

# ASTRA

COMPLETE COVERAGE OF MONTHLY CURRENT AFFAIRS

NOVEMBER 2023



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**GEOGRAPHY & ENVIRONMENT**

Biosphere Reserve	4
Kadalundi-Vallikunnu Community Reserve (KVCR)	4
Rajaji Tiger Reserve	5
Global Tiger Recovery Program (GTRP)	7
Mhadei Wildlife Sanctuary (MWS)	7
Gundla Brahmeswaram Wildlife Sanctuary (GBWS)	8
CITES's Review of Significant Trade on Red Sanders	8
Graded Response Action Plan (GRAP)	9
Blue Flag Certification	9
Adaptation Gap Report 2023	10
Green Hydrogen	11
Minamata Convention	12
Loss and Damage Fund	12
Dubai climate conference   CoP-28   UNFCCC	13
Production Gap Report (PGR) 2023	13
Emission Gap Report 2023	14
Climate Change & Child report by UNICEF	14

**POLITY**

Cinematograph (Amendment) Act 2023	15
Model Prisons and Correctional Services Act 2023	15
Private Sector Reservation struck down by High Court	16
AAINA Dashboard	17
Appointment of new CIC	18
CERT - In   Exemptions under RTI Act	19
ENCORE	20
Digital Advertising Policy 2023	20
National Pharmacy Commission Bill, 2023	21

**WELFARE**

Ancient Kosi Superflood	22
Particularly Vulnerable Tribal Groups (PVTGs)	22
Central Adoption Resource Authority (CARA)	23
UDAN (Ude Desh Ka Aam Naagrik) Scheme	24
PM-KISAN   PM-KISAN Bhai	24
PM-KISAN   PM-KISAN Bhai	25
Ayurveda Gyan Naipunya Initiative (AGNI)	25
Basic Animal Husbandry Statistics 2023	25
SATH Project	26
Krishi Sakhis   Natural Farming	26
FAME India Scheme	27
CBG Blending Obligation (CBO)	28

**SCHEMES**

Krishi Sakhis   Natural Farming	29
FAME India Scheme	29
CBG Blending Obligation (CBO)	28
Krishi Sakhis   Natural Farming	29
FAME India Scheme	29
India Australia RISE Accelerator program	30
Partnership for Global Infrastructure and Investment (PGII)	30

**ECONOMY**

Minimum Export Price (MEP)	31
Sustainability Bond   Sovereign Green Bonds	31
IMF Quotas and Special Drawing Rights (SDR)	33
Foreign Exchange Management Act (FEMA)	34
Global Digital Public Infrastructure Repository   Social Impact Fund	35
Core Sectors in Industry	35
Technical Textiles	36
Silkworms   Silk Colour	36
Sea Buckthorn Fruit	37
Cashew crop   APEDA	37
Jamdani Sari	38
Poppy Cultivation in India	38
Rat Hole Mining	39
India's e-commerce Exports	40
Digital Twins	40
G7	41

**INTERNATIONAL RELATIONS**

Asia-Pacific Economic Cooperation (APEC)	41
UN Human Rights Council	42
International Tropical Timber Council (ITTC)	42
C40 Cities	43
Central Trade Unions   India and ILO Conventions	43
World Gold Council	44
Indian Ocean Tuna Commission	45
2nd Voice of Global South Summit (VOGSS)	45
China-Myanmar Economic Corridor (CMEC)	46
Comprehensive Nuclear Test Ban Treaty (CTBT)	46
Two Plus Two Dialogue	47
INDIA UK FTA	48
India, EU Sign MoU on Semiconductors in Research	49
Cultural Property Agreement (CPA)	50
Agartala-Akhaura Rail Line Project	51

**SCIENCE & TECHNOLOGY**

Asteroid Dinkinesh   Lucy spacecraft	52
X-Ray Polarization in Black Hole	52
XPoSat	52
NISAR	53
Atmospheric Wave Experiment   Airglow   Atmospheric Gravity Waves	54
Euclid Space Mission	54
Near Space Region	55
Deep Space Optical Communications (DSOC)	55
Environmental DNA (eDNA)	56
Langlands Program   Abel Prize	56
Fibre Optic Cables	56
Bletchley Declaration	57
ISPR-Cas9	57
Chimeras of Nature	58
Mpox (Monkeypox)	58
Global Onchocerciasis Network for Elimination (GONE)	59





**Why in news?**

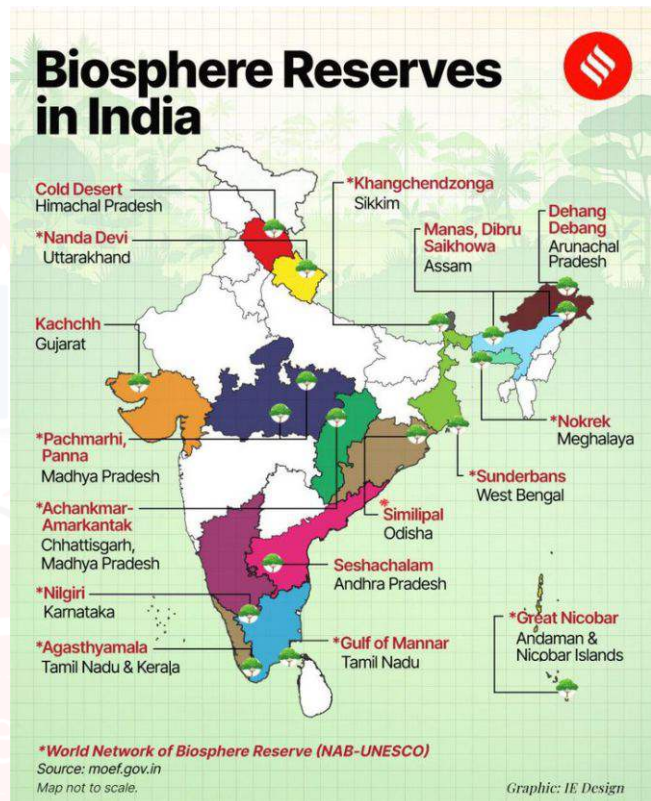
- Second anniversary of International Biosphere Reserve Day, celebrated on November 3, annually highlights the critical importance of biosphere reserves (BR) in safeguarding our environment and promoting sustainability.

**Biosphere Reserve:**

- It is an international designation for representative parts of **natural and cultural landscapes** extending over large area of terrestrial or coastal/marine ecosystems or a combination thereof.
- BRs are living examples of **how human beings and nature can co-exist** while respecting each other's needs.
- Designated by – **United Nations Educational, Scientific and Cultural Organization (UNESCO)**
- Supported by – Other UN agencies and International Union for Conservation of Nature (IUCN)
- Function –**
  - Conservation of biodiversity and cultural diversity
  - Economic development that is socio culturally and environmentally sustainable
  - Logistic support underpinning development through research, monitoring education and training

**Criteria for designating biosphere reserves:**

- The site must contain an **effectively protected and minimally disturbed core area** of value of nature conservation.
- The core area should be typical of a **bio-geographical unit** and large enough to **sustain viable populations** representing all trophic levels in the ecosystem.
- The management authority to ensure the **cooperation of local communities** while managing and containing the conflicts.
- Areas potential for **preservation of traditional tribal or rural modes** of living for harmonious use of environment.



**Status of biosphere reserves in India:**

- Status – **18 biosphere reserves** in India (12 are recognized internationally under the MAB programme)
- UNESCO Michel Batisse Award 2023** – Won by Gulf of Mannar for introducing the concept of 'plastic checkpoints'.
- 1st biosphere reserve** – Nilgiri Biosphere Reserve
- Largest Biosphere reserve – Great Rann of Kutch, Gujarat
- Smallest biosphere reserve – Dibru-Saikhowa, Assam

**Kadalundi-Vallikunnu Community Reserve (KVCR)**

**Environment**

**Why in news?**

- Shrinking mudflat ecosystem of Kerala's Kadalundi keeps shorebirds away.

**Kadalundi-Vallikunnu Community Reserve**

- Location - mouth of the **River Kadalundi** - west coast of **Kerala**.
- Offers potential foraging ground for several hundreds of wintering and resident water birds

- Provides significant socio-economic and livelihood services for the people around (fishing, oyster farming and sand mining)

#### About Mudflat Ecosystem:

- Coastal **wetlands** that form in intertidal areas where sediments have been deposited by tides or rivers.
- Most of the sediment in a mudflat resides in the intertidal zone, causing the flat to be submerged and exposed approximately twice daily.
- One of the richest foraging grounds for migrant shorebirds along India's west coast

#### About Community Reserves and Conservation reserves

- Protected areas of India which typically act as **buffer zones** to or connectors and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests of India.
- **Difference**
  - Conservation areas - uninhabited and completely **owned by the Government** of India
  - Community areas - if part of the lands are **privately owned**.
  - Both are used for subsistence by communities
- These protected area categories were first introduced in the **Wildlife**
- **(Protection) Amendment Act of 2002** – the amendment to the Wildlife Protection Act of 1972.
- These categories were added because of reduced protection in and around existing or proposed protected areas due to private ownership of land, and land use.

### Rajaji Tiger Reserve

### Environment

#### Why in news?

- Uttarakhand government decided to establish Rajaji Tiger Reserve Conservation Foundation.

#### About Rajaji Tiger reserve

- State – **Uttarakhand**
- Situated along the hills of **Shiwalik ranges** and in transition zone between temperate western Himalaya and central Himalaya.
- River flowing – **Ganga and Song**
- Forest type – Ranges from semi-evergreen to deciduous and from mixed broad-leaved to **Terai grassland**.

**List of Tiger Reserve in India : State Wise**

Sl. No	State	Name of Tiger Reserve
1	Andhra Pradesh	Nagarjunsagar Srisailem Tiger Reserve
2	Arunachal Pradesh	Pakke Tiger Reserve
3	Arunachal Pradesh	Kamlang Tiger Reserve
4	Arunachal Pradesh	Namdapha National Park
5	Assam	Kaziranga National Park
6	Assam	Orang Tiger Reserve
7	Assam	Nameri National Park
8	Assam	Manas Tiger Reserve
9	Bihar	Valmiki National Park
10	Chhattisgarh	Indravati Tiger Reserve
11	Chhattisgarh	Udanti-Sitanadi Wildlife Sanctuary
12	Chhattisgarh	Achanakmar Wildlife Sanctuary



Sl. No	State	Name of Tiger Reserve
13	Chhattisgarh	Guru Ghasidas National Park and Tamor Pingla Wildlife Sanctuary
14	Jharkhand	Palamau Tiger Reserve
15	Karnataka	Biligiri Ranganatha Temple Tiger reserve
16	Karnataka	Nagarahole National Park
17	Karnataka	Dandeli-Anshi Tiger Reserve
18	Karnataka	Bandipur Tiger Reserve
19	Karnataka	Bhadra Wildlife Sanctuary
21	Kerala	Parambikulam Tiger reserve
21	Kerala	Periyar Tiger reserve
22	Madhya Pradesh	Sanjay-Dubri Tiger reserve
23	Madhya Pradesh	Satpura Tiger reserve
24	Madhya Pradesh	Bandhavgarh Tiger reserve
25	Madhya Pradesh & Maharashtra	Pench Tiger reserve
26	Madhya Pradesh	Kanha Tiger reserve
27	Madhya Pradesh	Panna Tiger reserve
28	Maharashtra	Bor Tiger Reserve
29	Maharashtra	Nagzira Tiger Reserve
30	Maharashtra	Sahyadri Tiger Reserve
31	Maharashtra	Tadoba-Andhari Tiger Reserve
32	Maharashtra	Melghat Tiger reserve
33	Mizoram	Dampa Tiger Reserve
34	Odisha	Satkosia Tiger Reserve
35	Odisha	Similipal Tiger Reserve
36	Rajasthan	Ranthambore Tiger Reserve
37	Rajasthan	Mukundara Hills Tiger Reserve
38	Rajasthan	Sariska Tiger Reserve
39	Rajasthan	Ramgarh Vishdhari Tiger Reserve
40	Rajasthan	Dholpur-Karauli Tiger Reserve
41	Tamil Nadu	Mudumalai Tiger Reserve
42	Tamil Nadu	Kalakad-Mundanthurai Tiger Reserve
43	Tamil Nadu	Anamalai Tiger Reserve (Indira Gandhi Wildlife Sanctuary and National Park)
44	Tamil Nadu	Sathyamangalam Tiger Reserve
45	Tamil Nadu	Srivilliputhur Megamalai Tiger Reserve
46	Telangana	Kawal Tiger Reserve



Sl. No	State	Name of Tiger Reserve
47	Telangana	Amrabad Tiger Reserve
48	Uttar Pradesh	Dudhwa Tiger Reserve
49	Uttar Pradesh	Pilibhit Tiger Reserve
50	Uttar Pradesh	Amangarh Tiger Reserve
51	Uttarakhand	Corbett National Park
52	Uttarakhand	Rajaji Tiger Reserve
53	West Bengal	Sundarbans National Park
54	West Bengal	Buxa Tiger Reserve

## Global Tiger Recovery Program (GTRP)

## Environment

### Why in news?

- A recent report submitted under GTRP 2 says the number of tigers in the wild has gone up by 60%.

### About Global Tiger Recovery Program (GTRP)

- Global Tiger Recovery Program (GTRP) **was launched in 2010 under the Global Tiger Initiative (GTI) by the World Bank to save wild tigers.**
- The St Petersburg Declaration in 2010 saw 13 tiger range countries commit to reversing the decline of the species population and double their numbers by 2022.

### GTRP 2.0

- Global Tiger Recovery Programme 2.0 was released at Thimphu on 29 July International Tiger Day.
- Global Tiger Recovery Program (GTRP) 2.0 has been firmed up by tiger range countries through the intergovernmental platform of the Global Tiger Forum along with collaborators like the WWF.
- GTRP 2.0 emphasizes on strengthening tiger governance, enhancing resources and protection while addressing contemporary challenges like Human-Wildlife Conflict.
- The recent submissions were made under GTRP 2.0 and CITES, which aim to pave the way for tiger conservation from 2023-2034.

## Mhadei Wildlife Sanctuary (MWS)

## Environment

### Why in news?

- A contempt petition is filed against Goa government for not notifying a tiger reserve in MWS as directed by Bombay high court.

### About the sanctuary

- Location – **Goa**
- An **International Bird Area** and is part of Mhadei river basin.
- Mahadei river has catchment area spread over **Goa, Karnataka and Maharashtra**.
- Forest types range – Moist Deciduous, Semi-evergreen and Secondary Scrub.
- Sacred grove Nirankarachi** is dominated by a unique plant species *Myristica malabarica*, which is **endangered and endemic** to the site.



- Over 50 grass species were identified during a survey on 'Grasses Identification and Grassland Management' at GBWS.

- Location – **Andhra Pradesh.**
- Lies between 2 hill passes known as "**Mantralammakanuma**" and "**Nandi kanuma**".
- **Immediately to the north of this sanctuary – Nagarjunasagar Srisailam Tiger Reserve.**
- Forest Type – Dry mixed deciduous forest, moist dry deciduous, semi evergreen, dry deciduous scrub forest and dry savannahs.

## Environment

- India has been removed from the CITES's Review of Significant Trade (RST) for Red Sanders.

