian Railways' ambitious plan to connect Kashmir to Jammu and the rest of India seamlessly.
- After missing multiple deadlines, including those in 2017 and 2022, the ₹400-crore project to build India's first cable-stayed rail bridge is finally nearing completion.

Details:

- Perched precariously over the Anji Khad River that swells every monsoon, the bridge is supported by a single pylon, a large vertical tower-like structure, soaring 1,086 feet from the riverbed, the height of a 77-storey building.
- After the bridge is completed, it will pave the way for a single broad-gauge track for trains connecting Jammu to Baramulla, via Srinagar, along a 326-km railway line.

Challenges:

- The structure of the bridge itself could sustain winds blowing up to 216 km per hour. However, every time the windspeed crosses 45 kmph, construction work, including laying casts, has to be stopped, due to the risk of machinery, like tower cranes, swaying.
- A running train, whose speed limit would be restricted to 30 kmph, can sustain a wind speed of up to 90 kmph.
- However, engineers at the bridge site said that the execution of the Udhampur-Srinagar-Baramulla rail link project, pegged at over ₹37,000 crore, is more challenging due to persistent climatic issues and the treacherous nature of the difficult Himalayan terrain.

Stakeholders:

- The project was commissioned by the Northern Railways and is being executed by Konkan Railway Corporation Ltd. (KRCL) and Hindustan Construction Company.
- Konkan Railway has prior experience of executing the largest railway project of the century in Asia. It cut through ghat sections and built 96 tunnels while laying a 756-km railway line.

Current Status:

- Out of the total length of 326 km, work has been completed on 215 km, including the Jammu-Udhampur-Katra stretch (79 km) on the Jammu side and the Banihal-Qazigund-Baramulla stretch (136 km) in the Kashmir Valley.
- The work on the intervening Katra-Banihal section of nearly 111 km is currently in progress.
- It is the most difficult section of the project, what with construction of 27 tunnels on a stretch of 97 km and 37 bridges in a 7-km section. Nearly 87% of the work is that of tunnelling.

Background:

- The idea was first conceived in 2002 during Atal Bihari Vajpayee's tenure as Prime Minister, and was declared a "national project".
- The nearest border area is Suchetgarh, about 92 km from the bridge construction site, making it a politically sensitive project. After 2016, construction work was delayed for a number of reasons, including the Pulwama attack and the onset of COVID-19.

DEFENCE**IAF'S 1ST SUPERSONIC SQUADRON COMPLETES 60 YEARS****Why in news?**

- Recently, the No. 28 Squadron of the Indian Air Force (IAF), nicknamed 'The First Supersonic', completed 60 years in service.

**Timeline:**

- In March 1963, the Squadron inducted the Soviet-era MiG-21s in Chandigarh which marked a turning point in the IAF's inventory, as they were its first supersonic fighters.
- Significantly, India got the MiG-21s as a counter to Pakistan being given 12 F-104 Starfighter supersonic aircraft by the US. The Starfighter was the first supersonic aircraft in the Indian subcontinent.
- On 16 October 1987, after over two decades since induction, the No. 28 Squadron transitioned from the MiG-21s to MiG-29s. Given their experience in inducting the MiG-21s, the squadron was responsible for inducting the MiG-29s.

The 1965 and 1971 wars:

- In both 1965 and 1971 India-Pakistan wars, the No. 28 Squadron and the MiG-21s played an important role in India's success. During the 1965 Monsoon war, the squadron was central in conducting combat air patrol duties. This development had major ramifications during the 1971 war.
- No 28 carried out successful steep dive bombing attacks on the two Pakistani airfields of Tezgaon and Kurmitola during the 1971 war. They also played a major role in the attack on the Governor's House in Dhaka, this led to the governor's resignation and hastened Pakistan's surrender.

MiG-21 induction & Soviet deal:

- While the geopolitics of the era and the need to match Pakistan's Starfighters were central to acquiring MiG-21s from the Soviet Union, the linked incentives in the deal ensured India purchase the fighter.
- The Soviet Union provided India with the most fiscally prudent deal through licensed production

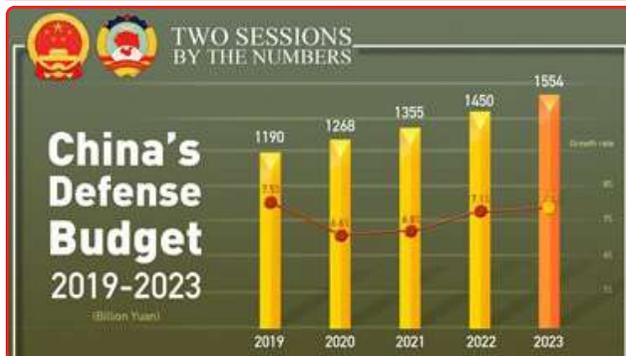
agreements in the purchase, which enabled India to produce MiG-21s at the Aircraft Division in Nasik.

- The first batch of the Squadron under Dilbag Singh, trained near Tashkent in Kazakhstan prior to inducting the MiG-21s in March 1963.
- India has manufactured over 800 variants of the MiG-21.

Specs of MiG-21:

- The MiG-21 is essentially a fighter and interceptor aircraft. It was amongst the first to successfully combine both characteristics in one aircraft. In its early iterations, it was a lightweight, short-range fighter that achieved a speed of Mach-2 (2,450 km/hour).
- Development began in the 1950s in the Soviet Union, and it was supposed to be a successor to the subsonic MiG-17s and 19s. It has since been deployed by over 60 countries since its development in the 1950s.
- Over the years, it has had multiple variants, these include the MiG-21 F, F-13, FL, PF, U, R, M, SM, and PF-13, amongst others. It is the most widely produced supersonic fighter aircraft.
- Currently, the IAF still operates 4 squadrons of the MiG-21 which are supposed to be phased out by 2025.

CHINA INCREASES DEFENCE SPENDING BY 7.2%



Why in news?

- Recently, China announced a hike in defence spending by 7.2% to \$225 billion in 2023, saying the rise was needed to deal with "complex security challenges".
- It also announced a lower than expected growth target of "around 5%" for the year.

Key Highlights:

- It announced an economic growth target of "around 5%" for 2023. In 2022, the economy failed to meet its 5.5% target, growing by 3% as it struggled with the impact of the "zero-COVID" policy, which was finally withdrawn in December.
- China would add "around 12 million new urban jobs" this year as well as continue to boost strategic, high-tech industries while "defusing major economic and financial risks", which included local government

debt as well as financial problems continuing to plague real estate enterprises.

Defence spending:

- A draft Budget presented to the NPC, proposed a 7.2% hike to take defence spending to 1.55 trillion Yuan (\$225 billion), up from 1.45 trillion Yuan in 2022. In dollar terms, the Budget actually declined from \$230 billion in 2022 given the depreciation in the Yuan.
- China's still sizeable Budget remains around three times that of India's.

New Premier:

- Outgoing Premier Li Keqiang delivered his last report to the National People's Congress (NPC), or Parliament.
- He is set to be replaced by a close ally of President Xi Jinping, Li Qiang, who was promoted as the second-ranked leader of the Politburo at the ruling Communist Party's once-in-five-year congress in October 2022.
- The NPC is a largely ceremonial legislature that endorses party policies as well as approves government appointments.

FRINJEX 23



Why in news?

- Recently, the maiden Joint Military Exercise FRINJEX-23 between Indian Army and French Army will be conducted at Pangode Military Station, Thiruvananthapuram, Kerala.

Key Highlights:

- It is for the first time armies of both the nations are engaging in this format with each contingent comprising of a Company Group each from the Thiruvananthapuram based Indian Army troops and French 6th Light Armoured Brigade.
- The exercise is aimed at enhancing inter-operability, coordination and cooperation between both forces at tactical level.
- The scope of the exercise involve establishment and operationalisation of a joint command post to secure an envisaged area for undertaking joint humanitarian assistance and disaster relief, establishing an Internally Displaced Population (IDP) camp and move of disaster relief material.

Way Forward:

- The Joint exercise will further cement defence cooperation with France which is a key aspect of the overall Indo-France strategic partnership.

SHALIZA DHAMI IS FIRST WOMAN TO BE APPOINTED TO AN IAF COMMAND POST

**Why in news?**

- In the first command appointment for a woman officer in the Indian Air Force, Group Captain Shaliza Dhami has been selected to take over the command of a frontline combat unit in the Western sector.

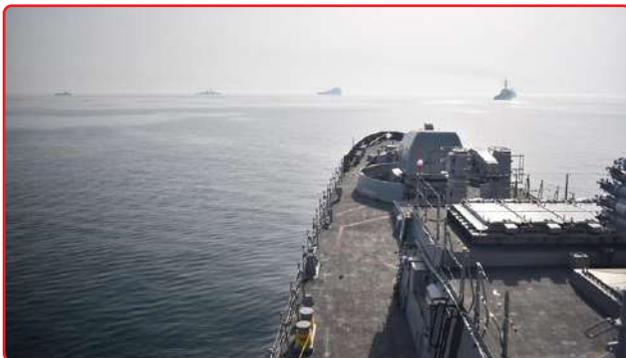
Details:

- Having been commended by the Air Officer Commanding-in-Chief on two occasions, the officer is presently posted in the Operations branch of a frontline Command Headquarters.
- Group Captain Dhami was commissioned in 2003 as a helicopter pilot and has over 2,800 hours of flying experience.
- She is a qualified flying instructor, and has served as Flight Commander of a helicopter unit in the Western sector.

Background:

- The armed forces have opened up command appointments for women officers following a Supreme Court verdict.

INS TRIKAND IN INTERNATIONAL MARITIME EXERCISE/CUTLASS EXPRESS 23 (IMX/CE-23)

**Why in news?**

- Recently, INS Trikand participated in Sea Phase-I of the International Maritime Exercise/Cutlass Express 2023 (IMX/CE-23) held in the Gulf from 05 to 09 March 2023.
- During the period, the ship exercised with naval units of Bahrain, Japan, Oman, Saudi Arabia, UAE, UK and USA with the common aim of enhancing maritime security, keeping shipping lanes open and ensuring safety of navigation.

About IMX/CE-23:

- IMX/CE-23 is one of the largest multinational maritime exercises in the world.
- This is Indian Navy's maiden IMX participation.
- It is coordinated by the US-led Combined Maritime Forces (CMF).
- Combined Maritime Forces (CMF) – a 34-nation naval group that seeks to promote security, stability, and prosperity.
- India became an associate member of CMF in 2022.

About INS Trikand:

- INS Trikand is part of the Indian Navy's Western Fleet and operates under the Western Naval Command headquartered at Mumbai.
- 'INS Trikand' is a Stealth Frigate commissioned into the Indian Navy in 2013.
- It is the last of the three "Follow On Talwar Class" frigates built in the Russian Federation.
- The other ships of the class: INS Teg and INS Tarkash.

TROPEX - 23

**Why in news?**

- Every second year, the Indian Navy sails out to sea and conducts a major battle exercise to verify that it is ready in all respects for war.
- 2023 exercise, called the "Theatre Level Operational Readiness Exercise for 2023" (TROPEX-23), culminated recently in the Arabian Sea after running for four months from November 2022 to March 2023.