- A process through which the **CITES Standing Committee places increased scrutiny** on the exports of a species from a country to determine if the Convention is being properly implemented.
- **Non-compliance** may lead to disciplinary actions through **trade suspensions**.
- India has been under RST process for Red Sanders since 2004.
- **Benefits of removal of Red Sanders from the RST process:**
- Helps farmers cultivating Red Sanders to become part of the **legal trade** supply chain.
- Motivates farmers to grow more red sanders trees as a source of **sustainable income**.
- **Wild Life (Protection) Amendment Act, 2022** incorporated provisions of CITES as mandated under the CITES **National Legislation Programme (NLP)**.
- NLP: Based on compliance level Parties could be placed in any of the **3 categories**
- As a result, CITES Standing Committee has now **moved India from Category 2 to Category**

- Endemic to – **Tropical dry deciduous forest** of Eastern Ghats
- Referred to as '**the pride of Eastern Ghats**'.
- Distribution Areas – Palakonda, Seshachalamhill ranges (Andhra Pradesh), Kerala, Tamil Nadu and Karnataka.
- **Conservation Status** – IUCN Red List (Endangered), **CITES (Appendix II)**, Wildlife Protection Act (Sched. IV).
- **Santalalin** – A **red dye** impregnated in plants heartwood
- **Threats** – Illegal harvesting, smuggling etc.

- An international agreement between governments.
- Aim – To ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.
- **Appendix I** includes species threatened with extinction.
- **Appendix II** includes species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilization incompatible with their survival.
- **Appendix III** contains species protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.



**Why in news?**

- The Commission for Air Quality Management (CAQM) invokes GRAP Stage 4 in Delhi NCR to combat Air pollution.

**About GRAP:**

- It deals with a comprehensive strategy of emergency measures to prevent deterioration of air quality in Delhi NCR.
- Background –**
  - Originated from Supreme Court's directions in 2016** to the Central Pollution Control Board to form an emergency action plan to combat air pollution.
  - The **Ministry of Environment, Forest and Climate Change** notified GRAP in 2017 in consultation with state government involved.
- How does GRAP Work?**
  - GRAP comprises **a set of stratified actions** that are triggered in response to specific pollution levels.
  - It involves **all stakeholders, implementing agencies and authorities** to immediately respond to situations of deteriorating air quality in Delhi-NCR.
  - Referred to as '**graded**' plan i.e. it functions in a step by step manner, or in stages.
- GRAP for Delhi NCR** (4 different stages of adverse air quality in Delhi) –
  - '**Poor**' Air Quality (AQI 201-300)
  - '**Very Poor**' Air Quality (AQI 301-400)
  - '**Severe**' Air Quality (AQI 401-450)
  - '**Severe +**' Air Quality (AQI 450)
- Delhi's Air Quality Index (AQI) –**
  - Air Quality is measured using a metric called **Air Quality Index (AQI)**.
  - The AQI in Delhi-NCR has deteriorated to the '**Severe +**' category (AQI > 450).
  - Delhi's air quality ranks among the **worst in the world's capital cities**.

**Commission for Air Quality Management (CAQM):**

- A **statutory body** responsible for formulating
- strategies to combat pollution in the region.
- Looks into Air Quality Management** in National Capital Region and Adjoining Areas
- for co-ordination, research and resolution of problems surrounding the air quality index (AQI).
- Takes proactive anti-air pollution actions**
- based on forecasts made by the Indian
- Institute of Tropical Meteorology (IITM) and the India Meteorological Department (IMD) up to three days in advance.
- CAQM has recently **revised the existing GRAP** to further strengthen the measures to combat air pollution especially '**Severe**' and '**Severe+**' air quality stages in the entire NCR.

**Why in news?**

- The Tamil Nadu government has chosen to pinpoint beaches along the State's coastline as potential candidates for achieving Blue Flag status.

**About Blue Flag certification:**

- Awarded by – **Foundation for Environmental Education (FEE)**, Denmark
- Aim – To promote sustainability in the tourism sector, through environmental education, environmental protection and other sustainable development practices.
- Awarded to – Beaches, Marinas and sustainable boating tourism operators.

- **International jury –**
  - United Nations Environment Programme (UNEP)
  - United Nations World Tourism Organisation (UNWTO)
  - Foundation for Environmental Education (FEE)
  - International Union for Conservation of Nature (IUCN)
- **33 Qualifying Criteria under major 4 categories –**
  - Environmental Education and Information
  - Water Quality
  - Environmental Management
  - Safety and Services
- **India has 12 Blue Flag Beaches** which have received the Blue Flag certification:
  - Minicoy Thundi Beach and Kadmat Beach (both in Lakshadweep)
  - Shivrajpur (Gujarat)
  - Ghoghla (Daman & Diu)
  - Kasarkod (Karnataka)
  - Padubidri beach (Karnataka)
  - Kappad (Kerala)
  - Rushikonda (Andhra Pradesh)
  - Golden beach (Odisha)
  - Radhanagar beach (Andaman and Nicobar)
  - Kovalam (Tamil Nadu)
  - Eden (Puducherry)

#### About Beach Environment & Aesthetics Management Services (BEAMS):

- Indian Initiative under ICZM (Integrated Coastal Zone Management) project.
- **Launched by –**
  - Society of Integrated Coastal Management (SICOM)
  - Union Ministry of Environment, Forest and Climate Change (MoEFCC)
- **Objectives –**
  - Abate pollution in coastal waters
  - Promote sustainable development of beach facilities
  - Protect & conserve coastal ecosystems & natural resources
  - Strive and maintain high standards of cleanliness
  - Hygiene & safety for beachgoers in accordance with coastal environment & regulations

## Adaptation Gap Report 2023

## Environment

### Why in news?

- United Nations Environment Programme has released the 2023 Adaptation Gap Report recently.

### About Adaptation Gap

- **Adaptation** is a process of **reducing countries and communities' vulnerability** to climate change by increasing their impact absorption ability.
- Adaptation gap is the difference between **implemented adaptation and societally set goals**.
- **Adaptation gap – Determined by preferences related to –**
  - Climate change impacts
  - Resource limitations
  - Competing priorities

### Key highlights:

- Adaptation **finance** needs are **10-18 times higher** than current public flows.
- Adaptation finance **gap is expanding**, now at US\$194- 366 billion annually.
- Action plan on **loss and damage has overlooked** non-economic losses like cultural heritage & indigenous knowledge.
- **Only 2% of gender-tagged** international adaptation finance is gender-responsive.



#### United Nations Environment Programme (UNEP):

- It is leading environmental authority in United Nations system.
- Genesis – Founded in 1972 following **UN Conference on the Human Environment**
- Objectives – To contribute to the building of a culture of peace, the eradication of poverty, sustainable development, and intercultural dialogue through education, the sciences, culture, communication, and information.
- Mandate – To find solutions to triple planetary crisis i.e., climate change, nature and biodiversity loss, and pollution and waste.
- Members – 193 (**including India**)
- Other Reports - Emission Gap report, The Global Environment Outlook, Frontiers, Invest into Healthy Planet.
- Headquarters – **Nairobi, Kenya**.

## Green Hydrogen

## Environment

### Why in news?

- According to a study by Climate Risk Horizons (CRH), the adoption of green hydrogen in India could exacerbate pollution if proper measures are not implemented.

### About Green Hydrogen:

- Hydrogen produced by the **electrolysis of water, using renewable electricity**.
- **Uses –**
  - Chemical industry: Manufacturing ammonia and fertilisers.
  - Petrochemical industry: Production of petroleum products.
  - Used in the steel industry (Green Steel)
- **Electrolyser –**
  - An electrolyser is a device capable of splitting water molecules into their constituent Oxygen (O<sub>2</sub>) and Hydrogen (H<sub>2</sub>) atoms.
- **Types of Electrolysers:**
  - Solid oxide electrolysis cell (SOEC)
  - Alkaline electrolyser
  - Proton exchange membrane (PEM)
- Advantages of Hydrogen: **High calorific value, alternative to coke and coal in steel production, fuel cells in electric vehicles etc.**
- **Constraints in using hydrogen:** High cost of electrolyser technology, high price of green hydrogen, difficult to transport and store etc.

### National Green Hydrogen Mission:

- **Aim:** To provide a comprehensive action plan for establishing a Green Hydrogen ecosystem
- **Objective:** Catalysing a systemic response to the opportunities and challenges of this sunrise sector.
- Ministry: **Ministry of New and Renewable Energy (MNRE)**

### Guidelines implemented by the Ministry

- **Strategic Interventions for Green Hydrogen Transition Programme (SIGHT):** To provide incentives for targeting domestic manufacturing of electrolysers and for production of Green Hydrogen.
- **Pilot projects:** In emerging end-use sectors, supporting large scale production or utilization of Hydrogen will be identified and developed as **Green Hydrogen Hubs**.
- **Strategic Hydrogen Innovation Partnership (SHIP):** Public-Private Partnership framework for R&D.
- **Skill Development programme**

### Mission Governance Framework

- Empowered Group: Chaired by Cabinet Secretary
- Advisory Group: Chaired by Principal Scientific Advisor
- Mission Secretariat: Headquartered in MNRE



**Why in news?**

- Fifth meeting of Conference of Parties (COP 5) to Minamata Convention held in Geneva.

**Minamata Convention on Mercury:**

- Adopted in 2013
- 1st global legally binding treaty to protect human health and environment from adverse effects of mercury.**
- It came into force in 2017 and **India ratified it in 2018.**
- Mercury may have toxic effects on nervous system, thyroid, kidneys, lungs, immune system, eyes, skin etc.

**Key decisions adopted at COP 5:**

- For the 1st time, **COP pushed to reduce mercury supply sources and trade by strengthening capacities** at national level and developing study on global supply, trade, production and use of mercury compounds. Implementation of projects and programmes undertaken under Convention with **participation of Indigenous Peoples and local communities.**
- Limit of 15 mg/kg concentration of mercury** is set as threshold for wastes contaminated with mercury or mercury compounds.
- Amend Annex A of Convention** to list phaseout dates for certain types of batteries, switches and relays, fluorescent lamps, and cosmetics.
- Amend Annex B of Convention** to mandate phaseout of mercury in polyurethane production by 2025.

Annexes of Convention	
<b>Annex A</b>	Contains Mercury-added products. Eg. Batteries, Compact fluorescent lamps, Pesticides, biocides etc.
<b>Annex B</b>	Contains Manufacturing processes in which mercury or mercury compounds are used. Eg. Production of polyurethane using mercury catalysts.
<b>Annex C</b>	Contains Artisanal and small-scale gold mining.
<b>Annex D</b>	Contains List of point sources of emissions of mercury and mercury compounds to atmosphere.
<b>Annex E</b>	Contains arbitration and conciliation procedures.

**Why in news?**

- Article in the Hindu - Importance of 'loss and damage' funds

**About Loss and Damage**

- Loss and damage **lack a universally agreed-upon definition** within the UN Framework Convention on Climate Change (UNFCCC)
- Varying interpretations among different groups.
- Generally, loss and damage refer to the adverse effects of climate change that occur despite mitigation and adaptation efforts.
- Can be broadly categorized into economic and non-economic aspects.
  - Economic loss involves measurable monetary impacts, such as costs for rebuilding infrastructure or revenue loss from destroyed crops.
  - Non-economic loss encompasses impacts challenging to assign a monetary value, including trauma from climate events, community displacement, and biodiversity loss.

**Loss and Damage Fund**

- It was being created to provide financial and technical assistance to economically developing nations that were incurring L&D due to climate change.
- Loss and Damage Fund tackles the gaps that current climate finance institutions such as the Green Climate Fund do not fill.



### Historical perspective:

- Formally agreed - 19th Conference of the Parties (COP 19) to the United Nations Framework Convention on Climate Change (UNFCCC) in Warsaw, Poland, in 2013.
- COP 25 - **Santiago Network for L&D** was set up - but countries didn't commit any funds.
- COP 26 - **Glasgow Dialogue on finance for L&D** was established to continue discussions over the next three years on the fund.
- COP 27 - representatives of the UNFCCC's member states agreed to set up the L&D fund and a Transitional Committee (TC) to figure out how the new funding mechanisms under the fund would operate.
- The TC was also to prepare recommendations that countries would consider, deliberate on, and potentially adopt by COP 28.

## Dubai climate conference | CoP-28 | UNFCCC

## Environment

### Why in news?

- Next month, the 28th edition of the Conference of Parties (CoP) is scheduled to take place in Dubai, spanning two weeks.

### About UNFCCC

- United Nations Framework Convention on Climate Change
- Forms the basis for most subsequent international climate agreements, constituting the foundational climate agreement.
- Signed in **1992** at the **United Nations Conference on Environment and Development** (The **Rio Earth Summit**)
- Entered into force in 1994
- Ratified by 197 countries
- UNFCCC birthed both the **Kyoto Protocol** and **Paris Agreement**

### Common but differentiated responsibilities

- The concept of common but differentiated responsibilities is endorsed by the UNFCCC in the climate context. This signifies that, although developing country parties are anticipated to contribute to climate mitigation, developed countries are expected to take the lead in addressing climate change and its adverse effects. This distinction is based on the superior capacity of developed nations to undertake mitigation efforts and their greater contribution to the problem of climate change due to historical emissions.

### Conference of the Parties (COP)

- COP (Conference of the Parties) is the **supreme decision-making body of the Convention**.
- All States that are Parties to the Convention are represented at the COP.
- The COP reviews the implementation of the Convention and other legal instruments it adopts.
- Decisions are made to promote effective implementation, including institutional and administrative arrangements.
- COP meets every year
- 1st COP meeting - Germany (1995)

## Production Gap Report (PGR) 2023

## Environment

### Why in news?

- Production Gap Report (PGR) 2023 was released recently.

### About the report

- Prepared by – **United Nation Environment Programme (UNEP)** and others
- Major countries (Australia, Brazil, Canada, China, India, UAE, etc.) plans and projections would lead to an **increase in global coal production** until 2030, and in global oil and gas production until at least 2050.
- Production gap tracks the **misalignment** between **governments' planned fossil fuel production and global production levels consistent** with limiting global warming to 1.5°C or 2°C.
- Emissions gap refers to difference between **global greenhouse gases (GHG) emissions under the Nationally Determined Contributions (NDCs)** and accepted level in 2030.

**Why in news?**

- UN Environment Programme (UNEP) released Emission Gap Report 2023 (Broken Report Record) recently.

**Key highlights of the report**

- **Global Scenario**
  - 86 days have been recorded with **temperatures exceeding 1.5°C** above pre-industrial levels this year.
  - Global GHG emissions **increased by 1.2 % from 2021 to 2022** with fossil fuel combustion and industrial processes being main contributors.
  - **Highly unequal distribution of current and historical emissions:** Globally, the 10% of the population with the highest income accounted for 48% of emissions.
  - Global warming is estimated to be **limited to 3°C** if the current policies continue.
- **Indian Scenario**
  - GHG emissions across the **G20 increased by 1.2%** in 2022, with increases in China, India, Indonesia, and the USA but decreases in Brazil, EU and Russia.
  - India to date has **only contributed 5%** of warming.
  - India has **8% implementation gap** between Current Policies and NDC pledges

**United Nations Environment Programme (UNEP):**

- It is leading environmental authority in United Nations system.
- Genesis – Founded in 1972 following **Stockholm UN Conference on the Human Environment**
- Objectives – To contribute to the building of a culture of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication, and information.
- Mandate – To find solutions to triple planetary crisis i.e., climate change, nature and biodiversity loss, and pollution and waste.
- Members – **193 (including India)**
- Other Reports – Adaptation Gap report, The Global Environment Outlook, Frontiers, Invest into Healthy Planet, Environmental Rule of Law Report
- Headquarters – **Nairobi, Kenya.**

## Climate Change &amp; Child report by UNICEF

## Environment

**Why in news?**

- UNICEF released The Climate-Changed Child: A Children's Climate Risk Index Supplement report.

**About the report**

- The report builds on **UNICEF's Children's Climate Risk Index (CCRI)** components –
  - **Water scarcity** (physical availability of water)
  - **Water vulnerability** (combination of water scarcity and lack of access to drinking water service)
- Nearly 1 billion children face severe water stress.
- India, Niger, Eritrea, Yemen, Burkina Faso: high child water vulnerability.
- Children, especially in low-income areas, vulnerable to climate change impacts.

**Why in news?**

- Ministry of Information and Broadcasting has set up an institutional mechanism under the Cinematograph (Amendment) Act 2023 to curb film content piracy.
- Under it, Nodal Officers have been appointed from **Central Board of Film Certification (CBFC)** and the Ministry to receive complaints against piracy.

**Key Provisions – Cinematograph (Amendment) Act 2023:**

Specifications	Details
It supports the existing laws viz. the Copyright Act, 1957 and the Information Technology Act (IT) 2000.	
<b>Anti-Piracy Provisions</b>	<ul style="list-style-type: none"> <li><b>Prohibits the unauthorised recording and unauthorised exhibition</b> of films and makes it a punishable offence under the provisions of <b>Copyright Act, 1957</b>.</li> <li><b>Punishment –</b> <ul style="list-style-type: none"> <li>Jail Term: Imprisonment from 3 months to 3 years.</li> <li>Fine: From ₹3 lakhs to 5% of the audited gross production cost</li> </ul> </li> </ul>
<b>Age-Based Certification</b>	<ul style="list-style-type: none"> <li><b>3 age-based certifications</b> under 'UA' category —'UA 7+', 'UA 13+' and 'UA 16+'.</li> <li>Meant for parents or guardians to consider whether their children should view such a film.</li> <li>These are <b>only recommendatory</b>.</li> </ul>
<b>Separate certificate</b>	<ul style="list-style-type: none"> <li>Films with an '<b>A</b>' or '<b>S</b>' <b>certificate</b> will require a separate certificate for exhibition on television, or any other media prescribed by the central government.</li> </ul>
<b>Certificate validity</b>	<ul style="list-style-type: none"> <li>Certificates will be <b>perpetually valid</b> as opposed to the present validity of <b>10 yrs.</b></li> </ul>
<b>Revisional powers of central government</b>	<ul style="list-style-type: none"> <li>Omits <b>section 6(1) of the Act</b> as directed by Supreme Court in <b>Union of India vs KM Shankarappa Case, 2000</b> which states that Centre cannot exercise revisional powers on films already certified by the CBFC.</li> </ul>

**About Central Board of Film Certification (CBFC):**

- Statutory body** under **Ministry of Information and Broadcasting**.
- Mandate** – It regulates public exhibition of films under provisions of Cinematograph Act 1952.
- Vision** – To ensure the good and healthy entertainment in accordance with provisions of Cinematograph Act 1952 and Cinematograph (Certification) Rules 1983.
- Mission** –
  - Make certification process transparent and responsible;
  - Develop CBFC as a Centre of Excellence;
  - Adopt modern technology for certification process etc.
- Composition** – Consists of **non-official members and a Chairman** (all of whom are appointed by Central Government).
- HQ: Mumbai**

**Why in news?**

- As a part of implementing Model Prisons and Correctional Services Act, 2023, Centre asks States to use tracking devices on prison inmates released on parole.

**Features of Model Prisons and Correctional Services Act, 2023:**

- Aim** – To holistically address all relevant issues relating to prison administration.
- Replaces **Prisons Act (1894)** and assimilates relevant provisions of **Prisoners Act (1900)** and **Transfer of Prisoners Act (1950)**.

- **High Security Prison:** Independent self-sufficient prison with strengthened security systems and independent Court complex, etc. for gangsters, hardened criminals, etc.
- **Directorate of Prisons and Correctional Services:** For implementing prison policies and coordinating various prisons and correctional services.
- **Classification of prisoners:** Broad categories of prisoners include Civil; Criminal; Convicted; Undertrial; Detenues; Habitual Offenders; Recidivists.
- **Segregate accommodation:** For various categories of prisoners and for attending to special needs of women/transgender, etc.
- **Staff welfare wing:** To be established by Head of Prisons and Correctional Services to aid Government for welfare measures for prison staff.
- **Use of Technology:** Computerize the entire prison administration and integrate the database with the Interoperable Criminal Justice System.
- **Use of electronic tracking devices:** For prisoners who are granted leave.
- **Jammu and Kashmir** police recently introduced **GPS tracker anklet** for monitoring a terror accused out on bail.
- **Prisoners' Health Care:** All prisoners will have access to adequate, gender-responsive health care facilities.

## Private Sector Reservation struck down by High Court

## Polity

### Why in news?

- The Punjab and Haryana High Court recently struck down the Haryana government's law that gave 75 percent **reservation in private jobs** to the state's residents in 2020.

### About the Judgement

- The **Haryana State Employment of Local Candidates Act, 2020** is held to be unconstitutional and violative of Part III of the Constitution of India.
- The Supreme Court emphasized that the government cannot discriminate against people simply because they do not belong to a particular country and discriminate negatively against other citizens of the country.
- The court said that it is not within the power of the state to restrict a private employer from recruiting such workers from the open market who earn less than Rs 30,000 per month.
- Considering the moral principles of the Supreme Court, the state cannot direct private employers to do what is prohibited by the Constitution of India.

### Related Judicial verdicts

- **Dr. Pradeep Jain Vs. Union of India, 1984:** "Sons of the Soil" legislation was called unconstitutional, but not clearly because the case involved different aspects of equality law.
- **Sunanda Reddy Vs. State of Andhra Pradesh, 1995:** The Supreme Court upheld the finding in Pradeep Jain, striking down the state government's policy of giving 5% extra weightage to candidates who studied using Telugu as a medium of instruction.
- The Supreme Court quashed the appointment of government teachers in Rajasthan in 2002, when the state selection commission gave preference to "candidates belonging to the area or rural area of the district concerned".
- In 2019, the Allahabad High Court struck down a recruitment notification issued by the UP Subordinate Services Selection Board, which ordered to give preference to women who are "natives" of UP only.

### Petitioners' arguments (against reservation)

- The petitioners challenged the Act, claiming that it is an unprecedented violation of the fundamental rights of private employers under Article 19 of the Constitution by the state government.
- They also argued that the Act violates Article 14 of the Constitution of India.
- It added that the law aims to create a fundamental wedge between people living in different states, which is against the concept of common citizenship enshrined in the Constitution of India.

### Arguments of Government of Haryana (Preference of Reservation)

- He argued that the law does not discriminate against working under the central or state governments or any other organization belonging to them.





- He also argued that reservation based on place of birth would violate the provisions of the constitution, but employment based on residence would not violate Section 15(1) of the constitution.
- **Constitution talks about government jobs:** According to the Haryana government, the law is constitutional as it applies to private sector jobs. It stated that unemployed local youth is a separate category and a reasonable classification can be made in this category to ensure 75 percent employment in the private sector.

## AAINA Dashboard

## Polity

### Why in news?

- The AAINA Dashboard for Cities, launched by the Ministry of Housing and Urban Affairs (MoHUA) on November 13, 2023, is aimed at encouraging Urban Local Bodies (ULBs) across the country to voluntarily submit key data through a user-friendly data entry form on the portal.

### About AAINA Dashboard

#### Objectives

- **Benchmarking Cities:** The dashboard enables cities to assess their performance relative to other cities. It does not rank ULBs but serves as a comparative tool, allowing cities to understand their standing among similar counterparts.
- **Inspiration and Improvement:** The dashboard aims to inspire cities by showcasing possibilities and areas for improvement. It serves as a motivational tool for ULBs to enhance their performance in various aspects.
- **Peer Learning:** Promotes peer learning among cities by facilitating the exchange of best practices. Cities can learn from frontrunners and implement successful strategies in their contexts.

### Dashboard Structure

The AAINA Dashboard organizes data submitted by ULBs into **five broad pillars**:

- Political & Administrative Structure
- Finance
- Planning
- Citizen-Centric Governance
- Delivery of Basic Services

### Data Submission

- ULBs submit data, including audited accounts and self-reported performance metrics, through the portal.
- A simple, easy-to-fill data entry form is provided for this purpose.
- ULBs have the flexibility to update the information as needed, ensuring the dashboard remains current.
- The dashboard is designed to be a permanent platform for ULB-related data and will be regularly updated.

### Accessibility

- Once populated, the database of key performance metrics will be accessible to all stakeholders.
- The information will eventually be made public, promoting transparency and accountability.

### Support Mechanism

- The Ministry, through Digital India Corporation, will offer handholding support to ULBs and states during the data submission process.



- Adhir Ranjan Choudhry the leader of opposition writes to the President on appointment of new CIC Heeralal Samariya

#### Central Information Commission (CIC):

- CIC is a **statutory body** constituted under **section 12 of the Right to Information Act, 2005.**
- **Composition:-**
  - CIC consists of a **Chief Information Commissioner** and **not more than ten Information Commissioners.**
- **Appointment:**
  - They are **appointed by the President of India** on the **recommendation** of a **committee consisting of the Prime Minister as Chairperson, the Leader of Opposition in the Lok Sabha, and a Union Cabinet Minister** nominated by the Prime Minister.
- **Eligibility**
  - The **members of CIC** shall be **persons of eminence in public life** with wide knowledge and **experience in law, science and technology, social service, management, journalism, mass media, or administration and governance.**
  - Members shall **not be a Member of Parliament, or Member of the Legislature of any State or Union Territory** as the case may be, or **hold any other office of profit or connected with any political party or carry on any business or pursue any profession.**
- **Tenure and Salary**
  - The members shall hold office for **such term as prescribed by the Central Government or until they attain the age of 65 years, whichever is earlier.**
  - They are **not eligible for reappointment.**
  - The **salary, allowances and other service conditions** of the Chief Information Commissioner shall be such as **prescribed by the Central Government.**
- **Removal:**
  - **President can remove** the Chief Information Commissioner or any Information Commissioner from the office under the **following circumstances:**
    - If he is **adjudged an insolvent**; or
    - **Convicted of an offence** which (in the opinion of the President) involves a **moral turpitude**; or
    - Engages during his **term of office in any paid employment** outside the duties of his office; or
    - He is (in the opinion of the President) **unfit to continue in office** due to **infirmity of mind or body**; or
    - **Acquired such financial or other interest** as is likely to affect **prejudicially his official functions.**
  - The President **can also remove the Chief Information Commissioner or any Information Commissioner** on the ground of **proven misbehavior or incapacity.**
  - The President has to **refer the matter to the Supreme Court** for an enquiry.
  - If the **Supreme Court, after the enquiry, upholds the cause of removal and advises so, then the President can remove him.**
- **Power and Function:**
  - **Complaint Inquiry:** CIC and SIC are **obligated to investigate complaints** received from any person regarding information requested **under the RTI Act, 2005, as per Section 18.**
  - **Adjudication in Second Appeals:** They have the **authority to adjudicate on second appeals** related to the disclosure of information, as **outlined in Section 19.**
  - **Penalty Imposition:** CIC and SIC can **impose penalties** when they believe that the **Public Information Officer, at the central or state level, has unjustifiably rejected or refused** to entertain an application without reasonable cause, in accordance with **Section 20.**
  - **Access to Public Records:** During their investigations, **CIC and SIC have the authority to request any records within the control of a public authority.**
  - **Suo-Moto Powers:** They can **initiate inquiries into matters with reasonable grounds** and **possess civil court-like powers, including summoning individuals and requesting documents.**
  - **Enforcement of Decisions:** CIC and SIC have the **power to ensure that public authorities comply with their decisions.**
  - **Annual Reporting:** CIC **submits an annual report to the Central Government, and the central government presents it before the Parliament.**

- **What is the Right to Information Act(RTI Act):**
  - The Right to Information (RTI) is an **act of the Parliament of India** enacted on **15 June 2005** which sets out the rules and procedures regarding citizens' right to information.
  - It replaced the former **Freedom of Information Act, 2002**.
- **Objective of the Right to Information Act :**
  - To empower the citizens
  - To promote transparency and accountability
  - To contain corruption
  - To enhance people's participation in democratic process
- **Key provisions of RTI:**
  - **Section 1(2) :** The act extends to the **whole of India**.
  - **Section- 2 (f):** This section is related to **Information which means any material** in any form, including **Records, Documents, Memos, e-mails, Opinions, Advices, Press releases, Circulars, Orders, Logbooks, Contracts, Reports, Papers, Samples, Models,**
  - **Section- 2(j) :** The Right to Information means the right to information **accessible under this Act** which is held by or under the control of any public authority.
  - **Section 4** of the RTI Act : Requires **suo motu disclosure of information** by each public authority.
  - **Section 8 (1) :-** It mentions **exemptions against furnishing information** under RTI Act.
  - **Section 8 (2) :-** It provides for **disclosure of information exempted under Official Secrets Act, 1923** if larger public interest is served.
  - **Section 13** of the Act:-It sets the **term of the central Chief Information Commissioner and Information Commissioners** including salaries, allowances and other terms of service.
  - **Section 22** of the RTI Act:-It states that the **provisions of the act will have effect notwithstanding anything that is inconsistent with the OSA.**
- **Functioning of Right to Information Act:**
  - A **three-tier structure** for enforcing the right to information has been set up under the RTI Act 2005.
  - **Public Information Officers:** The **first request** for information goes to the **Assistant Public Information Officer** and **Public Information Officer**, designated by the Public Authorities. These Officers are **required to provide information to an RTI applicant within 30 days of the request.**
  - **Appellate Authority:** It caters to the appeals against **decisions of the Public Information Officer.**
  - **State Information Commission or the Central Information Commission :** Their major function is to **listen to appeals against the order of the Appellate Authority.**

## CERT – In | Exemptions under RTI Act

## Polity

### Why in news?

- Central government has added the Computer Emergency Response Team (CERT-In) among a list of organisations that are exempted from the ambit of the Right to Information Act (RTI), 2005.

### About RTI Act:

- Sets out the principles and techniques in regards to citizens' right to information.
- Replaced **Freedom of Information Act, 2002**.
- Objective – To empower the citizens, promote transparency and accountability in the working of the Government, contain corruption, and make our democracy work for the people in real sense.
- **Key Provisions –**
  - **Section 4** – requires **suo motu disclosure of information** by each public authority. However, such disclosures have remained less than satisfactory.
  - **Section 8 (1)** – exemptions against furnishing information under **RTI Act**.
  - **Section 8 (2)** – disclosure of information exempted under **Official Secrets Act, 1923** if larger public interest is served.
- **Time period –**
  - Normal information – supplied in **30 days**
  - Information regarding life/liberty – supplied within **48 hours**.



**Why in news?**

- ENCORE, which stands for "Enabling Communications on Real-time Environment," is a software system developed by the Election Commission of India (ECI) to streamline and enhance candidate and election management processes.

**Key components and features of ENCORE**

- Candidate Nomination and Affidavit Management**
  - ENCORE facilitates the seamless processing of candidate nominations and affidavits.
  - Returning Officers can use the software to handle nomination submissions and affidavit verification.
  - Candidates can create accounts on the ECI's online portal to fill out nomination forms, deposit security, and plan visits to the Returning Officer.
  - The online portal simplifies the nomination process by allowing candidates to fill out forms online, which they can then print, notarize, and submit along with relevant documents in person.
- ENCORE Counting Application**
  - The ENCORE counting application is an **end-to-end solution for returning officers to digitize and tabulate the votes polled during an election.**
  - It enables the real-time collection and tabulation of round-wise election data.
  - Various statutory reports related to the counting process can be generated using this application.
- ENCORE Scrutiny Application**
  - This application **allows Returning Officers to scrutinize the nominations submitted by candidates online.**
  - After verifying the nomination details, the status of each nomination (Accepted, Rejected, or Withdrawn) is marked, aiding in the preparation of the final list of contesting candidates.
  - The application also assists in assigning election symbols to the candidates.
- Candidate Affidavit Portal**
  - The Candidate Affidavit Portal is used to **display information about a candidate's financial assets and liabilities.** This information provides transparency about a candidate's financial standing to the voters and other stakeholders.
- ENCORE Nodal App**
  - The ENCORE Nodal App is **used by various government departments (e.g., fire, education, police, environment, CPWD) to issue 'no objection' certificates.**
    - These certificates are required when political parties or candidates seek permission to hold rallies, road shows, and meetings.
  - By obtaining 'no objection' certificates from relevant departments, the ECI ensures that all necessary approvals are in place before allowing election-related activities.