Participation:

- The overall exercise construct included Coastal Defence exercise Sea Vigil and the Amphibious Exercise AMPHEX. Together, these exercises also

witnessed significant participation from the Indian Army, the Indian Air Force and the Coast Guard.

Key Highlights:

- Set in the Indian Ocean including the Arabian Sea and the Bay of Bengal, the theatre of operations for the exercise extended approximately 4300 nm from North to South upto 35 deg South Latitude and 5000 nm from Persian Gulf in the West to North Australia coast in the East, spanning an area of over 21 million square nautical miles.
- TROPEX 23 witnessed participation of approximately 70 Indian Navy ships, six submarines and over 75 aircraft.
- These warships are from both the western and eastern naval fleets. One year, the western fleet sails to the Bay of Bengal to participate in TROPEX, while the eastern fleet sails to the Arabian Sea the following year. Part of the fleet is designated as the enemy "Red Force", which takes on the "Blue Force" – an Indian Navy component.
- The overall exercise includes a combat firing phase, in which warships fire torpedoes, depth charges, surface-to-air missiles and surface-to-surface missiles in order to ensure that the warships' ordnance is firing as it should.

Conclusion:

- The culmination of TROPEX-23 brings to an end an intense operational phase for the Indian Navy that commenced in November 2022.

EXERCISE LA PEROUSE – 2023



Why in news?

- The third edition of the multilateral exercise La Perouse commenced in the Indian Ocean Region recently.

About La Perouse:

- The biennial exercise La Perouse is conducted by the French Navy, and is aimed at enhancing maritime domain awareness and optimising maritime coordination amongst the participating navies in the Indo-Pacific Region.

Participants:

- This edition will witness participation of personnel, ships and integral helicopters of Royal Australian

Navy, French Navy, Indian Navy, Japanese Maritime Self Defence Force, Royal Navy and the United States Navy.

Key Highlights:

- The two-day exercise provides an opportunity for like-minded navies to develop closer links in planning, coordination and information sharing for seamless maritime operations.
- The exercise will witness complex and advanced naval operations including surface warfare, anti-air warfare, air defence exercises, cross deck landings and tactical manoeuvres.
- Indigenously built guided missile frigate INS Sahyadri and fleet tanker INS Jyoti will be participating in this edition of the exercise.

Way Forward:

- Participation of Indian Navy in the exercise showcases the high levels of synergy, coordination and inter-operability between the friendly navies, and their commitment to a rules-based international order in the Indo-Pacific region.

EXERCISE BOLD KURUKSHETRA



Why in news?

- The Singapore Army and Indian Army participated in the 13th edition of Exercise Bold Kurukshetra, a bilateral armour exercise from 06-13 March 2023 at Jodhpur Military Station, India.

Key Highlights:

- For the first time in the exercise series, both armies participated in a command post Exercise, which involved Battalion and Brigade level planning elements and computer wargaming.
- Hosted by the Indian Army, the exercise involved soldiers from the 42nd Battalion, Singapore Armoured Regiment and an Armoured Brigade of Indian Army.
- The ten-day long joint training fostered common understanding of mechanised warfare in emerging threats and evolving technologies, developing inter-operability through a computer simulation-based Wargame using joint operational and tactical procedures controlled through a joint command post.

About Exercise Bold Kurukshetra

- Exercise Bold Kurukshetra is conducted under the ambit of the bilateral arrangement for the joint Army Training and exercises between the Singapore Army and the Indian Army.
- First conducted in 2005, this exercise underscores the strong and long-standing bilateral defence relationship between both countries and enhances cooperation between the two armies.
- Both defence establishments also interact regularly through high-level visits, policy dialogues, courses and other professional exchanges.

DEFENCE ACQUISITION PROPOSALS VALUED AT ₹70,500 CR. CLEARED



Why in news?

- The Defence Acquisition Council (DAC), chaired by Defence Minister recently accorded Acceptance of Necessity (AoN) for capital acquisition proposals estimated at ₹70,500 crore.
- Some of the projects are long-gestation projects involving indigenous design and development including the development of marine diesel engine.

Key Highlights:

- The AoN has been accorded for capital acquisitions under 'Buy Indian-IDDMM' (Indigenously Designed, Developed and Manufactured).
- Out of the total proposals, Indian Navy proposals constitute more than ₹56,000 crore, which largely includes indigenous BrahMos cruise missiles, Shakti Electronic Warfare (EW) systems, Utility Helicopters-Maritime among others.
- Other proposals include a Long-Range Stand-Off Weapon (LRSOW) for the Indian Air Force (IAF) to be designed and developed indigenously and integrated on SU-30 MKI fighters and the indigenous 155mm/52-Calibre Advanced Towed Artillery Gun System (ATAGS) along with High Mobility Vehicles (HMs) and Gun Towing Vehicles (GTVs) for the Army.

What's next?

- Accordance of AoN for medium-speed marine diesel engine is a significant step as, for the first time, India is venturing into the development and manufacturing

- of such engines indigenously to achieve self-reliance.
- An AoN is the beginning of the long winding procurement process.

ENVIRONMENT

FOSSIL FUELS FIRMS FAILED TO CURB METHANE EMISSION



Why in news?

- According to the International Energy Agency's (IEA) annual Methane Global Tracker report, fossil fuel companies emitted 120 million metric tonnes of methane into the atmosphere in 2022, only slightly below the record highs seen in 2019.
- These companies have done almost nothing to curb the emissions despite their pledges to find and fix leaking infrastructure.
- The report has come after energy giants such as Shell, BP, ExxonMobil and others reported record profits in 2022 as the Russia-Ukraine war drove up oil and natural gas prices.

What are the findings of the report?

- The energy sector accounts for around 40 per cent of the total average methane emissions from human activity, as oil and natural gas companies are known to release methane into the atmosphere when natural gas is flared or vented. The greenhouse gas is also released through leaks from valves and other equipment during the drilling, extraction and transportation process.
- More than 260 billion cubic metres (bcm) of natural gas (mostly composed of methane) is wasted through flaring and methane leaks globally today. Although it's impossible to avoid all of this amount, the right policies and implementation can bring 200 bcm of additional gas to markets.
- In the oil and gas sector, emissions can be reduced by over 75 per cent by implementing well-known measures such as leak detection and repair programmes and upgrading leaky equipment.
- It further mentioned that 80 per cent of the available options to curb the release of methane could be implemented by the fossil fuel industry at net zero cost.

Impact on global temperatures:

- Ultimately, reducing 75 per cent of the wastage of natural gas could lower global temperature rise by nearly 0.1 degree Celsius by mid-century.
- This would have the same effect on the soaring global temperatures as immediately stopping greenhouse gas emissions from vehicles such as cars, trucks, buses and two- and three-wheeler vehicles across the world. However, fossil fuel companies have done little to tackle the problem.

How are methane emissions driving climate change?

- Methane is a greenhouse gas, which is responsible for 30 per cent of the warming since preindustrial times, second only to carbon dioxide. A report by the United Nations Environment Programme observed that over a 20-year period, methane is 80 times more potent at warming than carbon dioxide.
- In recent years, scientists have repeatedly sounded the alarm regarding the increasing amount of methane in the atmosphere.
- In 2022, the US National Oceanic and Atmospheric Administration (NOAA) said that the atmospheric levels of methane jumped 17 parts per billion in 2021, beating the previous record set in 2020.

INFLUENZA VIRUS MIGHT HAVE MARINE ORIGIN WITH FISH AS EARLY HOST**Why in news?**

- A new study has found that the order Articulavirales, which includes the influenza viruses, first emerged in aquatic ecosystems, and fish might have been the earliest hosts of influenza virus.

Key findings:

- The study found that invertebrates rather than fish might have likely been among the first hosts of influenza virus.
- The study found that influenza viruses can infect all classes of fish, and Siberian sturgeon (*Acipenser baerii*) may have served as early, if not the first, hosts of influenza virus before it spilled over into mammals.
- Besides aquatic origin, the researchers say that the order Articulavirales may have persisted since

about 640 million years ago when corals branched off to form other members of Articulavirales in other animals.

Background:

- A virologist at the University of Sydney, analysed the RNA from two coral species and found evidence of infection with the viruses. The discovery of the virus in corals gave the first hint that the influenza viruses might have been born at sea.
- A 2018 identification of a distant relative of influenza in hagfish only strengthened the possibility of a marine origin of the virus.
- Having found the virus in two coral species, the researchers turned their attention to Siberian sturgeon, and surprisingly found evidence of the virus in sturgeon fish.
- Phylogenetic analysis of the three polymerase segments revealed that the sturgeon-associated virus consistently falls within the influenza clade but is basal to all known influenza viruses.

Transmission:

- The findings do suggest that influenza viruses can infect all classes of fish such that these animals may have served as early, if not the first, hosts of influenza virus before it spilled over into mammals.
- The virus in the Articulavirales order utilises a large repertoire of transmission routes.
- If influenza virus spreads via respiratory droplets in the case of mammals and faeces among birds, the transmission of the virus from one fish to another is thought to be through the respiratory route.

NEW WILDLIFE CORRIDOR TO COME UP AFTER REINTRODUCTION OF TIGERS IN MNP**Why in news?**

- Recently, the Union Minister Jyotiraditya Scindia said a new wildlife corridor will form between Madhya Pradesh and Rajasthan after three tigers are released in Madhav National Park (MNP) in MP's Shivpuri district.

Details:

- Shivpuri borders Sheopur district which houses the Kuno National Park, the new home of 20 cheetahs brought from Namibia and South Africa.

- ⇒ With the reintroduction of three tigers, a wildlife corridor linking MNP, Kuno National Park, Panna Tiger Reserve (all in MP) and Ranthambore Tiger Reserve in Rajasthan will come up.

Reintroduction in MNP:

- ⇒ A tiger captured from the campus of the Maulana Azad National Institute of Technology (MANIT) in October will be brought from Satpura Tiger Reserve, while the two tigresses will be brought from Panna and Bandhavgarh Tiger Reserves. The tiger, after its capture in Bhopal, was released in Satpura in October.
- ⇒ The three animals, after being kept in separate enclosures for some time, will be released in the wild at MNP which is spread over 375 square kilometres.
- ⇒ This is the third time the MP forest department is going to reintroduce a tiger in a wildlife sanctuary following successful reintroductions in Panna Tiger Reserve and Nauradehi Wildlife Sanctuary in Sagar district.

Tigers in MNP:

- ⇒ MNP has a good prey base for big cats. The number of tigers was fairly good in MNP in 1970
- ⇒ But since 2010, no tiger has been seen in the area, with wildlife experts blaming hunting for their disappearance.
- ⇒ As per reports, tigers from Rajasthan roamed around MNP for some time in 2010-12.