**Digital Advertising Policy 2023****Polity****Why in news?**

- Recently the Union Ministry of Information and Broadcasting has approved a comprehensive **Digital Advertising Policy 2023.**

**About Digital Advertisement Policy, 2023**

- Role of the Central Bureau of Communications (CBC):** Digital Advertising Policy, 2023 enables and empowers the Central Bureau of Communications (the advertising arm of the Union Government) to conduct campaigns in the digital media platform.
  - The Central Bureau of Communications (CBC) can now take advantage of the growing number of podcasts and digital audio platforms by connecting digital audio platforms and channeling their public service campaign messages through mobile apps.
  - The practice enables CBC to empower agencies and organizations in the OTT and video-on-demand space.
  - The policy simplifies the process by which the CBC can place ads on social media platforms for government clients.
  - This policy authorizes the CBC to adopt new and innovative communication platforms in the digital platform with the approval of a duly constituted committee.
- Citizen at Centre Stage:** The policy aims to facilitate the effective delivery of citizen-centric messages in a targeted manner, leading to cost-effectiveness of public facing campaigns.
- Transparency:** In practice, competitive bidding is used to determine prices, which ensures transparency and efficiency. The rates found through this process are valid for three years and apply to all eligible offices.



- **Awareness:** The objective of the policy is to disseminate information and create awareness about various schemes, programs and policies of the Government of India.
  - It leverages the huge subscriber base and technology-enabled communication capabilities of the digital universe through digital advertising.

#### Central Bureau of Communications (CBC)

- It is a unit of the Ministry of Information and Broadcasting, whose mission is to offer 360-degree communication solutions to ministries, departments, public sector enterprises and independent institutions.
- It acts as the government's advisory body on media strategy and its main role is to promote the government's image as a key promoter of people's empowerment through the delivery of messages through print media, audio-visual, outdoor and digital media.
- CBC helped create mass awareness of socio-economic issues, tried to participate in development activities and eliminate social abuses.

## National Pharmacy Commission Bill, 2023

## Polity

#### Why in news?

- The Ministry of Health and Family Welfare proposes to finalise the National Pharmacy Commission Bill, 2023 for setting up the National Pharmacy Commission and repealing the Pharmacy Act, 1948. Accordingly, a draft National Pharmacy Commission Bill has been prepared and uploaded on the website of Ministry of Health and Family Welfare (in News and Highlights section) on 14-11-2023 vide public notice dated 10-11-2023.

#### Details of the bill

- **Aim:** To enhance admission to affordable, amazing pharmacy training, and make certain the supply of pharmacy specialists national and seeks to sell equitable healthcare.
- **National Pharmacy Commission:** The Bill proposes to represent a fee with its head workplace in Delhi.
  - It shall include a Chairperson, 13 ex officio Members and fourteen part-time Members.
- **Boards:** The following forums will paintings under the supervision of the Commission
  - the Pharmacy Education Board;
  - the Pharmacy Assessment and Rating Board; and
  - the Pharmacy Ethics and Registration Board.
- **National Register:** The Pharmacy Ethics and Registration Board will keep a National Pharmacy Register on the way to have info of pharmacy specialists to make certain transparency.
- **Periodic Assessment:** The Bill additionally requires a periodic and obvious evaluation of pharmacy institutions.
- **Promote Research and Establish Standards:** It additionally encourages specialists to combine the modern day studies into their paintings, and uphold excessive moral requirements and set up an powerful criticism redressal mechanism for applicable matters.

#### Need for the Bill

- To offer a pharmacy training gadget that guarantees availability of good enough and excessive excellent pharmacy specialists in all elements of the country.
- To sell equitable and established healthcare & make offerings of pharmacy specialists on hand to all of the citizens.
- To sell countrywide fitness goals.

#### Pharmaceutical Sector in India

- The Indian Pharmaceuticals enterprise performs a distinguished function withinside the worldwide prescription drugs enterprise.
- India is a first-rate exporter of Pharmaceuticals, with over 200+ nations served with the aid of using Indian pharma exports.
- India resources over 50% of Africa's requirement for generics, ~40% of ordinary call for withinside the US and ~25% of all remedy withinside the UK.
- India additionally bills for ~60% of world vaccine call for, and is a main provider of DPT, BCG & Measles vaccines.
- 70% of WHO's vaccines (as consistent with the important Immunization schedule) are sourced from India.

#### Pharmacy Act of 1948

- It governs the drugstore career withinside the country.
- The number one motive of this act is to adjust the training and exercise of pharmacy to make certain the excellent, safety, and efficacy of medicine and prescription drugs.
- The act affords for the status quo of the Pharmacy Council of India, a statutory frame constituted in 1949, to adjust the training and exercise of pharmacy in India.



**Why in news?**

- Centre to extend Pradhan Mantri Garib Kalyan Anna Yojana (free ration scheme) for over 80 crore people for next five years.

**About PMGKAY:**

- Launched under section 3 of the **National Food Security Act (NFSA), 2013**.
- Different from** the PMGKAY that was launched in 2020 as a **pandemic relief measure**.
- Aim – To provide **rice, wheat, and coarse grains free of cost** to families belonging to Antyodaya Anna Yojana (AAY) and Priority Households (PHH) categories.
  - PHH** are to be identified by **State Governments/Union Territory Administrations** as per criteria evolved by them.
  - AAY families** are to be identified by States/UTs as per the criteria prescribed by the **Central Government**.
- Subsumes **2 subsidy schemes** of Department of Food & Public Distribution –
  - Food Subsidy to Food Corporation of India (FCI)**
  - Food Subsidy for Decentralized Procurement (DCP)**
- Implemented by – **Ministry of Consumer Affairs, Food & Public Distribution**
- Benefits – free food to around 80 crores people, ensuring nutrition security, etc.

**National Food Security Act (NFSA), 2013:**

- Objective –**
  - To provide for food and nutritional security in the human life cycle approach
  - To ensure access to adequate quantities of quality food at affordable prices to people to live a life with dignity.
- Coverage – **Rural (75%) and Urban (50%)** population under Targeted Public Distribution System (TPDS).
- Eligibility –**
  - Priority Households to be covered under TPDS as per guidelines by the State government.
  - Households covered under existing **Antyodaya Anna Yojana**.
- Important Provisions –**
  - 5 Kgs of foodgrains per person per month** at Rs.3/2/1 per Kg for rice/wheat/coarse grains.
  - The existing AAY household will continue to receive **35 Kgs of foodgrains per household per month**.
  - Meal and maternity benefit of **not less than Rs.6,000** to pregnant women and lactating mothers during pregnancy and six months after the child birth.
  - Meals for children upto 14 years of age.

**Why in news?**

- Prime Minister launched the PM-PVTG Development Mission for most backward of the Scheduled Tribes.

**Particularly Vulnerable Tribal Groups:**

- More vulnerable** group among tribal groups in India.
- Characteristics of PVTGs – Primitive traits, geographically isolated**
- Criteria for identification of PVTGs –**
  - Pre-agricultural level of technology
  - Low level of literacy
  - Economic backwardness
  - A declining or stagnant population

- Occupation & Living – hunting, collect **Non-Timber Forest Produce** like honey, gum, bamboo and wax etc.
- Recommended by – **Dhebar Commission**
  - In 1973, the Commission set up a separate category for **Primitive Tribal Groups (PTGs)**. Later, in 2006, these groups were named PVTGs.
- **Status in India –**
  - **75 tribes** listed under PVTGs across 18 states and Union Territories
  - State with **largest** population of PVTGs – **Odisha** (13 tribes)
  - Largest PVTG – **Saura community (Odisha)** – 2011 Census

#### PM-PVTG Development Mission:

- Part of 'Reaching The Last Mile- Leaving No Citizen Behind'
- **Objectives –**
  - To improve the socio-economic status of PVTGs.
  - To conduct a survey to create a **Human Development Index (HDI)** for PVTGs.
  - To bring 11 key interventions like the PM-Gram Sadak Yojana, PM-Gram Awaas Yojana, Jal Jeevan Mission, etc.
  - To **provide basic facilities** such as road and telecom connectivity, electricity, safe housing, clean drinking water and sanitation, improved access to education, health and nutrition and sustainable livelihood opportunities.

### Central Adoption Resource Authority (CARA)

### Welfare

#### Why in news?

- SC calls for collaborative efforts to bring children into the adoption pool.

#### About Central Adoption Resource Authority (CARA):

- **Statutory body – Juvenile Justice (Care and Protection of Children) Act, 2015**
- Launched in 1990
- Aim – To oversee child adoption procedures, in the best interest of the child, for Indians and non-resident Indians living abroad.
- **Mandate –**
  - To monitor and regulate in-country and inter-country adoptions.
  - To deal with inter-country adoptions in accordance with the provisions of **Hague Convention, 1993**.
- Nodal agency – **Ministry of Women & Child Development**
- **Functions of CARA –**
  - Promote in-country adoptions
  - Facilitates inter-state adoptions in coordination with State Agency
  - Frames regulations on adoption and related matters from time to time as may be necessary
  - It regulates State Adoption Resource Agency (SARA), Specialised Adoption Agency (SAA), Authorised Foreign Adoption Agency (AFAA), Child Welfare Committees (CWCs) and District Child Protective Units (DPU)s
- **Procedure for Adoption:**
- Adoption means a legal process that allows someone to become the parent of a child, even though the parent and child are not related by blood.
- **Legal framework –**
  - Hindu Adoption and Maintenance Act, 1956 (for Hindus, Jains, Sikhs and Buddhists) and
  - The Juvenile Justice (Care and Protection of Children) Act, 2015
- **Procedure –**
  - Child and parent data centralized in **Child Adoption Resource Information and Guidance System (CARINGS)** by CARA.



- Parents register through CARINGS.
- **Specialised Adoption Agency (SAA)** conducts Home Study, referral, and adoption process.
- Parents take child for pre-adoption foster care.
- SAA petitions court; legal process initiated.
- CARA conducts 2-year post-adoption follow-up.
- Child Welfare Committees declare child legally free for adoption.

## UDAN (Ude Desh Ka Aam Naagrik) Scheme

## Welfare

### Why in news?

- The country's third-largest airport in terms of passenger traffic, the Bengaluru International Airport, has seen a rapid proliferation of travel to domestic destinations since COVID-19.

### About UDAN:

- A **Regional Connectivity Scheme (RCS)** under the **Ministry of Civil Aviation** in 2016.
- **Features –**
  - To develop the regional aviation market.
  - To provide affordable, economically viable and profitable air travel on regional routes to the common man even in small towns.
  - Providing connectivity and financial incentives to **un-served and underserved** airports of the country
  - Airlines have to **cap airfares for 50% of the total seats at ₹2,500** per hour of flight.
- Mode of funding – **Viability Gap Funding (VGF)** and **Regional Connectivity Fund (RCF)**.
- **Key features of UDAN 5.0:**
  - No restriction on the distance between the origin and the destination of the flight.
  - **VGF** to be provided will be capped at **600 km** (earlier 500 km) stage length for **both Priority and Non-Priority areas**.
  - **No predetermined routes** would be offered.
  - **Same route** would **not be awarded to a single airline** more than once
  - Exclusivity of operation provided to an airline will be withdrawn if the average quarterly Passenger Load Factor (PLF) is higher than 75% for 4 continuous quarters.
  - Airlines would be required to commence operations within 4 months (earlier 6 months) of the award of the route.
  - Novation process for routes from one operator to another has been simplified and incentivized.

## PM-KISAN | PM-KISAN Bhai

## Welfare

### Why in news?

- Centre plans to incentivise small and marginal farmers under a scheme likely to be named PM- KISAN Bhai (Bhandaran Incentive) scheme.

### PM KISAN Bhai:

- To **break the monopoly** of traders in deciding crop prices.
- To allow farmers retain their crops for a minimum of 3-months post-harvest.
- It grants farmers the autonomy to decide when to sell crops.

### About Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme:

- Under the scheme, the Centre transfers an amount of **Rs.6,000 per year**, in 3 equal instalments.
- Directly into the bank accounts of **all landholding farmers** irrespective of the size of their land holdings.
- Launched: 2019





- **Central Sector Scheme** (100% funding from the GoI)
- Ministry – **Ministry of Agriculture and Farmers Welfare**.
- The entire responsibility of identification of beneficiary farmer families rests with the State / UT Governments.
- **Ineligibility for the PM-Kisan scheme –**
  - **Income tax payers.**
  - Farmer families holding constitutional posts.
  - Serving or retired officers and employees of state or Central government.
  - Those working in public sector undertakings and autonomous government bodies.
  - Those earning a monthly pension of over **Rs.10,000**.

## National Organ and Tissue Transplant Organization (NOTTO)

Welfare

### Why in news?

- As per NOTTO data, 80% of organ recipients in India between 1995 and 2021 were men.

### About NOTTO

- Ministry – **Ministry of Health and Family Welfare**
- Apex centre for procurement and distribution of Organs and Tissues and registry of Organs and Tissues Donation and Transplantation in the country.
- **Other 2 divisions** established under **Transplantation of Human Organs (Amendment) Act 2011-**
  - National Human Organ and Tissue Removal and Storage Network
  - National Biomaterial Centre (National Tissue Bank)

## Ayurveda Gyan Naipunya Initiative (AGNI)

Welfare

### Why in news?

- Central Council for Research in Ayurveda Sciences (CCRAS) launched Ayurveda Gyan Naipunya Initiative (AGNI).

### About AGNI:

- Aim – To promote research for mainstreaming the pragmatic Ayurveda practices through scientific validation and evidence-based appraisal.
- It will provide a platform to Ayurveda practitioners for reporting their innovative practices and experiences in various disease conditions.
- Nodal agency – **Central Council for Research in Ayurveda Sciences (CCRAS)**
- Cooperate with **National Commission (NCISM)**, a statutory body.
  - Development, among others.
- Indian systems of medicine include **Ayurveda, Yoga & Naturopathy, Unani, Siddha and Sowa Rigpa, and Homoeopathy**.

## Basic Animal Husbandry Statistics 2023

Welfare

### Why in news?

- Ministry of Fisheries, Animal Husbandry & Dairying released Basic Animal Husbandry Statistics 2023 during National Milk Day event.

### Basic Animal Husbandry Statistics 2023:

- Survey of **milk, egg, meat and wool production** in India.
- Based on **Animal Integrated Sample Survey (ISS)**



Ignite IAS



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25

- Conducted in **3 seasons** – summer (March-June), monsoon (July-October) and winter (November-February).
- **Production of milk, egg and meat** has significantly **gone up in 2022-23 over the past five years**. Wool output in the same period has witnessed a negative growth.

#### Survey Highlights

	Milk Production	Egg Production	Meat Production	Wool Production
<b>Total Production</b>	230.58 million tonnes	138.38 billion nos.	9.77million tonnes	33.61 million kg
<b>Trend</b>	Increase in production by 3.83%.	Increase in production by 6.77%.	Increase in production by 5.13%.	Increase in production by 2.12%.
<b>Top producing State</b>	<b>Uttar Pradesh</b>	<b>Andhra Pradesh</b>	<b>Uttar Pradesh</b>	<b>Rajasthan</b>
<b>State with high annual growth rate (AGR)</b>	Karnataka	West Bengal	Sikkim	Arunachal Pradesh

### SATH Project

### Welfare

#### Why in news?

- NITI Aayog released the report Learnings for Large-Scale Transformation in School Education.
- This is the outcome report on the **Sustainable Action for Transforming Human Capital in Education (SATH-E) project** implementation in Jharkhand, Odisha, Madhya Pradesh.

#### Key Findings of Report:

- India has **5 times more schools than China** with similar enrolment.
- Many Indian states have **over 50% of primary schools with fewer than 60 students**.
- **2-5 lakh untrained teachers** in primary and upper primary levels.
- **Jharkhand merged 4,380 schools**, saving Rs.400 crores by optimizing resources.

#### SATH Project:

- Launched by – **NITI Aayog** (in 2017)
- A program providing '**Sustainable Action Transforming Human capital**' with the State Governments
- Aim – To initiate transformation in the education and health sectors.
- It proposed to identify and build '**3 future role model states**' (Jharkhand, Odisha and Madhya Pradesh) in the education and health sectors.

### Krishi Sakhis | Natural Farming

### Welfare

#### Why in news?

- Ministry of Rural Development (MoRD) and the Ministry of Agriculture and Farmers' Welfare (MoA&FW) launched the training of Krishi Sakhis for the promotion of Natural Farming.

#### About Krishi Sakhis initiative:

- **Krishi Sakhis** – They are **practicing farmers and trained para extension professionals** in agriculture at the grassroots level.
- They encourage the **adoption of environmentally friendly and economically viable** agricultural methods by raising awareness.

- Aim – To train and certify 50,000 Krishi Sakhis in a phased manner by the **National Centre for Organic and Natural Farming (NCONF)**.
- NCONF – a subordinate office of the **Ministry of Agriculture and Farmers' Welfare**.
- Training under **Deendayal Antyodaya Yojana- National Rural Livelihoods Mission (DAY-NRLM)**.

#### Natural farming:

- A **chemical-free farming system** with an understanding of ecology, resource recycling, and on-farm resource optimization.
- It relies on –
  - Adoption of diversified **multi-cropping** systems.
  - **Desi cow** based on-farm inputs for nutrient and soil enrichment.
  - Various **botanical concoctions** for plant protection.
- It aims at restoring soil health, maintaining diversity, ensuring animal welfare, **stressing on efficient use of natural/local resources**, and promoting ecological fairness.
- Originally introduced by – **Agriculturist Subhash Palekar**
- Promotes low-cost inputs such as the use of **Cow dung, aged cow urine, jaggery, pulse flour and other plant-based extracts**.
- **4 Pillars** –
  - **Bijamrit** – It is the microbial coating of seeds with formulations of cow urine and cow dung.
  - **Jivamrit** – It is the enhancement of soil microbes using a mixture of cow dung, cow urine and jaggery.
  - **Acchadana (Mulching)** – It is the covering soil with crops or crops residue.
  - **Waaphasa** – It is the building up of soil humus to increase soil aeration.
- Insect and pest management methods – **Agniastra, Brahmastra and Neemastra**.

### FAME India Scheme

### Welfare

#### Why in news?

- ICRA said that E-buses will account for 11-13% of new bus sales by FY25.
- Steady progress has been made towards meeting the e-bus deployment targets under the **Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME)** scheme.

#### FAME India Scheme:

- A part of the **National Electric Mobility Mission Plan**.
- Aim – To encourage electric vehicles by providing subsidies.
- Monitoring Authority: **Ministry of Heavy Industries and Public Enterprises**
- Covers **Hybrid & Electric technologies** like Mild Hybrid, Strong Hybrid, Plug in Hybrid & Battery Electric Vehicles.
- **4 focus Areas** –
  - Technology development
  - Demand Creation
  - Pilot Projects
  - Charging Infrastructure

#### National Electric Mobility Mission Plan (NEMMP):

- Aims at promoting hybrid and electric vehicles.
- Objective – To achieve targets set out in the NEMMP is the "Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles" (FAME) scheme.
- It sets out the target to achieve 6-7 million sales of hybrid and electric vehicles year on year from 2020 onwards by providing fiscal incentives.



### Related News

- Recently, 14th Clean Energy Ministerial's e-FAST India event aimed at promoting sustainable transport in India.
- **Clean Energy Ministerial** is a high-level global forum to promote policies and programmes that advance clean energy technology to encourage the transition to a global clean energy economy. **India is a member.**

### About e-FAST India:

- **Country's 1st electric freight platform**
- Spearheaded by – **NITI Aayog**
- Purpose – For transition towards cleaner freight transportation.
- **Need for freight electrification –**
  - Approximately **71%** of the total freight movement in India is attributed to road transportation.
  - The freight sector is responsible for nearly **14%** of the country's total greenhouse gas (GHG) emissions.

## CBG Blending Obligation (CBO)

## Welfare

### Why in news?

- The Government of India has initiated a policy to blend Compressed Bio-Gas (CBG) with Compressed Natural Gas (CNG) and Piped Natural Gas (PNG) in City Gas Distribution (CGD) areas. This policy was announced by the Union Minister of Petroleum and Natural Gas and Housing and Urban Affairs, Hardeep Singh Puri.

### About the plan

- **Voluntary Blending in 2024-25:** Initially, in the financial year 2024-25, the blending of CBG with CNG and PNG will be voluntary. This means that gas distributors can choose to blend CBG with CNG and PNG, but it's not a requirement.
- **Mandatory Blending from 2025-26:** Starting from the financial year 2025-26, it will be mandatory for distributors to blend CBG with CNG and PNG. This obligatory blending will begin with a 1% blend in the initial year.
- **Gradual Increase in Blending Percentage:** Over the following years, the mandatory blending percentage will increase gradually. It will be 3% in 2026-27, 4% in 2027-28, and reach 5% in 2028-29.
- **Objectives of CBG Blending Obligation (CBO):** The CBO policy aims to promote the production and use of CBG in India. The objectives include increasing the demand for CBG, saving foreign exchange by reducing import dependency, promoting a circular economy, and contributing to the goal of net-zero emissions.
- **National Biofuels Coordination Committee's Role:** The decision for mandatory blending was taken by the National Biofuels Coordination Committee, which is chaired by Union Minister Hardeep Singh Puri. The committee's announcement came on November 24.
- This policy reflects India's ongoing efforts to transition to cleaner energy sources and its commitment to environmental sustainability and energy self-sufficiency.



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  - The freight sector is responsible for nearly **14%** of the country's total greenhouse gas (**GHG**) emissions.

### India Australia RISE Accelerator program

#### Schemes

#### Why in news?

- Rapid Innovation and Startup Expansion (RISE) accelerator program was launched.

#### About the program

- Launched by – **Atal Innovation Mission (NITI Aayog)** and **Australia's national science agency (CSIRO)**
- It will support Australian and Indian **circular economy startups** and **small-to-mid-sized enterprises (SMEs)**.
- Program will be delivered virtually with opportunities to travel between both countries.
- Participating startups may also be eligible for up to
- **Rs.40,00,000 in non-equity grants.**

### Partnership for Global Infrastructure and Investment (PGII)

#### Schemes

#### Why in news?

- Union Minister for Commerce and Industry participated in the Investor Forum of the PGII.

#### About PGII

- Officially launched in 2022 - aims to mobilize up to USD 600 billion by 2027.
- **1st announced – G7 summit (UK)**
- It will **narrow the infrastructure gap** in developing countries and accelerate progress on SDGs globally.



**Context:**

- Directorate General of Foreign Trade (DGFT) imposed a minimum export price (MEP) of \$ 800 per tonne on onion exports till December 31 2023.

**News Highlights:**

- It aims to keep onion prices affordable by ensuring adequate domestic supply, as stock from the Rabi Season Onion crop is decreasing.

**What is MEP?**

- MEP is set for a particular product below which it cannot be exported.
- It is declared under the **Foreign Trade (Development & Regulation) Act, 1992**.
- DGFT is an attached office of **Ministry of Commerce and Industry**.

**What can be the reasons for rise in onion price?**

- Consumed all year round** but is **not harvested around year**.
- Rabi** crop accounts for **65-70%** of onion output.
- Low shelf life**
- No onion harvesting** takes place between **June and September**, when supply is met through stored rabi onion and harvested Kharif onion.
- Now, stored Rabi onion is getting exhausted and there is a **delay in arrival of Kharif onion**, resulting in low onion supply, and an increase in its price.
- Delay in the sowing of Kharif onion** due to weather conditions resulted in less crop coverage.
- Cobweb phenomenon in agriculture** is when farmers base their planting decisions on last year's prices.
- Other reasons – High transportation cost (rising oil price, poor road connectivity), lack of cold storage facilities, high storage cost, etc.

**Government initiatives to stabilise the price:**

- Operation Greens:** Scheme for development of **Tomato, Onion and Potato (TOP)** value chain (2018) under.
- Price Stabilization Fund (PSF)** to cool onion prices.
- Irradiation of onion:** In collaboration with **Bhabha Atomic Research Centre (BARC)** with the objective of minimizing storage loss.

**Context:**

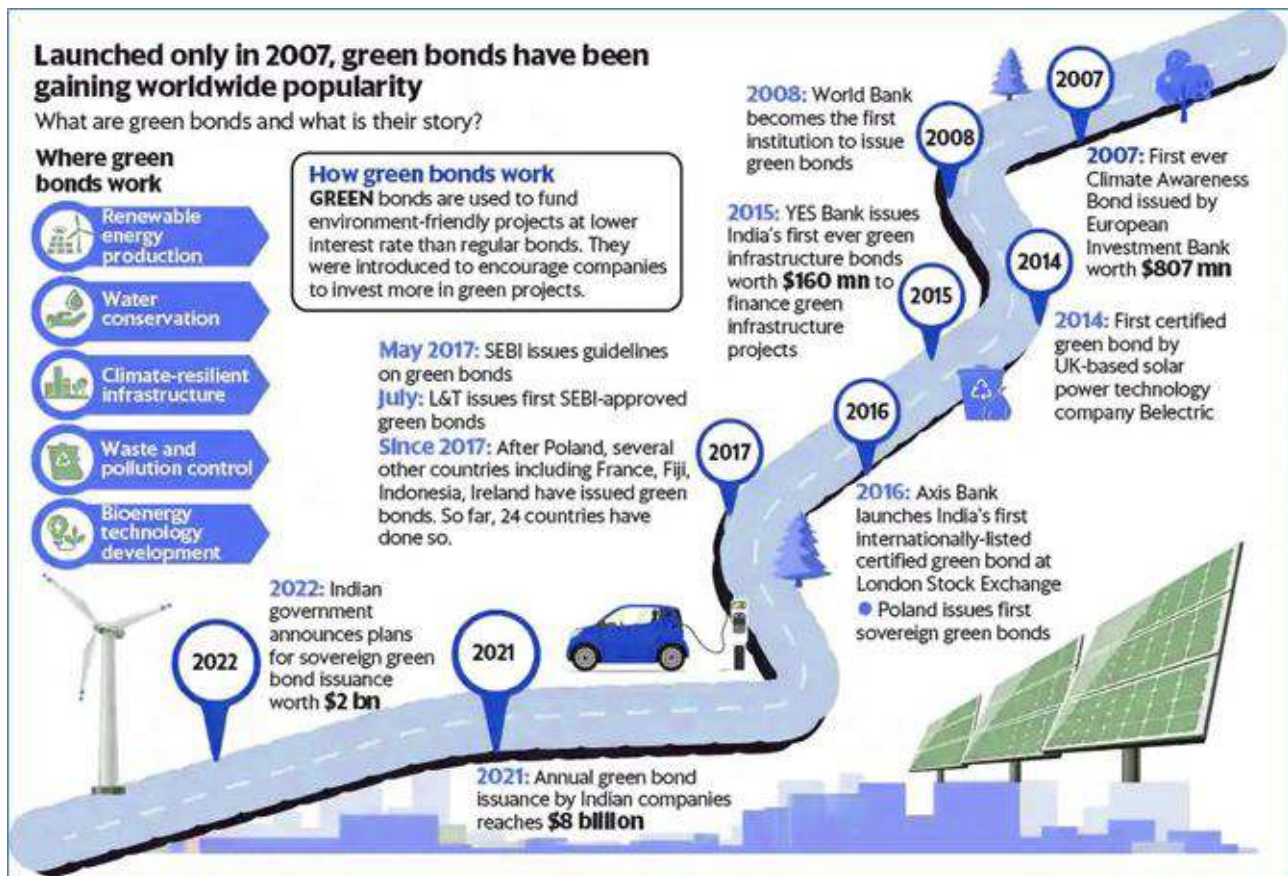
- India Exim Bank has listed its 10-year \$1billion sustainability bond on Sustainable Bond Market platform at London Stock Exchange.
- India Exim Bank finances and facilitates India's international trade. In January, it had raised \$1 billion issuing 10-year Sustainability Bond under its Environmental Social Governance Framework.

**Sustainability Bonds:**

- They are specifically designed to raise money for environmentally and socially responsible initiatives.
- Sustainability Bonds combines the features of **Green and Social Bonds**.
- Till June 2022, the Sustainable bond market had reached \$2.9 trillion.

**About Sovereign Green Bonds (SGrB):**

- What are Green Bonds?**
  - Fixed-income financial instruments which are used to fund projects that have positive environmental and or climate benefits.
  - Funds raised by green bonds are used **only to support initiatives which are beneficial for environment**, e.g., green construction, renewable energy etc.



- **What are Sovereign Green Bonds (SGrB)?**
  - When these bonds carry **guarantees related to the repayment of principal and payment of interest** by the sovereign or the government, they are called SGrB.
- **Key features of framework –**
  - **Principles for 'green project' classification:**
    - Encouraging energy efficiency.
    - Reducing carbon and greenhouse gases emissions.
    - Promoting climate resilience and/or adaptation.
    - Values and improves natural ecosystems and biodiversity in accordance with SDG principles.
  - Selection and evaluation of projects – **Green Finance Working Committee (GFWC)** with Ministry of Finance
  - Deposition of Proceeds with – **Consolidated Fund of India**
  - Track record – **Public Debt Management Cell**
  - Eligible projects will use the raised proceeds from sovereign green bonds for capitalisation or re-capitalization.





### Additional Information

- **Ghaziabad Nagar Nigam (GNN):** Issued **India's 1st** Green Municipal bond.
- **Blue Bond:** It is a relatively new form of debt instrument that is issued to support investments in healthy oceans and blue economies.
- **Rupee-denominated Bonds or Masala Bonds:** It is a term used to refer to a financial instrument through which **Indian entities can raise money from overseas markets in the rupee.**
- **Kerala – 1st Indian state** to issue Masala Bonds

## IMF Quotas and Special Drawing Rights (SDR)

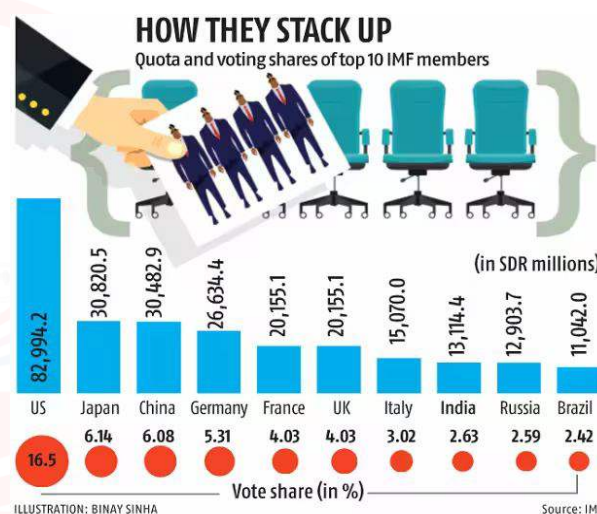
## Economy

### Context:

- The executive board of the International Monetary Fund (IMF) approved a proposal to make a 50 per cent increase in the quota allocated to members in proportion to their current quotas.
- Now, the proposal will be considered and voted on by the Board of Governors, after which it will be made effective.