About MNP:

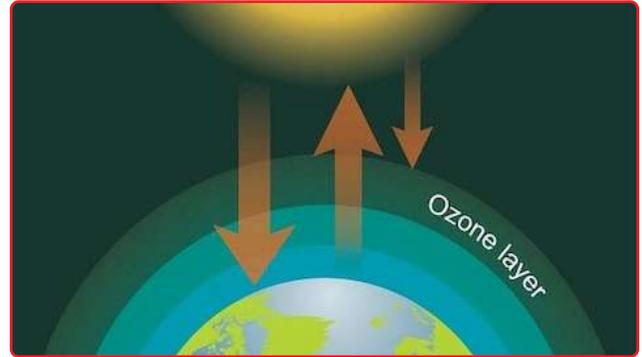
- ⇒ The park is situated near Shivpuri town and is a part of the upper Vindhyan hills.
- ⇒ The Park was the hunting ground of Mughal emperors and Maharaja of Gwalior. It got the status of a National Park in 1958.
- ⇒ The forest is home to tigers, leopards, Nilgai, and Chinkara (*Gazella bennettii*) and Chousingha (*Tetracerus quadricornis*) and Deers (Chital, Sambar and Barking Deer) among others.
- ⇒ Tiger Corridor: The Park falls within one of the 32 major Tiger Corridors of the country, which are operationalised through the Tiger Conservation Plan. Tiger Conservation Plan is implemented under the Wildlife (Protection) Act, 1972.
- ⇒ Madhav National Park is a part of the Ranthambhore-Kuno-Madhav (Madhya Pradesh and Rajasthan) Tiger Corridor of Central India & Eastern Ghats landscape.
- ⇒ The Park is currently facing displacement and rehabilitation issues as it is home to Particularly Vulnerable Tribal Groups (PVTG)s like Saharia.

SMOKE PARTICLES FROM WILDFIRES CAN CAUSE EROSION IN OZONE LAYER: RESEARCH

Why in news?

- ⇒ A wildfire can send smoke into the stratosphere, where it can linger for up to a year. According to a

new MIT study, these particles can cause chemical reactions that erode the protective ozone layer that protects the Earth from the sun's harmful ultraviolet radiation while suspended there.



Impact of Mega fire in Australia:

- ⇒ The study, focuses on the smoke from the 'Black Summer' mega-fire that burned in eastern Australia from December 2019 to January 2020. The fires, which were the most destructive on record in the country, scorched tens of millions of acres and released more than a million tonnes of smoke into the atmosphere.
- ⇒ The MIT team identified a new chemical reaction by which smoke particles from the Australian wildfires made ozone depletion worse.
- ⇒ By triggering this reaction, the fires likely contributed to a 3-5 per cent depletion of total ozone at mid-latitudes in the southern hemisphere, in regions overlying Australia, New Zealand, and parts of Africa and South America.
- ⇒ The researchers' model also indicates the fires had an effect in the polar regions, eating away at the edges of the ozone hole over Antarctica. By late 2020, smoke particles from the Australian wildfires widened the Antarctic ozone hole by 2.5 million square kilometres, 10 per cent of its area compared to the previous year.

Long-term effect of wildfires on ozone recovery:

- ⇒ The United Nations recently reported that the ozone hole, and ozone depletion around the world, are on a recovery track, thanks to a sustained international effort to phase out ozone-depleting chemicals.
- ⇒ But the MIT study suggests that as long as these chemicals persist in the atmosphere, large fires could spark a reaction that temporarily depletes ozone.

NIRDPR, ICRISAT SIGN MOU TO PROMOTE DRYLAND CROPS, CLIMATE-SMART FARMING

Why in news?

- ⇒ Recently, the National Institute of Rural Development and Panchayati Raj (NIRDPR) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) signed a MoU to strengthen evidence-based research and capacity building on critical development issues.



Mandate:

- The Memorandum of Understanding aims to promote collaboration between the two institutions in areas such as climate change adaptation, rural entrepreneurship development, value chain development, sharing international best practices, scaling-up of identified agricultural and rural technologies, and livelihood development.

Key Highlights:

- Under the agreement, the two institutions will focus on different collaborative activities by sharing each other's strengths, including developing Rurban' clusters for ICRISAT mandate crops through value chain development, encouraging rural incubation and entrepreneurship development by integrating with National Rural Livelihood Mission (NRLM) activities.
- Enhancing the value of new generation watersheds through climate proofing of Gram Panchayats in India and promoting international best practices for poverty alleviation through agriculture and rural development programmes is also included.

Way Forward:

- The technical competence of ICRISAT in research and development on high-yielding varieties and related value-added products, and the strength of NIRDPR in creating business opportunities and marketing support through self-help groups (SHGs) under NRLM across the country, will act in synergy to transform rural livelihoods.

EURASIAN OTTER RAISES HOPE FOR J&K STREAM



Why in news?

- Recently, a trio of scientists from the University of Jammu's Institute of Mountain Environment (IME) at Bhaderwah camera-trapped three Eurasian otters (*Lutra lutra*); two adults and one sub-adult in the Neeru stream of the Chenab catchment.
- They are semi-aquatic carnivorous mammal.

Status of Eurasian otter:

- Since the Eurasian otter, classified as 'near threatened' on the IUCN Red List is regarded as a flagship species and indicator of high-quality aquatic habitats, its presence is encouraging for the health of the Neeru stream.

Study area:

- The study area is drained by the Neeru, a 30-km perennial stream that originates in the Kailash Lake at 3,900 metres above mean sea level and drains into the Chenab at Pul-Doda.
- The Neeru is a tributary of the Chenab River.
- Fed by 13 major tributaries, the stream flows through several small villages, semi-urban and urbanised areas, with Bhaderwah being the largest settlement.

Significance:

- Apart from putting an end to doubts about the animal's presence in the upper Chenab catchment, their findings have confirmed that some stretches of the Neeru remain unpolluted.
- These stretches are away from human habitations and comprise stony beds and narrow valleys that are virtually unsuitable for sand and gravel mining, providing some hope for the otter's survival.

NIOT TO SET UP GREEN, SELF-POWERED DESALINATION PLANT IN LAKSHADWEEP



Why in news?

- Stepping up from its ongoing initiative of providing potable water on six islands of Lakshadweep using low temperature thermal desalination (LTTD) technology, the Chennai-based National Institute of Ocean Technology (NIOT) is working at making this process free of emissions.

How current desalination plants work?

- Currently, the desalination plants, each of which provides at least 1,00,000 litres of potable water every day, are powered by diesel generator sets; there being no other source of power on the islands.
- The LTTD exploits the difference in temperature (nearly 15 degrees Celsius) in ocean water at the surface and at depths of about 600 feet. This cold water condenses water at the surface, which is warmer but whose pressure has been lowered using vacuum pumps.
- Such depressurised water can evaporate even at ambient temperatures, this resulting vapour when condensed is free of salts and contaminants and fit to consume.
- However, the need for diesel power to reduce the water pressure means that the process is not fossil-fuel free and also consumes diesel, a precious commodity on the islands that has to be shipped from the mainland, critical for powering the electric grid.

Ocean thermal energy:

- The NIOT, an institute under the aegis of the Ministry of Earth Sciences (MoES), has worked for years on harnessing energy from the ocean. However, ocean thermal technology, while plausible for islands, was unlikely to be useful for supplying power onshore.
- For such plants to work, a large gradient (difference in temperature between the surface and the ocean depths) is required. In Lakshadweep, these depths can be achieved fairly easily unlike, say, off the coast of Chennai.
- While demonstration plants were funded by the MoES, the existing desalination plants were funded by the Lakshadweep administration.

Way Forward:

- Currently, there are five desalination plants in operation on the Lakshadweep islands. Four more were expected to be functioning in the coming months.
- The proposed self-sustaining plant, the 10th plant is expected to be ready later in 2023.

HORSESHOE CRABS DISAPPEARING OFF ODISHA'S COAST

Why in news?

- Scientists have urged Odisha government to come up with a robust protection mechanism for Horseshoe crabs before the living fossil becomes extinct due to destructive fishing practices.
- They appealed to the Union Ministry of Environment, Forest and Climate Change to place the horseshoe crabs on the list of marine species for which a Species Recovery Plan has to be developed.



Horseshoe crabs:

- Horseshoe crabs, one of the oldest living creatures on earth and medicinally priceless, appear to be disappearing from their familiar spawning grounds along Chandipur and Balaramgadi coast in Odisha's Balasore district.
- They first discovered horseshoe crabs along Balasore coast and brought the species to the State's notice in 1987.
- Like olive ridley sea turtles, these crabs are basically deep-sea animals.
- They come to coasts of Balasore in Odisha and Digha and Sundarban in West Bengal for breeding purposes. They select a suitable site for laying their eggs. Unfortunately, those eggs are also damaged by local people.
- This is the oldest living creature on Earth. Palaeontological studies say the age of horseshoe crabs is 450 million years.
- The creature has lived on earth without undergoing any morphological change. Scientists are surprised to find strong immune system in animal that helped it survive millions of years.

Medicinal value:

- The blood of this crab is very important for the preparation of rapid diagnostic reagents. All injectable medicines are tested on them. A molecule has been developed from a reagent of horseshoe crab to help treat pre-eclampsia.
- Only a few countries in the world have horseshoe crab population and India is one among them.

Way Forward:

- They suggested that the horseshoe crab's breeding grounds be declared as a conservation reserve to protect the species.

INDIAN ARMY PROMOTING THE NATIONAL GREEN HYDROGEN MISSION

Why in news?

- In line with the 'National Green Hydrogen Mission', the Indian Army has put in motion the process for installation of a Green Hydrogen based Micro Grid Power Plant project in the forward areas along

the Northern borders which are not connected by National / State Grid.

- ⇒ An MoU was accordingly signed between Indian Army and National Thermal Power Corporation Renewable Energy Limited (NTPC REL).



Key Highlights:

- ⇒ Indian Army is providing requisite land on lease for 25 years with a commitment to purchase generated power through a Power Purchase Agreement (PPA).
- ⇒ The proposed projects will be installed by NTPC on Build, Own and Operate (BOO) Models at a jointly identified location in Eastern Ladakh.
- ⇒ The project entails setting up a Solar Power Plant for hydrolysis of water to produce Hydrogen, which, during non-solar hours will provide power through fuel cells.
- ⇒ This will set the stage for similar projects in the future and contribute towards reducing dependence on fossil fuel-based generator sets with concomitant abatement of green-house gas emissions.

Way Forward:

- ⇒ With this MoU, the Indian Army has become the first government organisation to enter into an agreement with National Thermal Power Corporation Renewable Energy Limited with firm plans to roll out similar projects in the future.

IPCC SYNTHESIS REPORT



Why in news?

- ⇒ Highlighting the need for urgent climate action, the Intergovernmental Panel on Climate Change (IPCC)

released its Synthesis Report for the Sixth Assessment Cycle in Interlaken, Switzerland.

- ⇒ The report emphasised the need to reduce greenhouse gas emissions and adapt to human-caused climate change through “mainstream effective and equitable action” for a “liveable sustainable future for all”.

What does the report say?