### About IMF Quota:

- Quotas are the **building blocks** of the IMF's financial and governance structure.
- Quotas are denominated in **Special Drawing Rights (SDRs)**, the IMF's unit of account.
- **Use of Quotas is to determine –**
  - Resource contribution of a member
  - Voting power in IMF decisions.
  - Members get **one vote per SDR100,000 of quota plus basic votes**, which are the same for all members.
  - Amount of loans a member can obtain from the IMF.
  - General **allocation of SDRs**
- **What will be the impacts of the rise in Quotas?**
  - Help safeguard global financial stability by enhancing the IMF's permanent resources
  - Reducing reliance on borrowed resources.
  - Currently, the Fund relies on **bilateral borrowing arrangements** and pledges to a crisis lending fund called the **New Arrangements to Borrow** for nearly 60% of its lending resources



Any changes in quotas require approval by **85 per cent** of the total voting power, and a member's **own quota cannot be changed** without its consent.

### India and IMF Quota:

- Presently, **India** holds **2.75% of SDR quota**, and **2.63% of votes** in the IMF.
- **8th largest quota-holding** country in the IMF.
- **About Special Drawing Right (SDR):**
  - It is an **international reserve asset** created by the IMF.
  - **Objective** – To supplement its member countries' official reserves.
  - Created in 1969.
  - It is **neither a currency nor a claim** on the IMF. Rather, it is a potential claim on the **freely usable currencies** of IMF members. SDRs can be exchanged for these currencies.
  - It serves as the **unit of account of the IMF** and some other international organizations.
  - Determination of currency value of the SDR – Summing the values in US dollars, based on market exchange rates, of a SDR basket of currencies.
  - SDR basket of currencies – **US dollar, Euro, Japanese yen, pound sterling and the Chinese Yuan (Renminbi)** (included in 2016).

#### About International Monetary Fund:

- Genesis: Founded at the **Bretton Woods Conference** in 1944.
- **Countries must first join the IMF to be eligible to join the World Bank Group.**
- Headquarters – Washington DC
- **India is a member.**
- **3 critical missions –**
  - Furthering International monetary cooperation
  - Encouraging the expansion of trade and economic growth
  - Discouraging policies that would harm prosperity.
- Connections: It cooperates closely with other groups, including G20, and supports the G20's efforts to sustain international economic cooperation through its mutual assessment process.
- Key reports: **World Economic Outlook** and **Global Financial Stability Report.**

## Foreign Exchange Management Act (FEMA)

## Economy

### Context

- Adjudicating Authority under the Foreign Exchange Management Act (FEMA) has issued show cause notices to Byju's on the Enforcement Directorate's complaint alleging contraventions involving Rs.9,362.35 crores.

### About FEMA, 1999:

- Regulatory framework for managing foreign exchange transactions in India.
- Replaced the earlier **Foreign Exchange Regulation Act (FERA)**
- Primary objective – To help facilitate external trade and payments in India.
- Head office – **Enforcement Directorate**
- **All transactions** involving foreign exchange have been classified either as **capital or current account** transactions.
- **Current Account Transactions –**
  - All transactions undertaken by a resident that **do not alter his/her assets or liabilities, including contingent liabilities, outside India** are current account transactions.
  - Example – payment in connection with foreign trade, expenses in connection with foreign travel, education etc.
- **Capital Account Transactions –**
  - It includes those transactions which are undertaken by a resident of India such that his/her **assets or liabilities outside India are altered** (either increased or decreased).
  - Example – Investment in foreign securities, acquisition of immovable property outside India etc.
- **Applicability –**
  - It is **applicable to all parts** of India.
  - It is also equally applicable to the **offices and agencies located outside India** but **managed or owned by an Indian Citizen.**

### Resident Indians

- A '**person resident in India**' is defined in Section 2(v) of FEMA, 1999 as:
- Barring few exceptions, a person residing in India for **more than 182 days** during the course of the preceding financial year.
- Any person or body corporate **registered or incorporated** in India.
- An office, branch or agency in India **owned or controlled by a person resident outside** India.
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**Context:**

- Prime Minister of India announced the launch of Global Digital Public Infrastructure Repository (GDPIR) and Social Impact Fund (SIF).
- Both GDPIR and SIF, which are India-led initiatives announced during the Virtual G20 Leaders' Summit, achieved consensus at the G20 Digital Economy Working Group for the creation of a GDPIR to exchange information and best practices.

**Global Digital Public Infrastructure Repository (GDPIR):**

- A comprehensive resource hub, pooling essential lessons and expertise from G20 members and guest nations.
- Developed by – **Ministry of Electronics and Information Technology**
- **Aim –**
  - To bridge knowledge gap required for design, construction, deployment, and governance of DPIs.
  - To showcase information in a standardized format from countries that have developed DPIs at scale, incorporating governance frameworks etc.
- Currently, GDPIR features **54 DPIs** from 16 countries.

**Social Impact Fund (SIF):**

- Envisioned as a **government led multi-stakeholder initiative** to fast-track DPI implementation in **global south**.
- **India** has pledged an initial commitment of **25 million USD** to SIF.
- **Objectives –**
  - To offer financial support to provide technical and nontechnical assistance to countries in developing DPI systems.
  - To offers a platform for all relevant stakeholders, to contribute to this fund and help accelerate achievement of **Sustainable Development Goals in Low- and Middle-Income Countries** through DPIs.

**Digital Public Infrastructure (DPI):**

- A set of **shared digital systems**.
- **Features –**
  - **Secure and interoperable**
  - Can be built on **open standards and specifications** to deliver and provide equitable access to public/private services
  - Governed by **legal frameworks** to drive development, inclusion, innovation, etc.
- Examples of DPI: Aadhaar, UPI, DigiLocker etc.

**Context:**

- Core sector output grew 8.1% in September

**Index of Eight Core Industries (ICI)**

- The ICI measures combined and individual performance of production of 8 core industries
- 8 Core Industries - Cement, Coal, Crude Oil, Electricity, Fertilizers, Natural Gas, Refinery Products and Steel.
- The 8 Core Industries comprise 40.27 percent of the weight of items included in the Index of Industrial Production (IIP).
- **Decreasing order of weightage:** Refinery Products > Electricity > Steel > Coal > Crude Oil > Natural Gas > Cement > Fertilizers
- IIP Released by: National Statistical Office (NSO) under MoSPI.

## Context

- India's market for technical textiles is targeted to touch
- \$40 billion by 2030 from the current \$23 billion, said Rajeev Saxena, Joint Secretary, Ministry of Textiles.

## About technical textiles

- Textile materials that are manufactured for their **technical performances and functional properties** rather than aesthetic and decorative features.
- Broadly classified into **12 different categories** - Agrotech, Oekotech, Buildtech, Meditech, Geotech, Clothtech, Mobiltech, Hometech, Sporttech, Indutech, Protech, Packtech.
- Manufactured using **natural as well as man-made** fibres
- Some man-made fibres - Nomex, Kevlar, Spandex, Twaron
- A sunrise sector
- Technical textile accounts for approximately **13% of India's total textile and apparel market** and contributes to India's GDP at **0.7%**

India is the 2nd largest producer of polyester in the world

## National Technical Textile Mission

- Aim - to position the country as a global leader in Technical Textiles
- 4 year implementation period from FY 2020-21 to 2023-24.
- Have 4 components
- Content Research, Innovation and Development
- Promotion and Market Development
- Export Promotion
- Education, Training, Skill Development
- Prohibition** - directing judicial or quasi-judicial authorities to stop proceedings which it has no jurisdiction for; and

## USAGE OF TECHNICAL TEXTILES IN 12 SEGMENTS (BASED ON APPLICATION)

### MEDITECH

Diapers, Sanitary Napkins, Disposables, Contact Lens, Artificial Implants

### MOBILTECH

Airbags, Helmets, Nylon Tyre Cords, Airline Disposables

### OEKOTECH

Recycling, Waste Disposal, Environmental Protection

### PACKTECH

Wrapping Fabrics, Polyolefin Woven Sacks, Leno Bags, Jute Sacks

### PROTECH

Bullet Proof Jackets, Fire Retardant Apparels, High Visibility Clothing

### SPORTECH

Sports Net, Artificial Turf, Parachute Fabrics, Tents, Swimwear

### AGROTECH

Shadenets, Fishing Nets, Mulch Mats, Ant Hail Nets

### BUILDTECH

Cotton Canvas Tarpaulins, Floor and Wall Coverings, Canopies

### CLOTHTECH

Zip Fasteners, Garments, Umbrella Cloth, Shoelaces

### GEOTECH

Geogrids, Geonets, Geocomposites

### HOMTECH

Mattress and Pillow Fillings, Stuffed Toys, Blinds, Carpets

### GEOTECH

Conveyer Belts, Vehicle Seat Belts, Bolting Cloth

## Context:

- Researchers in China, proposed a model to explain how different combinations of mutations give rise to the different colours of the cocoons.

## Silk:

- Silk is reeled from **cocoons of the silk moth** and they based on feed they are classified.
- First domesticated by humans more than 5,000 years ago in China, from the **wild moth**.
- Wild silks – **muga, tasar, and eri silks**
- Obtained from moth species namely *Antheraea assama*, *Antheraea mylitta*, and *Samia cynthia ricini*.

- **Mulberry silks** – They have long, fine, and smooth threads.
- **Non-mulberry silks** – They have shorter, coarser, and harder threads.

Mulberry Silk		
	Ancestral Species	Domesticated Species
<b>Spread</b>	China, Korea, Japan, & Russia	All around the world including India
<b>Size</b>	Small	Larger
<b>Fibre length</b>	Small	Longer, up to 900 metres
<b>Cocoon colour</b>	Brown-yellow	Yellow-red, gold, flesh, pink, pale green, deep green or white.
<b>Flying ability</b>	Exists	Lost
<b>Pigmentation</b>	Observed	Lost

India is the **world's 2nd largest producer of raw silk after China** and non-mulberry silks comprise about 30% of all silk produced in India.

#### Silk Colour:

- Mulberry leaves have **colouring chemical compounds** called **carotenoids and flavonoids** which are absorbed by silkworms when they feed it.
- The absorbed chemicals are transported to the silk glands, where they are bound to the silk protein.
- Currently, **domesticated cocoons possess water soluble colour** that gradually fade away and so silk colours are derived from chemical compounds made by the mulberry leaves.
- The differently coloured cocoons arise from **mutations in genes** responsible for the uptake, transport, and modification of carotenoids and flavonoids.

#### Sea Buckthorn Fruit

#### Economy

- Sea buckthorn fruit from Ladakh has been awarded a Geographical Indication (GI) tag.
- Belongs to **Ladakh**.
- A plant found throughout Europe and Asia.
- **Habitat** –
  - In India, it is found **above the tree line** in the Himalayan region.
  - Generally, in **dry**
  - **areas** such as the **cold deserts** of Ladakh and Spiti.



#### Cashew crop | APEDA

#### Economy

##### Context:

- The Agricultural and Processed Food Products Development Authority (APEDA) facilitated the export of over 30 tonnes of cashew on National Cashew Day (23rd November).

##### About Cashew:

- Origin: Native to Brazil
- Introduced in the **Malabar Coast by Portuguese** in the 16th century.
- Soil and climate: Well-drained **deep sandy loam** soils.
- Temperature: Range of **20 to 38 degree Celsius**.
- Relative humidity: 60 to 95%
- Annual precipitation: **2000 to 3500 mm**.
- India – **2nd largest producer and exporter** of Cashew Nuts.

- Major Cashew producing states: **Maharashtra, Andhra Pradesh, Odisha, Karnataka and Tamil Nadu.**
- Top export destinations – **UAE, Netherlands, Japan, and Saudi Arabia.**



## AGRICULTURAL AND PROCESSED FOOD PRODUCTS EXPORT DEVELOPMENT AUTHORITY (APEDA)

Ministry of Commerce and Industry, Government of India

### Agricultural and Processed Food Products

- **Export Development Authority (APEDA):**
- **Statutory body** under the Agricultural and Processed Food Products Export Development Authority (APEDA) Act of 1985.
- Ministry – **Ministry of Commerce and Industry**
- Objective – To develop and promote the export of scheduled products.
- **Scheduled products:** Products specified under the **APEDA ACT**
- Headquarters – **New Delhi**
- Provides financial assistance, information, and guidelines for the development of scheduled products.

### Jamdani Sari

### Economy

- At 42nd edition of India International Trade Fair (IITF) in New Delhi, Jamdani sari (muslin) has been showcased.
- Origin – **Persia**
- A vividly patterned, sheer cotton fabric, traditionally woven on a handloom by craftspeople and apprentices around Dhaka (Bangladesh).
- **Weaving technique** – Bengali origin; Motif appears same on front and reverse side of sari.
- **Uppada Jamdani Sarees (Andhra Pradesh)** is a registered Geographical Indication product.



### Poppy Cultivation in India

### Economy

#### Context:

- Farmers are expressing dissatisfaction with the Union government's decision to allow private entities into the production and processing of opium.

#### About Opium Poppy Plant

- The opium poppy plant (*Papaver somniferous*) serves as the origin of **opium gum**, which comprises crucial alkaloids like **morphine, codeine, and thebaine**.
- Morphine stands out as a highly effective analgesic, particularly in cases of severe and agonizing pain, such as that experienced by terminally ill cancer patients. In such instances, nothing provides relief quite like morphine.
- Codeine is frequently employed in the production of cough syrups..

#### Opium cultivation in India

- India is one of the few countries that legally grow opium poppy
- India is the only country which legally produces opium gum (Source -department of revenue website).
- **Narcotic-Drugs and Psychotropic Substances Act 1985** empowers the Central Government to permit and regulate cultivation of opium poppy for medical and scientific purposes.
- The Government of India notifies the tracts where opium cultivation can be licensed as well as the General Conditions for issuance of license every year.



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**38**



- These notifications are commonly referred to as **Opium Policies**.
- The **Central Bureau of Narcotics (CBN), Gwalior** (Madhya Pradesh) under the Narcotics Commissioner issues licenses to the farmers to cultivate opium poppy.
- Opium cultivation is permitted in the notified tracts in the states of **Madhya Pradesh, Rajasthan and Uttar Pradesh**.
- **Mandsaur** district of Madhya Pradesh and **Chittorgarh and Jhalawar** Districts of Rajasthan constitute about 80% of the total area.

## Rat Hole Mining

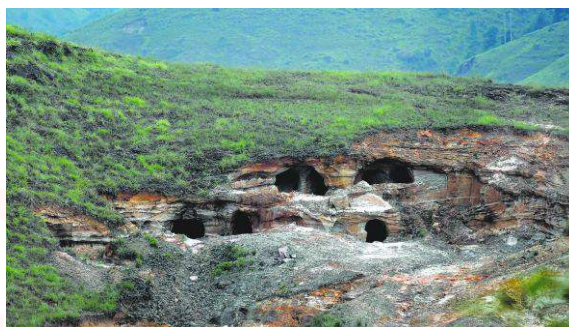
## Economy

### Context:

- National Disaster Management Authority said Rat-hole miners were used in the rescue operation to save the 41 workers trapped in the Silkyara tunnel.

### What is rat-hole mining?

- A method of extracting coal from **narrow, horizontal seams**, typically around 3-4 feet depth (prevalent in Meghalaya).
- Rat hole – Refers to the **narrow pits dug into the ground**, typically just large enough for 1 person to descend and extract coal.



### Types of rat hole mining

- **Side cutting** – Narrow tunnels are excavated into the hill slopes and workers enter these openings to locate the coal seam.
- **Box cutting** – Rectangular openings are created, ranging in size from 10 to 100 square metres.

### Why prevalent in Meghalaya?

- They are prevalent in Meghalaya due to challenging **terrain and the coal seam here are very thin** (less than 2 m) in most cases.

### What are the issues?

- Lack safety measures such as proper ventilation, structural support, or safety gear for the workers.
- Causes land degradation, deforestation, and water pollution.