- ⇒ The Synthesis Report is a compilation of the main findings of the IPCC's Sixth Assessment Report, based on results from three Working Groups (WGs).
- ⇒ WG I evaluated the physical science basis of climate change; WG II evaluated the impacts, adaptation, and vulnerability, and WG III evaluated the mitigation.
- ⇒ The report highlights the urgency of drastically reducing the emission of greenhouse gases and thereby limit rising global temperatures by 1.5°C from pre-industrial levels, set by the Paris Agreement.
- ⇒ Despite the IPCC's warnings in 2018, the increase in greenhouse gas emissions continued so much so that the global surface temperature has already warmed by 1.1°C over pre-industrial levels, leading to extreme and/or unpredictable weather events that risk human health, fortunes, and ecosystems.
- ⇒ Noting the impact of the rise in temperature, it states that such events have made people much more susceptible to food insecurity and water shortages with vulnerable populations disproportionately facing the brunt of climate change.
- ⇒ The report highlighted the economic loss and damages incurred due to climate change and stressed on the need for financial resolution for a more equitable world.

What is the way ahead?

- ⇒ The report suggests climate resilient development that will not only mitigate the effects of climate change but also provide wider benefits.
- ⇒ Access to clean energy, improving air quality, increasing employment opportunities, boosting healthcare through technology, and delivering equity are among the report's recommended goals to help adapt to climate change.
- ⇒ The report also foregrounded the role of financial investments to achieve climate goals and encouraged public funding through central banks, government and financial regulators to reduce emissions, scale up climate resilience and protect marginalised communities.

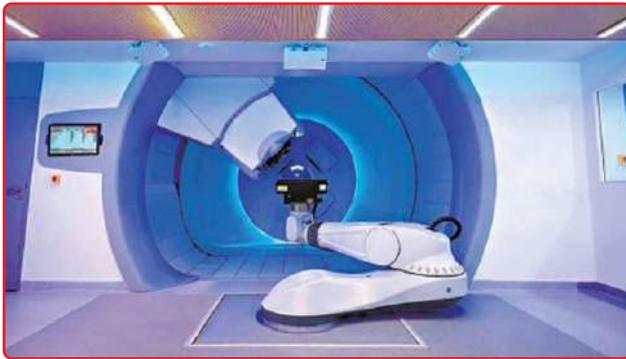
What are the implications for India?

- ⇒ India's priority should be to minimise loss and damage in terms of lives, livelihood and biodiversity, and accelerate equitable action and adaptation.
- ⇒ Several messages emerge that are salient for India: It proposes an approach emphasising ‘climate resilient development’.
- ⇒ As a developing country, India can lower its per-capita emissions through energy efficiency policies already

being implemented in almost every sector. However, it can also decarbonise the energy sector by using cleaner options like solar and renewable energy.

SCIENCE & TECHNOLOGY

PROTON BEAM THERAPY OUT OF REACH FOR MANY WITH CANCER



Why in news?

- Cancer patients in India face twin challenges when it comes to accessing proton beam therapy (PBT): not enough facilities offering the treatment and cost running into many lakhs of rupees.

PBT:

- The PBT is considered a viable alternative to radiation for treating solid tumours, especially head and neck cancers.
- Unlike radiation which uses X-rays, the PBT uses protons to tackle cancer. While radiation can prove toxic to the whole body, protons can destroy cancer cells precisely by targeting tumours, thus saving adjoining organs.
- This has proved useful in the cases of young women whose ovaries and reproductive function could be salvaged through the therapy.

Challenges:

- Apollo Hospital is the only centre in the whole of South and West Asia offering the PBT. With the Indian government shelving a project to install a PBT unit in the All India Institute of Medical Sciences (Jhajjar), there is a huge unmet need for access to the treatment.
- Another project that is yet to see the light of day is the proposed PBT unit at the National Hadron Beam facility of Tata Memorial Hospital in Navi Mumbai. The foundation stone for the project was laid by former Prime Minister Manmohan Singh in 2014.

Skewed ratio:

- Approximately 40,000 children in India are diagnosed with cancer every year and up to 1,400 of them would potentially benefit from the PBT.
- Currently there are 42 PBT machine installations in the U.S., followed by Europe (35), Japan (26), China

(seven), Taiwan (three) and South Korea (two), while India has only one.

- In the U.S., each unit of proton beam therapy serves a population of 7.9 million, while in India there is one unit for 1,412 million people.

High cost:

- The PBT unit in the AIIMS was meant to benefit poor patients as the treatment would have been free of cost. Currently, Apollo Hospital has been able to reduce the cost from nearly ₹1.2 crore (as charged in the U.S.) to between ₹5 lakh and ₹30 lakh.
- But setting up a PBT centre is fraught with infrastructural and regulatory challenges stemming from safety concerns from the Department of Atomic Energy. A PBT machine is a huge contraption, up to three storeys tall and costs nearly ₹500 crore.

JAPANESE SCIENTISTS CREATE MICE WITH TWO FATHERS



Why in news?

- In a breakthrough, Japanese scientists have created mice with two biological fathers, an advance that can pave the way for new fertility treatments in humans.

Details:

- The details of the new study were revealed at the Third International Summit on Human Genome Editing at the Francis Crick Institute in London.
- Researchers hope that the new medical development could also pave way for same-sex partners to have a biological child together in the future.

Key Highlights:

- Previously, scientists have created mice that technically had two biological fathers, and also mice with two mothers. However, this is the first time eggs have been cultivated from male cells.
- The team led by scientists at the universities of Kyushu, and Osaka in Japan made the mice using eggs from male skin cells.
- The novel technique can help two men to have children together. And also help in treatments for severe forms of infertility, such as Turner's syndrome, where one copy of the X chromosome is Oocytes from male cells

How the whole process took place?

- In the study, they transformed a male skin cell with the XY chromosome combination, into an egg, with the female XX version.
- Male skin cells were reprogrammed into a stem cell-like state to create so-called induced pluripotent stem (iPS) cells.
- They then deleted the Y-chromosome and replaced it with an X chromosome that was "borrowed" from another cell to produce iPS cells with two identical X chromosomes.
- The cells were then cultivated in an ovary organoid which replicated the conditions inside a mouse ovary.
- After fertilising the eggs with normal sperm, the team obtained about 600 embryos. These were then implanted into surrogate mice, resulting in the birth of seven mouse pups.
- The efficiency of about 1 per cent was lower than the efficiency achieved with normal female-derived eggs, where about 5 per cent of embryos went on to produce a live birth.
- The baby mice appeared healthy, had a normal lifespan, and went on to have offspring as adults.

What's next?

- The team is working to replicate the breakthrough in human cells. However, it will take some time to achieve that reality.

WORLD'S FASTEST CAMERA CONFIRMS HOW FLAMES FORM SOOT



Why in news?

- Scientists from Germany and the U.S. have built the world's fastest single-shot laser camera, 1,000x faster than its predecessors at capturing extremely short-lived events.
- They used the camera to provide the most precise view, of how a hydrocarbon flame produces soot, which can teach about how this important climate pollutant is produced in kitchen stoves, car engines, and wildfires.

LS-CUP:

- The device's technique is called laser-sheet compressed ultrafast photography (LS-CUP).

- It can resolve a plane of a three-dimensional object like a flame or spray or any turbid media and can "resolve physical or chemical processes" in space and time.
- The LS-CUP consists of laser-sheet imaging, compressed sensing, and a standard streak camera. The laser sheet is a sheet of laser light that illuminates a stable kerosene flame.
- The sheet is emitted as a 15-nanosecond-wide pulse shot at the flame, triggering the release of different types of electromagnetic radiation.
- A beam-splitter splits the radiation signals to two measurement devices, to simultaneously study the evolution of different types of radiation.
- The streak camera, compressed sensing (which entails advanced signal-processing techniques), and prior knowledge of the time intervals at which each type of radiation is emitted are used to reconstruct the signals.

Demonstration:

- The researchers' device can capture images at 12.5 billion frames per second. They used it to record the "emission, soot temperature, primary nanoparticle size, soot aggregate size, and the number of monomers" of polycyclic aromatic hydrocarbons, molecules that form soot.
- They found "strong experimental evidence in support of the theory and modelling of soot inception and growth mechanism in flames". Such evidence can validate models that predict soot formation in industrial processes. Soot changes rainfall patterns and melts glaciers faster.
- In the test, the group was able to reconstruct 200 frames per shot.

Limitation:

- Its primary shortcoming, is the price: their setup cost more than ₹1.5 crore.

MAIDEN SUCCESSFUL FLIGHT-TEST OF DRDO'S INDIGENOUS POWER TAKE OFF SHAFT CONDUCTED



Why in news?

- Recently, the maiden successful flight-test of Power Take off (PTO) Shaft was conducted on Light Combat

Aircraft (LCA Tejas) Limited Series Production (LSP) - 3 aircraft in Bengaluru.

- The PTO shaft is indigenously designed and developed by Combat Vehicles Research & Development Establishment (CVRDE), Chennai of Defence Research and Development Organisation (DRDO).

What is PTO shaft?

- The PTO shaft, which is a critical component in the aircraft, will support the requirements of future fighter aircraft & their variants and offers competitive cost & reduced time of availability.
- The PTO shaft was designed with unique innovative patented 'Frequency Spanning Technique' which enables it to negotiate different operating engine speeds.
- The light weight high speed, lubrication free PTO shaft transmits higher power between aircraft engine gear box and Aircraft Mounted Accessory Gear Box while accommodating misalignments that arise in the drive line.

Way Forward:

- With this successful test, the DRDO has achieved a greater technological feat by realisation of complex high-speed rotor technology which only few countries have achieved.
- The PTO shaft technology has already been transferred to Godrej & Boyce, Mumbai and Lakshmi Technology and Engineering, Coimbatore.

SPAIN'S RACE TO SPACE ABOUT TO BLAST OFF WITH REUSABLE ROCKET LAUNCH



Why in news?

- Two Spanish engineers hope to put their country at the forefront of the space transport industry with the launch of what could be the first private reusable rocket from Western Europe later in 2023.

Details:

- Raul Torres and Raul Verdu, who work for Spanish launch company PLD Space, have named their suborbital microlauncher 'Miura 1' after a renowned breed of bull in Spain's bullfighting tradition.
- The microlauncher is as tall as a three-storey building, has a 100-kg (220-lb) cargo capacity and can also be

used to carry zero-gravity experiments.

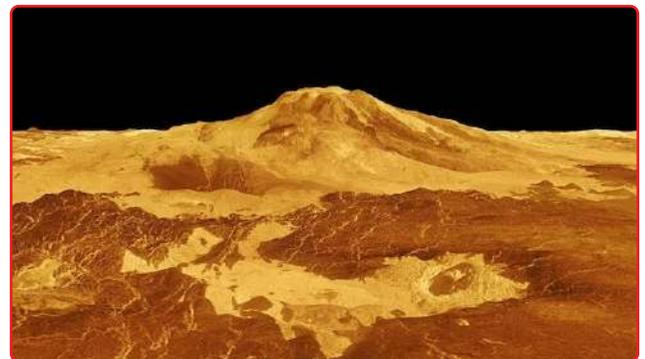
Spanish Space Agency:

- Spain launched its own state space agency on March 7 amid a push by European countries to keep pace with global rivals.
- The Spanish Space Agency, based in the southern city of Seville, will have a budget of 700 million euros (\$745 million) in its first year and a staff of 75.
- In November, European nations agreed to boost spending on space by 17% to keep on the heels of the United States and China.
- Spain's international position in the aerospace sector has been bolstered not only by increased public spending but by the European Space Agency's recruitment of the first two Spanish astronauts in 30 years, Pablo Alvarez and Sara Garcia.