### When was it banned, and why?

- In 2014, the National Green Tribunal (NGT) stopped rat-hole mining because it was unsafe and not scientifically sound.
- In 2019, the Supreme Court overturned this ban and said that coal mining could continue in Meghalaya if it was done scientifically.

### Silkyara-Barkot Tunnel:

- Location – **Brahmakhal - Yamunotri** portion
- Constructed between **Silkyara and Dandalgaon**.
- Connects **Yamunotri** on the south end to **Dharasu** on the north end.
- Part of the **Chardham Mahamarg Vikas Pariyojana**
- all-weather road project connecting 4 sacred sites in Uttarakhand.
- 4 sacred sites – **Gangotri, Yamunotri, Kedarnath and Badrinath**.





## India's e-commerce Exports

## Economy

- Directorate General of Foreign Trade (DGFT) predicts a remarkable surge in India's E-commerce exports.
- **Factors driving the growth of India's e-commerce exports include –**
  - Global e-commerce exports are estimated to touch **\$2 trillion by 2025**.
  - About **90%** of e-commerce exporters are **small and medium-sized** businesses.
- DGFT is attached office of the **Ministry of Commerce and Industry** responsible for administering laws regarding foreign trade.

## Digital Twins

## Economy

Survey of India (SoI) to prepare three-dimensional maps of several cities and towns called Digital Twins.

- **3 dimensional representations of cities** with high-resolution images
- Available digital twins – Ayodhya, the Dharavi slum cluster in Mumbai, Kochi



**Why in news?**

- Foreign Ministers of G7, who met in Tokyo, appeals for humanitarian pauses in Gaza.

**About G7:**

- An intergovernmental political forum of 7 Members-
  - Canada, France, Germany, Italy, Japan, the United Kingdom and the United States**
- The European Union (EU) is a "non-enumerated member"
- Origin - an ad hoc gathering of finance ministers in 1973
- G7 is **not based on a treaty**
- Has **no permanent secretariat or office**.
- Organized through a presidency that rotates annually 2023 presidency - Japan
- Russia belonged to the forum from 1998 TO 2014
- the bloc was known as the Group of Eight (G8).
- Russia's membership was suspended in 2014 over the annexation of Crimea.

**About G8:**

- The Group of Eight (G-8) was an intergovernmental organization addressing global economic and monetary issues through periodic meetings.
- Now known as the G-7 due to Russia's suspension in 2014 following the annexation of Crimea.
- Both the G-8 and the G-7 lack legislative or authoritative power to enforce the policies and plans they compile.

## Asia-Pacific Economic Cooperation (APEC)

## International Relations

**Why in news?**

- 30th Asia-Pacific Economic Cooperation (APEC) Economic Leaders' Meeting concluded in San Francisco with adoption of **Golden Gate Declaration**.

**About APEC:**

- Formed in 1989 with 12 members.
- Present members – **21 countries**
- Only international intergovernmental grouping** of economies around Pacific Ocean aiming to promote trade, investment, and economic development in region.
- Importance –**
  - Accounts for nearly **62% of global GDP**, half of global trade and covers **38% of global population**.
  - Operates on basis of **non-binding commitments** with decisions reached by consensus.

**India and APEC**

- India is an **observer** since 2011.
- Why is India not a member of APEC?**
  - Reservations about India's "**protectionist instincts**", and its unsatisfactory records on economic reforms and WTO engagement.
  - Membership in APEC group froze in 1997.
  - India's **lack of a Pacific coastline** has worked against its membership.
- Significance of APEC for India**
  - Reducing trade barriers, promoting free flow of goods, services and capital among APEC economies.
  - Improve physical infrastructure linkages, people mobility and institutional ties across Asia-Pacific.
  - Boost India's exports, attract investment and support initiatives like Make in India.
  - Facilitate "**technology transfer**" in IT, pharmaceuticals, renewable energy etc.

**Why in news?**

- The UN calls for an investigation into violations during the Israel-Hamas conflict.

**About UNHRC**

- An intergovernmental body within the United Nations system
- Established in 2006 by the General Assembly
- Responsibility - strengthening the promotion and protection of human rights around the globe.
- It has the ability to discuss all thematic human rights issues and situations that require its attention throughout the year.
- It meets at the United Nations Office at **Geneva** (UNOG).
- **Membership - 47 States**
  - Elected directly and individually by a majority of the 193 states of the UN General Assembly.
  - **3-year terms**
  - Elections take place **every year**.
  - Seats are equitably distributed among the five UN regional groups
- **Functions of UNHRC**
- Serves as an international platform for dialogue on human rights, involving UN officials, mandated experts, states, and civil society.
- Adopts resolutions during regular sessions to express the international community's will on specific human rights issues, signaling governments to take action.
- Conducts special sessions, totaling 36 to date, to address urgent human rights situations.
- Reviews the human rights records of all UN Member States through the Universal Periodic Review.
- Appoints Special Procedures, independent human rights experts, to monitor specific countries or themes.
- Authorizes commissions of inquiry and fact-finding missions to gather evidence on war crimes and crimes against humanity.

**Why in news?**

- The 59th International Tropical Timber Council (ITTC) was held at Pattaya, Thailand in 2023.

**About ITTC:**

- Governing body of the **International Tropical Timber Organisation (ITTO)**
- **Objectives –**
  - To promote sustainable tropical forest management and the trade of sustainably produced tropical timber.
  - To develop forest-related policies and approve and finance field-level projects.
- Meeting – Once a year
- Membership – All the 75 ITTO's members.
- **Assisted by 4 committees –**
  - Committee on Economics, Statistics and Markets.
  - Committee on Reforestation and Forest Management.
  - Committee on Forest Industry.
  - Committee on Finance and Administration.

**International Tropical Timber Organisation (ITTO):**

- Based on **International Tropical Timber Agreement, 2006** that entered into force in 2011.
- **Objectives –**
  - To promote sustainable forest management (SFM) and conservation of tropical forests.
  - To expand and diversify international trade in tropical timber from sustainably managed and legally harvested forests.

- Membership – **75 members including India and EU.**
- **Importance –**
  - Represents about 90% of the global tropical timber trade
  - Holds more than 80% of the world's tropical forests.

#### **Nordic-Baltic nations Eight (NB8)**

External Affairs Minister has said that India's engagement with the NB-8 nations has significantly strengthened in recent years.

- An **informal institutionalized) (non- regional cooperation** format established in 1992
- **5 Nordic countries** (Denmark, Finland, Iceland, Norway, and Sweden)
- **3 Baltic countries** (Estonia, Latvia, and Lithuania)
- Includes **both non-members members of the (Norway and Iceland) and EU and NATO (Sweden).**

## **C40 Cities**

## **International Relations**

### **Why in news?**

- 269 actions planned under Bengaluru Climate Action Plan. The Bruhat Bengaluru Mahanagara Palike (BBMP) has engaged the World Resources Institute (WRI) as a global consultant to formulate the CCAP for 2050

### **About C40**

- An international network comprising nearly 100 mayors from some of the world's foremost cities.
- Joined together in taking collective action to address the challenges posed by the climate crisis.
- Mayors of C40 cities are committed to using an inclusive, science-based and collaborative approach
- **Aims:**
  - to cut their fair share of emissions in half by 2030,
  - help the world limit global heating to 1.5°C,
  - build healthy, equitable and resilient communities.
- **6 Cities from India – Delhi, Ahmadabad, Mumbai, Chennai, Bengaluru & Kolkata**
- As part of the signatory of the C40 cities, the commitment from the cities is to reduce carbon (CO<sub>2</sub>) emission by 2030 and achieve carbon neutrality by 2050.



**WORLD  
RESOURCES  
INSTITUTE**

#### **World Resource Institute**

- A global research non-profit organization
- Studies sustainable practices for business, economics, finance and governance, with the purpose of better supporting human society in **6 areas: food, forests, water, energy, cities, and climate.**
- Flagship report- **WorldResources Report**

## **Central Trade Unions | India and ILO Conventions**

## **International Relations**

### **Why in news?**

- Central Trade Unions (CTUs) urge Government to ratify ILO Conventions on workers' Health and Safety in the light of recent Silkyara Tunnel collapse in Uttarakhand.
- **Central Trade Unions:**
  - Aim – To protect and promote the interests of their members, which are workers or employers.
  - Examples – All India Trade Union Congress (AITUC), Indian National Trade Union Congress (INTUC), Bharatiya Mazdoor Sangh (BMS), etc.
  - **1st organised trade union** in India –
  - **Madras Labour Union(1918)**
  - **Laws governing Trade Unions –**
    - **Article 19(1) (c) of the Constitution:** Guarantees citizens the right to form associations or unions, including trade unions.



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**43**

- **Trade Unions Act of 1926:** Regulates the formation and registration of trade unions and the laws that govern registered trade unions.
- **Industrial Disputes Act, 1947:** Manages the rights of employers and employees in the investigation and settlement of industrial disputes, including those involving trade unions.

#### International Labour Organization (ILO):

- Established in 1919.
- Only **tripartite U.N. agency**
- ILO brings together **governments, employers and workers**
- Members – **187 Members (India – Founding Member)**
- Objective – To promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.
- Headquarters – **Geneva, Switzerland**
- Reports – Renewable Energy and Jobs: Annual Review 2023, The road to decent work for domestic workers, etc.
- In India, **workers' safety** is covered under the **Occupational Safety, Health and Working Conditions Code (OSHWCC) 2020**.

India's ratification status of ILO conventions	
Ratified by India	Not Ratified by India
<b>Forced Labour Convention (No. 29)</b>	Freedom of Association and Protection of Right to Organise Convention (No.87)
<b>Abolition of Forced Labour Convention (No. 105)</b>	Right to Organise and Collective Bargaining Convention (No.98)
<b>Equal Remuneration Convention (No. 100)</b>	C155 - Occupational Safety and Health Convention, 1981
<b>Discrimination (Employment Occupation) Convention (No. 111)</b>	C187 - Promotional Framework for Occupational Safety and Health Convention, 2006
<b>Minimum Age Convention (No. 138)</b>	
<b>Worst forms of Child Labour Convention (No. 182)</b>	

#### World Gold Council

#### International Relations

##### Why in news?

- Demand for gold in India grew by 10% in Q3 2023 (July-September) as compared with the same period last year according to data released by the World Gold Council (WGC).

##### About World Gold Council:

- A nonprofit association of the **world's leading gold producers**.
- Includes 33 members - many members are gold **mining companies**
- Headquarters – **London**
  - they have office in India
- WGC covers the markets which comprise about three-quarters of the world's annual gold consumption.
- WGC is an advocate for gold consumption.
- works across all parts of the industry - from gold mining to investment
- Gold traces its origins to Ancient Egypt - first smelted gold around 3600 B.C.E.





**Why in news?**

- Ministry of Fisheries, Animal Husbandry & Dairying is organizing the 19th Working Party on Data Collection and Statistics (WPDCS19) of the Indian Ocean Tuna Commission (IOTC).

**About Indian Ocean Tuna Commission:**

- An intergovernmental organization that manages tuna and tuna-like species in the Indian Ocean and adjacent seas.
- Establishment – Agreement for the establishment of the IOTC was adopted in 1993 and entered into force in 1996.
- Created within the framework of the **UN Food and Agricultural Organization's (FAO)**
- Constitution.
- Objective – To ensure the conservation and appropriate utilization of fish stocks and encourage the sustainable development of fisheries.
- Headquarters – Victoria, Seychelles.
- Members – 31 countries (**India is a member**)
- Membership is open to –
  - Indian Ocean coastal countries
  - Countries that are members of the UN and UN special organisations
  - Those **who fish for tuna** in the Indian Ocean
- Key functions and responsibilities –**
  - Drawn from the **United Nations Convention on the Law of the Sea (UNCLOS)**.
  - Reviewing the conditions and trends of the stocks of Tuna and tuna-like fish.
  - Encouraging, recommending, and coordinating research and development activities.
  - Adopting conservation and management measures to ensure conservation of the stocks.
  - Reviewing the economic and social aspects of fisheries, bearing in mind the interests of developing coastal states.

**Why in news?**

- India hosted the 2nd Voice of Global South Summit which focused on ways to sustain the momentum generated toward a more inclusive, representative, and progressive world order.

**Highlights of the Summit:**

- Indian PM unveils **DAKSHIN (Global South Centre of Excellence)**
- Called for **5 'Cs' for the Global South**: Consultation, Cooperation, Communication, Creativity, and Capacity building.
- 1st VOGSS** – Hosted by **India** (125 countries) with the theme "**Unity of Voice, Unity of Purpose.**"

**What does "Global South" mean?**

- It refers to various countries often described as "**developing,**" "**less developed**" or "**underdeveloped.**"
- The phrase "Global South" refers broadly to the regions of **Latin America, Asia, Africa, and Oceania.**
- The concept of the Global South can be traced to the **Brandt report** of 1980.

**What is the need for South-South Cooperation?**

- To address the disproportionate impact of global challenges such as climate change.
- To improve representation in global forums such as the UN Security Council.
- To achieve food and energy security.
- To fulfill sustainable development goals.

### Indian Initiatives for South-South Cooperation:

- Inducting **African Union** in G20 Grouping.
- Institutional initiatives such as the **International Solar Alliance**, **Global Biofuel Alliance**, Coalition for Disaster Resilient Infrastructure, etc.
- **MAHARISHI** for global food security.
- **G20 Digital Public Infrastructure** Framework.
- Proposal for weather and climate monitoring satellite for Global South.

### China-Myanmar Economic Corridor (CMEC)

### International Relations

#### Why in news?

- China is prioritising the extension of the China-Myanmar Economic Corridor (CMEC) to Sri Lanka.

#### About CMEC:

- Newest of the 6 land corridors under the **Belt and Road Initiative (BRI)**.
- Initially part of ambitious '**Bangladesh China India Myanmar (BCIM) corridor**' proposed in 2013
- BCIM – To link Kunming in **China's Yunnan province with Kolkata** has been largely stalled as of now.
- **3 pillars of the CMEC** –
  - Kyaukpyu Special Economic Zone
  - China-Myanmar Border Economic Cooperation Zone
  - New Yangon City

#### Significance –

- China will be able to shift its manufacturing to its south-western provinces to avoid the middle-income trap.
- Provides **shorter routes** to markets in South Asia, East Africa, West Asia, and Europe.
- Opens the **Myanmar market to all Chinese goods and services**
- Allows China to import raw materials from Myanmar and beyond.
- Impact on India – It will reinforce and strengthen the string of pearls strategy of China.
- CPEC, CMEC and the CNEC signify the economic as well as strategic rise of China in the Indian subcontinent.

#### Project South Asia under the BRI project:

- China-Myanmar Economic Corridor (CMEC)
- Nepal-China Trans-Himalayan Multi-Dimensional Connectivity Network (CNEC)
- China Pakistan Economic Corridor (CPEC)

### Comprehensive Nuclear Test Ban Treaty (CTBT)

### International Relations

#### Why in news?

- Russia withdrew from ratification of CTBT to bring itself in line with the US.
- US have not ratified the CTBT by citing difficulty in verifying whether or not participant States meet rules of Treaty.

#### About CTBT:

- CTBT bans **all nuclear explosions**, whether for **military or peaceful** purposes.
- It seeks to establish **CTBT Organization (CTBTO)** to verify the ban worldwide.
- **Verification regime includes** –
  - International Monitoring System
  - International Data Centre
  - On-Site Inspections
- **Status** –
  - Opened for signature in 1996
  - Signed by 187 nations and ratified by 178.
  - It is **yet to formally enter into force** as it **requires ratification by 44 specific nations** - 8 nations yet to ratify.
  - **8 Nations** – US, India, China, Pakistan, North Korea, Israel, Iran, Egypt.
- **India's Stand** –
  - India has **neither signed nor ratified CTBT** because it considers the treaty discriminatory.
  - India calls for **universal and complete nuclear disarmament** in a time-bound manner.