What's next?

- PLD Space aims to launch the 'Miura 1' rocket in Huelva in southern Spain, paving the way for commercial launches further down the road, but no date has been set.
- London-based Orbex is also working to deliver small satellites into low Earth orbit from Scotland, with no launch date scheduled yet.

SCIENTISTS FIND VOLCANOES ERUPTING ON VENUS



Why in news?

- Recently, a new study has revealed the first evidence of volcanoes erupting on the surface of Venus, just as Earth.
- The new evidence has set the stage for the Veritas Mission, NASA will be launching to the Earth's nearest planet.

Magellan Mission:

- The discovery was made in the archival radar images of the planet by NASA's Magellan Mission over 30 years ago.
- The images revealed a volcanic vent changing shape and increasing significantly in size in less than a year. Volcanoes are important to study as they are responsible for the churning happening under the planet.

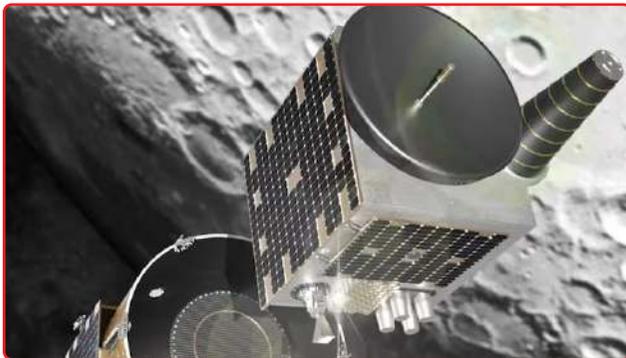
Key Findings:

- The Magellan spacecraft imaged the planet's surface using synthetic aperture radar, which has revealed the over two square kilometers volcanic vent that changed shape in the eight months between two radar images in Atla Regio, a vast highland region near Venus' equator that hosts two of the planet's largest volcanoes, Ozza Mons and Maat Mons.
- Data were recorded in overlapping swaths taken on the descending passes of the spacecraft's highly elliptical orbit, such that a given surface location was imaged once per sidereal day as the planet rotated.
- Researchers found that a volcanic vent associated with Maat Mons changed significantly between February and October 1991.
- It had steep interior sides and showed signs of drained lava down its exterior slopes, factors that hinted at the activity. The same vent had doubled in size eight months later in the second image.
- Researchers created computer models of the vent in various configurations to test different geological-event scenarios, such as landslides. From those models, they concluded that only an eruption could have caused the change.

Way Forward:

- Two big missions are set to be launched on Venus; VERITAS and Europe's EnVision mission.
- The two missions will unwrap the secrets of Venus and how this once Earth's twin turned into the gaseous hell that it is today.

FIREFLY TO DELIVER TWO MISSIONS TO THE FAR SIDE OF THE MOON

**Why in news?**

- Recently, the NASA has awarded a \$112 million contract to Firefly Aerospace based in Texas to develop a lander that will deliver two payloads to the most inhospitable region of the Moon, the far side.
- The lander will also carry communication and data relay satellites for lunar orbit.

CLPS Initiative:

- The contract is part of the Artemis program's Commercial Lunar Payload Services (CLPS) initiative,

an effort to deploy privately built lunar landers to study the moon's surface before people land there in the next few years.

Why far side of the Moon is focused?

- The far side of the Moon is one of the most challenging locations on the lunar surface, since it is permanently hidden from Earth. As the Moon is tidally locked with Earth, we just see one side, making the other side an unfamiliar space filled with massive impact craters.
- However, scientists consider this one of the best locations in the solar system for making radio observations, shielded from the noise generated by Earth. The region receives 14 days of highly bright sunlight followed by 15 days of complete darkness.

Investment by NASA:

- Firefly, which reached orbit for the first time in October, had seen years of difficulty, including a 2017 rescue from bankruptcy by Ukrainian-born entrepreneur Max Polyakov's Noosphere Ventures.
- NASA awarded Cedar Park, Texas-based Firefly \$93.3 million in 2021 to carry a suite of 10 science investigations and technology demonstrations to the Moon in 2023.

Way Forward:

- As part of the contract, Firefly will develop end-to-end delivery services, including payload integration, delivery from Earth to the surface, and the orbit of the Moon.

RESEARCH, EDUCATION AND TRAINING OUTREACH (REACHOUT)

**Why in news?**

- Recently, Union Minister of Ministry of Earth Science in a written reply to a question in Lok Sabha said that the REACHOUT scheme is being implemented for entire country and not State/UT-wise.
- He said that an umbrella scheme Research, Education and Training Outreach (REACHOUT) is being implemented by the Ministry of Earth Sciences for capacity building.

Sub-schemes:

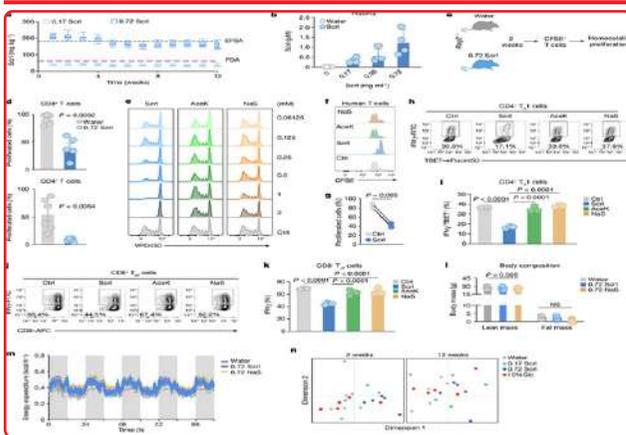
- It consists of the following sub-schemes:
 - a) R&D in Earth System Science (RDESS)

- b) International Training Centre for Operational Oceanography (ITCOcean)
- c) Program for Development of Skilled manpower in Earth System Sciences (DESK)

The main objectives of the above sub-schemes are

- Supporting various R &D activities in the thrust areas of different components of Earth System Sciences that are theme and need based and that would help in attaining the National goals set up for MoES.
- Develop useful collaborations with international organizations for mutual transfer of advanced knowledge in science and technology in Earth Sciences and to provide services to developing countries.
- Develop skilled and trained manpower in Earth Sciences with the support of academic institutions in the country and abroad.

AT A HIGH DOSE, SUCRALOSE IMPAIRS MOUSE IMMUNE RESPONSES



Why in news?

- A recent study, provides evidence that high doses of sucralose, a calorie-free sugar substitute that is 600 times sweeter than sucrose and approved by the Food and Drug Administration (FDA) for use as a general-purpose sweetener, can limit immune responses in mice.

Concerns:

- Sucralose is generally regarded as safe, the reason why the FDA has approved it. However, of late, concerns have been raised about the long-term safety of certain sweeteners.
- In line with these concerns, the latest study has shown that intake of high doses of sucralose in mice results in “immunomodulatory effects by limiting Tcell proliferation and Tcell differentiation”.
- The researchers have now shown that sucralose affects the membrane order of Tcells, accompanied by a reduced efficiency of Tcell receptor signalling and intracellular calcium mobilisation.

Key Highlights of the research:

- When mice with subcutaneous cancer and bacterial infection were given a dose of sucralose, which is higher than what humans consume daily, it resulted in impaired T cell responses; mice in the control group did not show any reduction in T cell responses.
- Also, when the researchers stopped feeding the mice in the intervention group with sucralose, the T cell responses began to recover, thus clearly indicating the link between sucralose and impaired T cell responses.

Conclusion:

- The findings do not provide evidence that normal sucralose intake is immunosuppressive, but they do demonstrate that at high (but achievable) doses, sucralose has an unexpected effect on Tcell responses and functions in autoimmune, infection as well as tumour models.
- However, the study cannot exclude the possibility that sucralose may affect Tcells through “additional mechanisms, such as epigenetic changes in response to long-term sucralose exposure or an ability to modulate taste receptors that are not shared with other sweeteners”.

A BOOST TO THE ZOONOSES THEORY



Why in news?

- In the never-ending debate about the origin of the virus that set off the COVID-19 pandemic, undisclosed genetic data from a food market in Wuhan has been unearthed and is being used to support the zoonoses theory over the lab leak theory.
- These findings were presented to the Scientific Advisory Group for the Origins of Novel Pathogens, an expert body constituted by the WHO.

What is this fresh theory about?

- Florence Débarre, who specialises in evolutionary biology at the Centre National de la Recherche Scientifique in France, discovered the data which consists of genetic sequences posted in GISAID, a virology database, by Chinese researchers.
- The Chinese team had reportedly collected samples from the Huanan Seafood Wholesale Market, which

has been, since 2020 notoriously connected to a cluster of early COVID-19 cases.

- ⇒ They had, in February 2022, posted a preprint with a graph that showed several environmental samples from the market containing the virus which also had human genetic material. It was this that Debarre had stumbled upon. It also reported that these sequences were later removed on the request of the authors.
- ⇒ It goes on to document early published research from Gao and team that proposes that humans brought the virus to the market, having detected that some of the samples that tested positive for SARS-CoV-2 had human DNA, but none other.
- ⇒ On the contrary, the evidence in front of the WHO now is that “some coronavirus-positive samples collected contained DNA or RNA from raccoon dogs, civets, and other mammals now known to be highly susceptible to SARS-CoV-2.”

Is it important to analyse origins?

- ⇒ The main theoretical dualism that the world has contended with since the COVID-19 pandemic is the origin question, lab leak or zoonoses.
- ⇒ Earlier, scientists urged the scientific world to keep an open mind about both the theories, on the ground that they remained viable. They also called upon public health agencies, and researchers to make their data and analyses open to the public.

Is this the final word on the origin question?

- ⇒ Clearly, there will be many more pow wows in the future, most raucous on social media perhaps, as researchers on both sides of the dichotomous question endeavour to gather evidence to support their theory.
- ⇒ This divisive debate will not die down; it is likely to continue until sufficient evidence emerges to arrive at a single cause.
- ⇒ Critics of the animal transmission theory are demanding specifics and details on the ‘spill over’ while virologists say it would be impossible to get that level of data.
- ⇒ With post facto research alone guiding the investigation, the scrutiny will likely continue.

ASIA'S LARGEST 4-METRE INTERNATIONAL LIQUID MIRROR TELESCOPE AT DEVASTHAL IN UTTARAKHAND

Why in news?

- ⇒ Recently, Union Minister of Science & Technology inaugurated Asia's largest 4-metre International Liquid Mirror Telescope at Devasthal in Uttarakhand.

Details:

- ⇒ Aryabhata Research Institute of Observational Sciences (ARIES) announced that the world-class 4-metre International Liquid Mirror Telescope (ILMT) is now ready to explore the deep celestial sky. It achieved its first light in the 2nd week of May 2022.



- ⇒ The telescope is located at an altitude of 2450 metre at the Devasthal Observatory campus of ARIES.

Stakeholders:

- ⇒ The ILMT collaboration includes researchers from ARIES in India, the University of Liège and the Royal Observatory of Belgium in Belgium, Poznan Observatory in Poland, the Ulugh Beg Astronomical Institute of the Uzbek Academy of Sciences and National University of Uzbekistan in Uzbekistan, the University of British Columbia, Laval University, the University of Montreal, the University of Toronto, York University and the University of Victoria in Canada.
- ⇒ The telescope was designed and built by the Advanced Mechanical and Optical Systems (AMOS) Corporation and the Centre Spatial de Liège in Belgium.

Components:

- ⇒ There are primarily three components in a liquid mirror telescope:
 - a) A bowl containing a reflecting liquid metal (essentially mercury),
 - b) An air bearing (or motor) on which the liquid mirror sits, and
 - c) A drive system.
- ⇒ Liquid mirror telescopes take advantage of the fact that the surface of a rotating liquid naturally takes on a parabolic shape, which is ideal for focusing light.
- ⇒ A scientific grade thin transparent film of mylar protects the mercury from wind. The reflected light passes through a sophisticated multi-lens optical corrector that produces sharp images over a wide field of view.
- ⇒ A 4k × 4k CCD camera, located above the mirror at the focus, records 22 arcminute wide strips of the sky.

How it works?

- ⇒ The ILMT employs a 4-metre-diameter rotating mirror made up of a thin layer of liquid mercury, to collect and focus light. The metal mercury is in liquid form at room temperature and at the same time highly reflective and hence, it is ideally suited to form such a mirror.
- ⇒ The ILMT is designed to survey the strip of the sky passing overhead each night, allowing it to detect transient or variable celestial objects such as

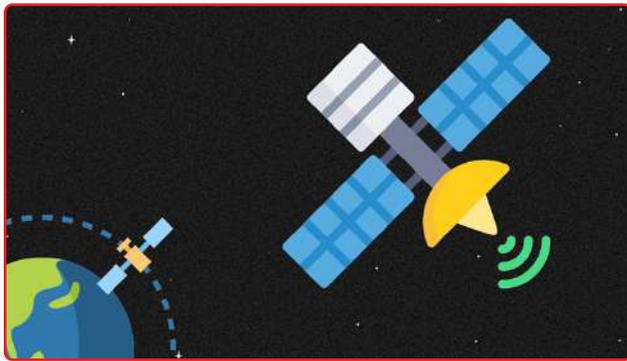
supernovae, gravitational lenses, space debris, and asteroids.

- ⇒ ILMT is the first liquid mirror telescope designed exclusively for astronomical observations and this is the largest aperture telescope available in the country at present and is also the first optical survey telescope in India.

Data collection:

- ⇒ While scanning the strip of the sky every night, the telescope will generate nearly 10-15 Gigabytes of data and the wealth of ILMT generated data will permit the application of Big Data and Artificial Intelligence/Machine Learning (AI/ML) algorithms that will be implemented for classifying the objects observed with the ILMT.
- ⇒ The data will be analyzed quickly to discover and discern variable and transient stellar sources. The 3.6 metre DOT, with the availability of sophisticated back-end instruments, will allow rapid follow-up observations of the newly-detected transient sources with the adjacent ILMT.
- ⇒ The data collected from the ILMT, over an operational time of 5 years, will be ideally suited to perform a deep photometric and astrometric variability survey.

INDIA PIXXEL BAGS 5 YEAR DEAL TO PROVIDE HYPERSPECTRAL IMAGERY TO US RECONNAISSANCE OFFICE



Why in news?

- ⇒ Indian space tech startup Pixxel Space has bagged a five-year contract from the US National Reconnaissance Office to provide hyperspectral imagery.

Details:

- ⇒ The NRO awarded six contracts for commercial hyperspectral imagery to BlackSky Technology, HyperSat, Orbital Sidekick, Pixxel, Planet, and Xplore.
- ⇒ As part of the contract, Pixxel will provide hyperspectral imagery (HSI), remote sensing capabilities via modeling and simulation, and data evaluation.
- ⇒ The company will use on-orbit pathfinder systems and future HSI constellations to collect and provide

the data, which will contribute to world-class intelligence, surveillance, and reconnaissance capabilities.

Hyperspectral images:

- ⇒ Hyperspectral images are made up of light from hundreds of colors across the electromagnetic spectrum. Since hyperspectral imaging collects many different colors of light, any given object will have a unique signature.
- ⇒ This enables users to obtain information about each pixel in an image, with the goal of identifying objects and materials. The imagery is used in the fields of agriculture, mining, geology, and intelligence and surveillance.
- ⇒ Pixel satellites capture images at hundreds of wavelengths in the electromagnetic spectrum and reveal key data about the health of our planet.

About Pixxel:

- ⇒ Pixxel is an India based private space Technology Company, aiming to put a constellation of 30+ hyperspectral earth observation micro-satellites into a sun-synchronous orbit in 2020s.
- ⇒ Pixxel launched the first of its three demonstration satellite through a hosted camera payload partnership with the Lithuanian firm, NanoAvionics on 30 June 2021.
- ⇒ Anand and Shakuntala are a part of the three demonstration satellites that Pixxel planned to launch. It plans to launch the first 6 satellites of its Firefly constellation in 2023 and 12 more by the end of 2024.

RELATIVITY SPACE SAID 3D PRINTED METAL PARTS MADE UP 85 PERCENT OF THE ROCKET



Why in news?

- ⇒ Recently, Relativity Space successfully launched the world's first 3-D printed rocket into space. However, the mission was not fully successful as it failed to reach orbit. The mission, which was not carrying any form of payload, failed nearly three minutes into the flight.
- ⇒ The startup is aiming to revolutionise space travel and the satellite launch market with 3D printing replacing the traditional casting of rockets.

Details:

- Relativity launched its third launch attempt of Terran 1, called "GLHF" (Good Luck, Have Fun), from Launch Complex 16 in Cape Canaveral, Florida.
- The company had earlier in March aborted the launch of a rocket made almost entirely from 3D-printed parts minutes before the scheduled lift-off.
- The two-stage, 110 feet tall, 7.5 feet wide, expendable rocket was attempting to launch into Low Earth Orbit from the former missile site.

Key Highlights:

- It was the third launch attempt from what once was a missile site. Relativity Space came within a half-second of blasting off earlier March with the rocket's engines igniting before abruptly shutting down.
- Most of the 110-foot (33-meter) rocket, including its engines, came out of the company's huge 3D printers in Long Beach, California.
- 3D-printed metal parts made up 85% of the rocket, named Terran. Larger versions of the rocket will have even more and also be reusable for multiple flights.

3D printing process:

- The 3D-printing process, widely used in various industries, involves machines that autonomously "print" sequential layers of soft, liquid, or powdered materials that are quickly hardened or fused to form solid three-dimensional objects.
- The designs of the objects are scanned from digital blueprints.

Way Forward:

- The startup wanted to put the souvenir into a 125-mile-high (200-kilometer-high) orbit for several days before having it plunge through the atmosphere and burn up along with the upper stage of the rocket.

NEW TECHNIQUE CAN TELL APART SPENT NUCLEAR FUEL FROM SIX REACTOR TYPES

**Why in news?**

- Scientists in China have developed a technique to reliably identify whether some nuclear fuel originated in one of two common kinds of nuclear reactors, a difficult task in nuclear forensics, using experimental data and machine-learning (ML).

Why it matters?

- Nuclear fuel is a highly regulated material because of its destructive potential. Countries maintain detailed inventories to safeguard it.
- Nuclear forensics use analytical methods to identify the origins of nuclear materials and whether they were used for military applications.
- Spent fuel from boiling water reactors (BWRs) is hard to differentiate from that from pressurised water reactors (PWRs) because both "use water as moderator and have similar thermal neutron spectra, so they are quite similar in neutron reaction mechanism.

Basic of the research:

- The group used experimental data instead of simulations, whose accuracy is unknown.
- The reactor type, the fuel's exposure time inside the reactor, and the extent of the fuel's enrichment can uniquely identify spent nuclear fuel.
- Using a database that contains the composition of different isotopes in spent fuel from reactors over 50 years, the researchers developed equations that related these quantities to each other.
- If one quantity can be determined through other measurements such as gamma-ray emissions from the spent fuel, the values of the other two quantities can be calculated.
- They also trained data from the database to develop three ML models to distinguish fuel from BWRs from that from PWRs.
- In BWRs, the fuel rods are submerged in water. When the fuel fissions, the water boils and the steam drives a turbine. In PWRs, the fuel rods aren't exposed to the water; only the heat is exchanged.
- Outcome:
 - The group's ML models correctly identified 91% of the fuel from BWRs, and 95% the of fuel from PWRs.
 - There was no explicit information about the accuracy of discriminating between PWRs and BWRs in older papers.

HEALTH

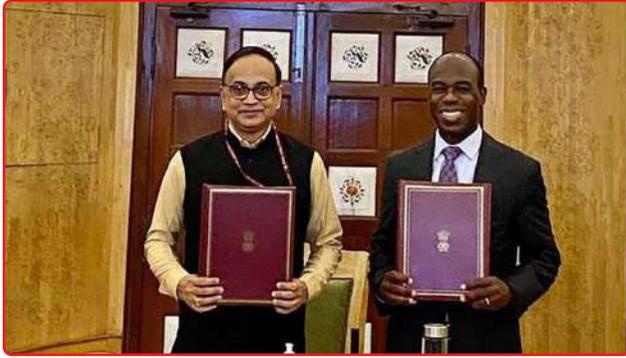
WORLD BANK TO LEND \$1 BILLION TO SUPPORT INDIA'S HEALTH SECTOR

Why in news?

- The World Bank is lending up to \$1 billion to help India with preparedness for future pandemics as well as to strengthen its health infrastructure.

Details:

- The lending will be divided into two complementary loans of \$500 million each.
- Through this combined financing of \$1 billion, the bank will support India's flagship Pradhan Mantri-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM), launched in October 2021, to improve the public healthcare infrastructure across the country.



Key Highlights:

- In addition to the national-level interventions, one of the loans will prioritise health service delivery in seven States: Andhra Pradesh, Kerala, Meghalaya, Odisha, Punjab, Tamil Nadu, and Uttar Pradesh.
- The \$500-million Public Health Systems for Pandemic Preparedness Programme (PHSPP) will support the government's efforts to prepare India's surveillance system to detect and report epidemics of potential international concern.
- Another \$500-million Enhanced Health Service Delivery Programme (EHSDP) will support government's efforts to strengthen service delivery through a redesigned primary healthcare model, which includes improved household access to primary healthcare facilities, stronger links between each household and its primary care facility through regular household visits and risk assessment of non-communicable diseases.

Tenure:

- Both the PHSPP and the EHSDP loans from the International Bank for Reconstruction and Development (IBRD) have a final maturity of 18.5 years, including a grace period of five years.

Health system in India:

- India's performance in health has improved over time. According to the World Bank estimates, India's life expectancy has increased from 58 in 1990 to 69.8 in 2020. This is higher than average for the country's income level.

RAJASTHAN'S RIGHT TO HEALTH BILL

Why in news?

- The recently concluded Budget session of the Rajasthan Assembly revived the debate around the Right to Health Bill.
- The legislation, if passed, will provide mandatory free and affordable medical services in hospitals, clinics and laboratories; both public and privately owned.
- Private hospital doctors object to the Bill citing it is hastily drafted, ignores ground realities and may tighten norms in an already over-regulated field.

SALIENT FEATURES OF THE RIGHT TO HEALTH DRAFT BILL, RAJASTHAN

OBLIGATIONS OF THE GOVERNMENT

- ❑ Appropriate state budget for health
- ❑ Within six months of enactment, develop and institutionalize a human resource policy for health for equitable distribution of healthcare workers across hospitals
- ❑ Social audit and grievance redressal mechanism
- ❑ Within one year, prescribing standards for quality and safety at all levels of hospitals
- ❑ Guarantee availability of government funded healthcare services as per distance or geographical area
- ❑ Ensuring that there is no direct or indirect denial to anyone for any government funded healthcare service
- ❑ Institute effective measures to prevent, treat and control epidemics and other public health emergencies
- ❑ Setting up state and district level health authorities

Source: Rajasthan Government

What does the Bill say?

- The Congress-led government tabled the Right to Healthcare Bill, 2022 in the Rajasthan State Assembly in September 2022.
- The Bill provides rights to patients and healthcare providers, places the obligation on the government to protect these legal rights and mandates the setting up of grievance redressal mechanisms.
- Rajasthan residents will be entitled to free check-ups, drugs, diagnostics, emergency transport and care at all public health institutes, along with affordable surgeries.
- The Bill frames medical services as a public service rather than a vehicle for making money. If enacted, the Act will have a recurring annual expenditure of ₹14.5 crore.

Clauses:

- Clause 3 of the Bill lays down 20 rights a State resident will be entitled to, including the right to informed consent, to seek information (in the form of medical records and documents) regarding diagnosis and treatment, and to receive treatment without discrimination based on caste, class, age, gender, etc.
- Clause 4 of the Bill shifts the burden of responsibility in providing adequate medical services to the government. The government is "obligated" to provide funds, set up institutions and constitute grievance redressal systems.
- Clause 4 mandates that the government develop a Human Resource Policy for health ensuring equitable distribution of doctors, nurses and healthcare workers at all levels of the system across regions.

Does the Constitution guarantee a right to health?

- The Indian Constitution does not explicitly talk about a right to health. A "right to health", in theory, is derived from the right to life and liberty as guaranteed under Article 21 of the Constitution.
- Previously, courts have highlighted the State's obligation to protect and promote the health of citizens, pointing to Constitutional provisions such as Article 38 (promoting the welfare of people) and

Article 47 (which directs the government to meet the nutrition and health requirements of the population).

Why are people opposed to it?

- The staunchest resistance to the Bill has come from private healthcare providers, owing to the ambiguity around who will pay for the mandatory free-of-cost emergency treatment.
- After protests, the government has agreed to create a fund to reimburse any emergency care offered by the private sector.
- Further, doctors argue the Bill is both futile and an exercise in over-regulation. Clinics and hospitals are required to abide by State regulations and norms.

TAMIL NADU'S NOVEL INITIATIVE RESULTS IN REDUCED TB DEATHS



Why in news?

- Tamil Nadu has pioneered an initiative across the State to reduce the mortality rate among people with tuberculosis.
- The initiative, TN-KET (Tamil Nadu Kasanoi Erappila Thittam, meaning TB death-free project) which began in April 2022 in 2,500-odd public healthcare facilities that diagnosed TB in 30 districts, has already achieved significant reduction in the number of early TB deaths.

Differentiated TB Care:

- The heart of the initiative is the 'Differentiated TB Care' aimed at assessing whether people with TB need ambulatory care or admission in a health facility to manage severe illness at the time of diagnosis.
- The differentiated TB care guidelines, released by the Central TB Division in January 2021, requires comprehensive assessment of 16 clinical, laboratory and radiological parameters.
- But the challenge is that undertaking the comprehensive assessment would take time, and most PHCs, many taluk and block-level healthcare facilities lack clinical and diagnostic capacity to carry out these assessments.

Preliminary assessment:

- In lieu of the 16 parameters, Chennai-based National Institute of Epidemiology (ICMR-NIE), which is

spearheading TN-KET along with the State TB Cell, found that preliminary assessment (triaging) of patients based on just three conditions; very severe undernutrition, respiratory insufficiency, and inability to stand without support was feasible for quick identification at diagnosis and referral for admission in a healthcare facility for comprehensive assessment and further management of the disease.

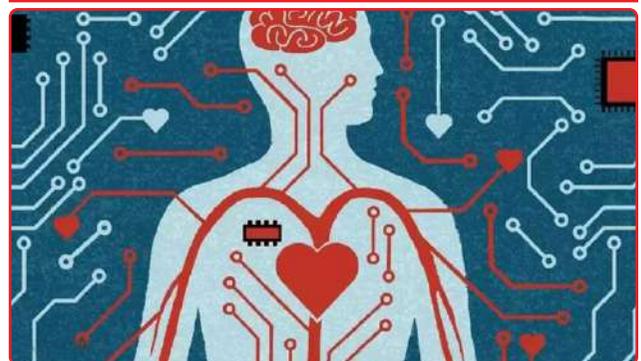
Comprehensive assessment:

- The comprehensive assessment is mainly for identifying the medical conditions that require immediate treatment.
- Using only three conditions meant that people with severe TB illness needing immediate care were identified and admitted to a healthcare facility on the same day of diagnosis even under programmatic conditions, thus vastly cutting down the delay and increasing the chances of saving lives.
- The State has identified around 150 nodal inpatient care facilities with nearly 900 beds earmarked for people with TB who are severely ill.

Target achieved & Way Forward:

- The TN-KET initiative has already achieved the initial target of 80% triaging of patients, 80% referral, comprehensive assessment and confirmation of severe illness, and 80% admission among confirmed.
- In December 2022, it reached the 90%-90%-90% goal at State level and now target is to achieve the same in each district.
- Another challenge is to increase the duration of admission. For instance, people with very severe undernutrition, which comprises 50% of the admitted patients, the duration of treatment has to be long.
- At the State level, the average admission duration was five days between April and December last year, which improved to six days in December.
- With the support of district TB officers and physicians in the nodal inpatient care facilities, the next goal is to increase the average admission duration to more than seven days.

ICMR RELEASES ETHICAL GUIDELINES FOR AI USAGE IN HEALTHCARE



Why in news?

- Recently, the Indian Council of Medical Research (ICMR) has released the India's first 'Ethical Guidelines for Application of Artificial Intelligence in Biomedical Research and Healthcare'.
- It aimed at creating "an ethics framework which can assist in the development, deployment, and adoption of AI-based solutions" in the fields specified.
- Through this, they hope to make "AI-assisted platforms available for the benefit of largest section of common people with safety and highest precision possible," while also addressing emerging ethical challenges when it comes to Artificial Intelligence in biomedical research and healthcare delivery.

Details:

- The document, prepared by the Department of Health Research and the ICMR Artificial Intelligence Cell, Delhi, will be updated as and when the need arises.
- Developed through extensive discussions with experts and ethicists, the guidelines include sections on ethical principles, guiding principles for stakeholders, an ethics review process, governance of AI usage, and informed consent.

Key Highlights:

- Development, as well as deployment of AI-based solutions in healthcare, span a number of issues, including those related to data safety, data sharing, and data privacy.
- The document says that as AI technologies are further developed and applied in clinical decision making, it is important to have processes that discuss accountability in case of errors.
- As per the guidelines, the ethical review process for AI in health comes under the domain of the ethics committee.
- It notes that the regulation of AI technologies in healthcare is still in its nascent stage even in developed countries.

Background:

- India already offers streamlining of AI technologies in various sectors including healthcare through the National Health Policy (2017), National Digital Health Blueprint (NDHB 2019), and Digital Information Security in Healthcare Act (2018) proposed by the Health Ministry which will pave the way for the establishment of the National Data Health Authority and other health information exchanges.

SHOULD INDIA WORRY ABOUT RISING COVID-19 CASES?

Why in news?

- Recently, the Prime Minister convened a high-level meeting of the COVID-19 taskforce.
- This is the first time this year that such a meeting has been convened, with the last such meet held on December 22, 2022.



Why was the meeting necessary?

- By all metrics, there has been a rise in COVID-19 cases over several weeks. As of March 23, India officially reported 1,300 new coronavirus cases over a 24-hour period bringing the overall tally of active cases to 7,605. In the previous weeks too, an average of 800 cases have been reported weekly.
- The death toll climbed to 5,30,813 with five deaths, one each reported in Chhattisgarh, Delhi, Gujarat, Maharashtra and Kerala. The number of daily deaths has been in the single digit in the past few weeks. Globally, about 1 lakh cases are being reported every day.
- The daily positivity rate, or the percentage of tests administered by States every day that confirms the presence of the virus, was recorded at 1.46% while the weekly positivity rate was pegged at 1.08%.
- During the pandemic, a test positivity rate below 5% was considered to be a sign of the disease being within manageable limits.

What was the outcome of the meeting?

- PM said that the COVID-19 pandemic "is far from over", and he stressed the need to monitor the status of the disease across the country on a regular basis.
- He directed officials to increase whole genome sequencing of COVID positive samples, using the designated INSACOG (Indian SARS CoV-2 Genomics Consortium) laboratories, to aid with the tracking of new and emerging variants and facilitate a timely response.
- The consortium is a network of labs across the country that analyses samples from different regions and sounds an alert if a spike in cases is linked to certain mutations of the coronavirus that are known to increase virus transmissibility.
- He directed officials to follow up with States to ensure effective monitoring of all cases of influenza-like illnesses (ILI) and severe acute respiratory illnesses (SARI), with testing for influenza, SARS-CoV-2 and adenovirus.

What is behind the surge in cases?

- There is an increase in the number of seasonal influenza H3N2 cases and tests on patients often reveal an uptick in COVID-19 cases.

- A rapidly proliferating lineage of the Omicron virus called XBB.1.16 is believed to be behind the recent spike in COVID-19 cases.
- Scientists from the INSACOG consortium report that though systematic genomic surveillance in India is limited, XBB.1.16 has been found in nearly a third of all the sequenced genomes in March 2023.
- Its proportion has been seen to be increasing in the past few weeks, to become the major lineage in several States such as Telangana, Maharashtra, Karnataka, Gujarat, Delhi, Puducherry, Haryana, Himachal Pradesh, and Odisha. These States report higher cases also because they have better surveillance systems.

CULTURE

FIRST OF ITS KIND SCO INTERNATIONAL CONFERENCE ON "SHARED BUDDHIST HERITAGE"



Why in news?

- Recently, the two-day international conference of Shanghai Cooperation Organization (SCO) on "Shared Buddhist Heritage" was inaugurated at Vigyan Bhawan in New Delhi, with focus on India's civilizational connect with the SCO nations.
- The two-day programme is being organized by the Ministry of Culture, the Ministry of External Affairs and the International Buddhist Confederation (IBC-as a grantee body of the Ministry of Culture).

Key Highlights:

- The event, a first of its kind, under India's leadership of SCO brings together Central Asian, East Asian, South Asian and Arab countries on a common platform to discuss "Shared Buddhist Heritage".
- The aim of the Conference is to re-establish trans-cultural links, seek out commonalities, between Buddhist art of Central Asia, art styles, archaeological sites and antiquity in various museums' collections of the SCO countries.
- The Conference is a unique meeting of the minds, where countries from different geographical regions but with a common thread connecting them based on a shared civilization legacy, strengthened by Buddhist

missionaries who played a major role in integrating various cultures, communities and regions in the entire Indian subcontinent and Asia will discuss for two days' various themes, chalking out ways to continue the age-old bonds into the future.

About Shanghai Cooperation Organization (SCO):

- SCO is a permanent intergovernmental international organization.
- It was created in 2001. The SCO Charter was signed in 2002, and entered into force in 2003.
- The SCO countries comprise of Member States, Observer States and Dialogue Partners, including China, Russia and Mongolia. Several scholars – delegates from SCO are resending research papers on the topic including from Dunhuang Research Academy, China; State Museum of the History of Religion, International Theravada Buddhist Missionary University, Myanmar, among others.
- Prior to the creation of SCO in 2001, Kazakhstan, China, Kyrgyzstan, Russia and Tajikistan were members of the Shanghai Five.
- Following the accession of Uzbekistan to the organization in 2001, the Shanghai Five was renamed the SCO.
- India and Pakistan became members in 2017.
- On 17th September, 2021, it was announced that Iran would become a full member of the SCO.

MISCELLANEOUS

ABEL PRIZE 2023



Why in news?

- Recently, Luis Caffarelli has won the 2023 Abel Prize "for his seminal contributions to regularity theory for nonlinear partial differential equations including free-boundary problems and the Monge-Ampère equation".

About Abel prize:

- First awarded in 2003, the Abel prize "recognises pioneering scientific achievements in mathematics".
- It is named after Norwegian mathematician Niels Henrik Abel (1802-29), who in his short life made pioneering contributions in a multitude of fields.

- ⇒ It is often considered to be an equivalent of the Nobel prize – which does not have a category for mathematics and has been modelled as such.
- ⇒ The prize includes a monetary award of 7.5 million kroner (roughly \$ 720,000) and a glass plaque designed by Norwegian artist Henrik Haugan.
- ⇒ It is awarded by The Norwegian Academy of Science and Letters, on behalf of the Ministry of Education.

Who was Niels Henrik Abel?

- ⇒ Niels Henrik Abel (1802-1829) was a Norwegian mathematician who left a big impact on a number of fields in his rather short life.
- ⇒ His most famous single result is the first complete proof demonstrating the impossibility of solving the general quintic equation in radicals. This question was one of the outstanding open problems of his day, and had been unresolved for over 250 years.

Who is Luis Caffarelli and why did he win the Abel prize?

- ⇒ Caffarelli was born and raised in Buenos Aires, Argentina, making him the first Abel laureate from South America. Currently, he is a professor at the University of Texas, Austin.
- ⇒ He has been one of the leading figures in the study of partial differential equations for over five decades.
- ⇒ Partial differential equations arise naturally as laws of nature, whether to describe the flow of water or the growth of populations. These equations have been a constant source of intense study since the days of Newton and Leibniz.
- ⇒ He has been recognised for “combining brilliant geometric insight with ingenious analytical tools and methods” in this field of mathematics.



PRACTICE QUESTION FOR UPSC PRELIMS EXAM

1. Consider the following statement regarding Proton Beam Therapy (PTB):
 1. It is a viable alternative to radiation for treating solid tumours.
 2. The PBT uses protons to tackle cancer.
 3. This therapy damages the other adjoining organ.
 Choose the correct option from the codes given below:

a) 1 and 2	b) 2 and 3
c) 1 and 3	d) 1, 2 and 3

2. Consider the following statement regarding Antarctic Peninsula:
 1. It is the most southern and coldest region of Antarctica
 2. It is the largest reservoir of frozen water on Earth.
 3. It is home to a rich marine ecosystem of seals, penguins and whales.
 Choose the correct option from the codes given below:

a) 1 and 2	b) 2 and 3
c) 1 and 3	d) 1, 2 and 3

3. Consider the following statement regarding the recent projection of National Statistical Office (NSO):
 1. Current India's GDP slowed down as compared to the last quarter.
 2. Manufacturing sectors represented a negative growth.
 Choose the correct option from the codes given below:

a) 1 only	b) 2 only
c) 1 and 2	d) None of the above

4. Consider the following statement regarding International Court of Justice:
 1. It was established by the United Nation Charter.
 2. It headquarters is situated in New York.
 3. It has two types of jurisdictions.
 Choose the correct option from the codes given below:

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

5. Consider the following statement:
 1. COP-27 failed to narrow their differences on critical issues such as reducing greenhouse gas emissions.
 2. Small Island Developing (SID) states are most vulnerable to rising temperatures and sea levels.

3. Samoa launched an initiative, through the UNGA, to seek an advisory opinion to prevent the adverse effects of climate change.

Choose the correct option from the codes given below:

a) 1 and 2	b) 2 and 3
c) 1 and 3	d) 1, 2 and 3

6. Consider the following statement regarding "SWAYATT":
 1. It is an initiative to promote start-ups for Women and Youth.
 2. Social inclusion is a core value at GeM.
 3. It fails to promote sellers and service providers.
 Choose the correct option from the codes given below:

a) 1 and 2	b) 2 and 3
c) 1 and 3	d) 1, 2 and 3

7. Consider the following statement regarding forest cover assessment in India:
 1. All land areas with tree canopy density of 40% and above are considered open forest.
 2. Forest Survey of India (FSI) published its biennial State of Forest reports.
 3. In India, one hectare or above plot with 10% canopy density comes under forest area.
 Choose the correct option from the codes given below:

a) 1 and 2	b) 2 and 3
c) 1 and 3	d) 1, 2 and 3

8. Consider the following statement regarding Windsor Framework:
 1. It permits free trade between Great Britain and Northern Ireland.
 2. Free trade will be carried out through Green and Red Lane.
 Choose the correct option from the codes given below:

a) 1 only	b) 2 only
c) 1 and 2	d) None of the above

9. Consider the following:
 1. Natural forests have evolved naturally to be diverse and therefore, support a lot more biodiversity.
 2. Plantation forests have trees of the same age, are more susceptible to fire, pests and epidemics.

PRACTICE QUESTION FOR UPSC MAINS EXAM

1. Give a brief note on Vanuatu's initiative launched to seek an advisory opinion from the International Court of Justice (ICJ). 'Regardless of the ICJ initiative outcome, any acknowledged responsibility for loss and damage caused by climate change will only have meaningful effects when countries redress them'. Discuss.
2. Turkey earthquake, tremors in Joshimath, carry a warning for Indian cities. What are the challenges in India's current policy on earthquake preparedness and required approach? How missing urban policy for earthquake preparedness in India need to be addressed?
3. Discuss the importance of sustaining human capital investments to recover and boost economic growth, and to ensure greater resilience of South Asian populations and systems in the face of future crises.
4. Clean energy solutions have the potential to transform rural livelihoods and they are transforming women's livelihoods at the grassroots in India, but they need to be scaled up. Discuss ways to scale up this impact from thousands of women to millions of them?
5. How do market indices work? Are Indian retail investors embracing 'passive' index-based investing? Why is SEBI bringing Index makers under regulatory purview?
6. 'The goal of doubling farmers' income can't be seen in isolation from the need to promote sustainable and diversified agriculture'. Critically analyse.
7. Why should multilateralism be given importance in today's global order? How can the G-20 help in multilateral reform? Can multiple minilateral groupings become an alternative mode of multilateral cooperation? Why would global powers be averse to the idea of reform in multilateral institutions?
8. 'Women can harness digital tools for improving nutrition schemes and initiatives, while also using them to create economic opportunities that ensure long-term food and nutrition security'. Elaborate.
9. How are artificial general and narrow intelligence systems different from each other? What are the possible ways in which AI can disrupt jobs and industries?
10. Globally, natural disasters are on the rise. A bundling together of complementary start-ups could help tackle the global challenge of natural disaster and sustainable development. Discuss the prospects of this opportunity in front of the Startup20 Engagement Group of G20 with India taking the lead.
11. Recently, the Government roped in cryptocurrency trade in anti-money laundering law. Discuss how will the money trail in cryptocurrency transactions be tracked by intelligence units?
12. What are environment, social and governance regulations and how do they differ from corporate social responsibility rules? Why are the regulations important for the Indian economy? Will ESG compliance help Indian companies play a more prominent role in global supply chains?
13. What has led to the restoration of diplomatic relations between Saudi Arabia and Iran? What initially led to the breakdown of relations? Why is the U.S. deprioritising the West Asian region? Is China emerging as a new great power in West Asia?
14. 'Defence cooperation between US, UK and Australia highlights the opportunity for India to develop a unique set of arrangements with the US and its allies'. Comment.
15. When are countries categorised in the least developed countries list? How did Bhutan qualify for graduation from the list? What are the challenges facing Bhutan?
16. Give a brief note on ongoing income support programmes for farmers in India. Discuss how a crop-neutral income support programme in India will incentivise farmers to cultivate crops based on market demand and local climatic conditions.
17. 'The new thrust on millets by the government is welcome. But, to succeed as a global superfood, India needs to rework its millet strategy'. Elaborate.
18. Keeping in mind the widening gender gap in the Indian workforce, discuss proactive steps to create an inclusive workplace that values diversity and promotes gender equality based on the specific needs and circumstances of every workplace.
19. 'The year 2023 will mark the 50th year of the diplomatic relationship between South Korea and India. Also, South Korea recently in its Indo-Pacific strategy has stated India as a special strategic partner'. In this background, discuss why both countries need to move beyond the normative approach towards a robust bilateral relationship?
20. Give a brief note on India's role and experience as a non-permanent member of the United Nations Security Council (UNSC) for the term 2021-2022.
21. 'China's Global Security Initiative, which is a vision of a future security order, is vastly different from China's recent track record of external engagement'. Comment.

22. Highlight the challenges to ending TB as a global health emergency. Discuss the role of India's G20 presidency in road to eliminating TB.
23. 'A functional and healthy democracy must encourage the development of journalism as an institution that can ask difficult questions to the establishment'. Comment.
24. 'While new initiatives, platforms, and exercises attest to the growing synergy in Indo-African defence and security partnership, the true potential continues to remain untapped'. Discuss.
25. Where are mega parks coming up in the first phase under the PM MITRA scheme? What has been the reaction to the announcement from MSMEs, which dominate the textiles and apparel industry? How is the new initiative different from earlier textile park schemes?

PRACTICE QUESTION FOR UPSC PRELIMS EXAM

ANSWER KEY

1. (a) 2. (b) 3. (c) 4. (d) 5. (a) 6. (a) 7. (b) 8. (c) 9. (d) 10. (a)
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69th BPSC PRE+MAINS



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वर्क बुक - 8



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डाउट क्लियरेंस हेतु विशेष मेन्टर की व्यवस्था

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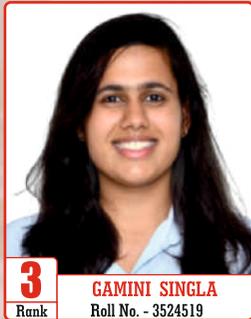
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