Other nuclear weapons control treaties			
Treaty	Year	Aim/Purpose	India's Signature
<b>Treaty on the Prohibition of Nuclear Weapons (TPNW)</b>	2017	Comprehensive prohibition of nuclear weapon activities.	Not Signed
<b>Treaty on the Non-Proliferation of Nuclear Weapons (NPT)</b>	1968	Preventing wider dissemination of nuclear weapons and averting nuclear war.	Not Signed
<b>Partial Test Ban Treaty</b>	1963	Ban on nuclear weapon tests in the atmosphere, outer space, and underwater.	Signed and Ratified

## Two Plus Two Dialogue

## International Relations

### Context

- India, Australia held 2+2 talks.

### What is 2+2 Dialogue?

- '**Two plus two dialogue**' is an expression used to indicate that two appointed ministers from each country, the ministers of defence and external affairs in this case, will meet up to discuss the two countries' strategic and security interests.

### What is the focus of current talks likely to be?

- The **growth in bilateral ties in recent years** has been driven by a shared interest in ensuring stability in the Indo-Pacific region.
- To that end, defence exercises and talks between the two countries have increased.
- Defence and increased collaboration on defence technologies are expected to be a focus of talks this time around.
- The two countries are also **working through the Quad and a new trilateral partnership with France.** The aim is to address regional needs like climate change, development and telecommunications technology.
- Besides this, both sides are **negotiating a comprehensive free trade agreement, which will likely feature in the talks.**
- Ministers will advance cooperation on our shared regional interests, including in defence, security, renewable energy and technology.
- They will also discuss deepening trade and investment ties.

### Significance of 'Two plus two dialogue'

- A 2+2 ministerial dialogue enables the partners to better understand and appreciate each other's strategic concerns and sensitivities taking into account political factors on both sides, in order to build a stronger, more integrated strategic relationship in a rapidly changing global environment.
- India has 2+2 dialogues with four key strategic partners: the US, Australia, Japan, and Russia. Besides Russia, the other three countries are also India's partners in the Quad.
- The US is India's oldest and most important 2+2 talks partner.

### Defence and strategic agreements

- Over the years, the strategic bilateral relationship with its partners, including the dialogues held in the 2+2 format, has produced tangible and far-reaching results for India.
- India and the US have signed a troika of "foundational pacts" for deep military cooperation, beginning with **the Logistics Exchange Memorandum of Agreement (LEMOA) in 2016, followed by the Communications Compatibility and Security Agreement (COMCASA) after the first 2+2 dialogue in 2018, and then the Basic Exchange and Cooperation Agreement (BECA) in 2020.**
- The strengthening of the mechanisms of cooperation between the two militaries are of significance in the context of an increasingly aggressive China, which threatens a large number of countries in its neighbourhood and beyond, and which has been challenging several established norms and aspects of international relations.



India & U.K. Free Trade Agreement	+ India	+ UK	- India	- U.K.	Wayforward
<p><u>Strategic Adv.</u></p> <p>1) RCEP - India is out of this. It can help India for market access.</p> <p>2) Counter China - BRI, CPEC</p> <p>3) Support - With the support of UK I. can become member of UNSC.</p> <p><u>Economic</u></p> <p>1) Duty concession - labour intensive sectors - textiles, leather, jewellery etc.</p> <p>2) Market access</p> <p>• Especially boost Marine</p> <p>• SE Indian units benefit</p> <p>3) Mutual recognition Agreements → Pharma open's new market</p> <p>4) Investment - UK FDI: USD 32 billion 2000-2012</p> <p>5) IT sector - 60% Commerce (services to U.K)</p> <p>6) Energy sector - U.K confirmed \$70 million of investment in India.</p>	<p><u>Strategic Adv.</u></p> <p>1. India-UK - can give a mod/ corridor</p> <p>2. India-EAPC - UK can access</p> <p>3. counter China</p> <p>4. Global Britain - Europe</p> <p>U.K expand market-begs and Europe's Brexit</p> <p><u>Economic</u></p> <p>1) Market access</p> <p>2) Import duties</p> <p>• Scotch whisky &amp; automobiles - 12.5%</p> <p>3) Investments</p> <p>trade</p> <p>12th largest trading partner - India</p>	<p>1) Jobs</p> <p>R.I. issue may arise</p> <p>2) Unemployment risk</p> <p>• replace domestically produced goods.</p> <p>3) Risk of harmonization of laws - I. patent laws with U.K laws due to the "protection systems like 'Evergreening'"</p> <p>4) Env. obligations - by FTA</p> <p>5) Attribution Bharat plan - \$1 billion export by 2020</p> <p>• so fewer trade barriers with UK could give a push to exporters.</p>	<p>1) Ban on localisation of data</p> <p>2) Restrict generic medicines supply</p> <p>• unregulated production, supply</p> <p>3) Export of affordable generic medicine - comes from I.</p>	<p>1) contentious issues such as IPRs, global value chains, digital trade, etc.</p> <p>2) Secure a comprehensive deal</p> <p>• protect both interest Ex: - 100% 22</p> <p>- off on of data</p> <p>3) Addresser Env</p> <p><u>Issues</u></p> <p>• U.K developed I not</p> <p>4) ↓ restriction on medical equipment</p>	<p>Wayforward</p> <p>1) contentious issues such as IPRs, global value chains, digital trade, etc.</p> <p>2) Secure a comprehensive deal</p> <p>• protect both interest Ex: - 100% 22</p> <p>- off on of data</p> <p>3) Addresser Env</p> <p><u>Issues</u></p> <p>• U.K developed I not</p> <p>4) ↓ restriction on medical equipment</p>
<p><u>Data :- Trade</u></p> <p>UK I's 18<sup>th</sup> largest trading partner.</p> <p>Exports - cotton, spices, metals, drugs &amp; P, marine etc</p> <p>Imports - pearls, electronic, chemicals, non ferrous metals etc.</p>	<p>Exports to UK</p> <p>in billion</p> <p>- UK India business council</p>				



**Why in news?**

- Recently, India and the European Union signed a Memorandum of Understanding (MoU) on semiconductors that will help in building a "robust supply chain" and support innovation.

**Strategic Significance**

- Semiconductors are critical components driving the digital world, essential in various sectors such as electronics, telecommunications, automotive, and more.
- Post-COVID-19, there has been a global shift towards diversifying supply chains away from heavy reliance on China, making semiconductor production and supply more strategically important.

**Indo-EU Collaboration**

- The MoU between India and the EU aims to strengthen collaboration and information sharing in the semiconductor sector, capitalizing on each other's strengths and experiences.
- It is an essential move in aligning India's semiconductor strategy with those of the EU and the U.S., especially in the Indo-Pacific region.

**KEY HIGHLIGHTS OF THE MOU:**

- **Information Exchange:**
  - The agreement emphasizes sharing experiences, best practices, and information on respective semiconductor ecosystems.
  - Identifying areas of collaboration in research, development, and innovation among universities, research organizations, and businesses is a significant focus.
- **Skill Development and Collaboration:**
  - The MoU aims to foster skill development, talent, and workforce training specifically for the semiconductor industry.
  - It encourages collaboration through workshops, partnerships, and promoting direct investments.
- **Level Playing Field:**
  - One critical aspect highlighted in the agreement is ensuring a level playing field in the semiconductor sector.
  - This includes sharing information on granted public subsidies to prevent unfair advantages and promote fair competition.
- **Future Meetings and Plans:**
  - The Trade and Technology Council is set to convene in India in early 2024, further solidifying the collaboration and exploring opportunities for deeper cooperation.

**IMPLICATIONS AND POTENTIAL OUTCOMES:**

- **Strengthening Supply Chains:**
  - By sharing information and collaborating on semiconductor technology, both India and the EU aim to build more resilient supply chains, reducing dependence on a single dominant supplier.
- **Technological Advancements:**
  - Collaboration in research, development, and innovation could lead to advancements in semiconductor technology, potentially accelerating progress in areas like AI, IoT, and other emerging tech.
- **Economic and Industrial Growth:**
  - Enhanced cooperation might result in increased investments, job creation, and economic growth in both regions, particularly in the semiconductor and related industries.
- **Geopolitical Implications:**
  - This alignment between India and the EU, along with the U.S., could influence geopolitical dynamics, potentially shaping global trade patterns and alliances in the tech sector.
- In conclusion, the MoU on semiconductors between India and the EU signifies a step toward fostering collaboration, knowledge-sharing, and mutual growth in the semiconductor industry.
- It not only aims to strengthen technological capabilities but also addresses strategic and economic aspects to build more resilient and competitive supply chains in the global semiconductor market.



**Why in news?**

- India is close to signing an agreement, the **Cultural Property Agreement (CPA)**, with the United States that will greatly simplify the process of returning stolen antiquities.

**Indian Laws Ensuring Repatriation of Antiquities**

- The Antiquities and Artistic Assets Act 1972 (AATA) defines an antique as any coin, sculpture, painting, epigraphy or other art or craft that has existed for at least 100 years.
- The validity period of a manuscript, plate or other document of scientific, historical, literary or aesthetic value is at least 75 years.
- The UNESCO Convention of 1970 defines cultural property as defined property of countries of importance according to archeology, prehistory, history, literature, art or science.
- Development of law after independence:**
  - All the Union, State and Concurrent Lists of Schedule 7 of the Constitution of India deal with inheritance of land.
  - The Antiquities and Archaeological Sites and Remains Act was passed in 1958 and a number of incidents of theft of antiquities prompted the government to enact the AATA 1972.
- The main provisions of the 1972 AATA:**
  - Antiquities and art treasures cannot be taken out of the country by anyone except the central government.
  - No person shall engage in the sale of antiques except under the terms of a license issued by the ASI.
  - Anyone who owns, controls or owns an ancient monument must register the ancient monument and obtain a certificate.
- Background of Cultural Property Agreement (CPA)**
  - In recent years, India has renewed efforts to restore the heritage, and the Indian Prime Minister has raised the issue with several world leaders and multilateral organizations during his foreign visits.
  - According to government data, more than 400 antiquities have been brought back to India since 2014.
  - Protection and restoration of cultural property is a priority for India and the United States, and the United States has worked closely with the Union Ministry of Culture and the Indian Embassy.
  - CPA in Washington for almost two years. During the Indian Prime Minister's state visit to the United States (June 2023), the two countries agreed to work on this agreement.
  - When a country applies for a treaty, the request is reviewed by the White House-appointed Advisory Committee on Cultural Property, which makes a recommendation to the State Department.
  - India's next step is to process its application before this commission.
- Information on the Cultural Property Agreement (CPA)**
  - The treaty establishes import restrictions that prevent looted and stolen cultural property from entering the United States, encouraging the legal sharing of such items for scientific, cultural, and educational purposes.
- Significance**
  - Under the agreement, the United States will stop smuggling at the border and return it quickly.
  - If items are seized and confiscated under import restrictions, the process of returning the items to the partner country is simplified.
  - The partner country does not have to prove that the product is its own.
  - Instead, the US will automatically offer it to them to return.
- Importance of the Cultural Property Agreement (CPA)**
  - A bilateral CPA would help prevent the illegal trade of cultural property from India to the United States.
  - It also eliminates key sources of funding for terrorists and international organized crime.
  - Instead of India having to prove that the product in question belongs to it, the US automatically offers it for return when the CPA arrives.
  - The verification step – which is usually the most time-consuming – can also be skipped in many cases.
  - This will simplify the current repatriation process and ensure the early return of waste.
  - From this model agreement, India plans to enter into such agreements with several countries where it is believed that a large number of Indian items are being smuggled.

**Why in news?**

- Prime Minister Narendra Modi and his Bangladesh counterpart Sheikh Hasina virtually inaugurated Agartala-Akhaura rail line project.

**About**

- Akhaura–Agartala line is a railway line between Bangladesh and India.
- It **will connect India's Northeastern state of Tripura with Bangladesh.**
- The train **will start from Agartala and move to Nischintapur**, on the Indian-Bangladesh border, where the immigration checks will be held. The first station on the Bangladesh side will be Gangasagar.
- **Signing**
  - The 15-km-long project, was **signed by both countries in 2013.**
- **Route portion**
  - Of the 15 km link, 33.52 percent (5.05 km) is in India and the remaining 10.014 km is in Bangladesh.
- **Aim**
  - The line **aims to enhance bilateral trade and tourism, as well as reduce travel time between Agartala and Kolkata via Dhaka.**
- **Priority Region**
  - The Northeast has been **earmarked as a priority region in this policy.**
- **Strategic Importance**
  - The project is part of **India's "Act East Policy", which aims to promote economic cooperation and develop strategic ties with countries in the Asia-Pacific region.**
- **Line Specifications**
  - It will be **a dual gauge station for both passenger and goods interchange.**
  - The Indian Railways portion has a broad gauge system while the portion in Akhaura has a metre gauge system.

In a broad gauge, the distance between the two tracks is 1.676m, while in the metre gauge system, the distance stands at one metre.

**Benefits**

- It will **reduce the travel time between Agartala and Kolkata, via Dhaka to 10 hours from 31 hours.**

**Why is the project important to Tripura?**

- For land-locked Tripura, any connectivity project is of great practical significance.
- The project is **crucial for connectivity in the NE region and would make Tripura the gateway for tourism.**
- Tripura is going to be the gateway for tourism and transport between India and Bangladesh.
- Due to the Agartala-Akhaura railway project, **the distance between Agartala and Kolkata will be effectively reduced from 1600 km to 500 km.**
- Tripura shares an 856-km international border with Bangladesh, the second highest after West Bengal. The North Eastern state is surrounded by the country on all three sides except Assam on the fourth.
- With the new connectivity project, **people on both sides can now hope for closer and smoother ties.**

**Significance**

- The upcoming rail project will **"boost the bilateral relations between India and Bangladesh"**, which will help grow small-scale industries in the border area and boost tourism in the Northeast region, particularly Tripura.
- It will also **help in the export and import of commodities faster** and help the local producers to export their products outside the country faster.

**Other connectivity routes between India and Bangladesh**

- As of now, there are five broad gauge routes connecting India and Bangladesh, namely **Gede-Darshana, Benapole-Petrapole, Singhabad-Rohanpur, Radhikapur-Birol and Haldibari-Chilahati.**
- There are also three passenger trains running between India and Bangladesh — **Kolkata-Dhaka Maitree Express, Kolkata-Khulna Bandhan Express and New Jalpaiguri-Dhaka Mitali Express.**

**Why in news?**

- NASA's Lucy spacecraft is on an epic 6-billion-kilometre-long journey to study the Jupiter Trojan asteroids.

**About Asteroid Dinkinesh**

- Discovery by – **LINEAR survey**
- Recently identified as a potential fly-by target for the Lucy mission.
- Orbit – between the orbits of Mars and Jupiter.
- Composition – An **S-type asteroid** (composed mainly of **silicates** and some metal)
- 1st asteroid that Lucy will visit on its 12-year-long journey.

**Lucy Spacecraft:**

- Launched in October, 2021.
- Agency – **NASA**
- Aim – To observe the **Jupiter Trojan asteroids**
- Objective – To provide updated estimates of the asteroid's size and albedo – a measurement of surface reflectivity that could help scientists better understand the nature of some near-Earth objects.
- It will first fly by Dinkinesh and another asteroid in the main belt called Donald Johnson in 2025.
- Supported by – NASA's **Wide-field Infrared Survey Explorer (WISE)**

**X-Ray Polarization in Black Hole****Science & Technology****Why in news?**

- Indian researchers detected polarized emissions for the first time from a black hole outside the Milky Way using a technique called **X-ray polarimetry**.

**About key findings**

- Radiations are emitted from the vicinity of a black hole located in the **Large Magellanic Cloud-X-3 (LMC X3)** and located 200,000 light years away from the Earth.
- LMC X-3 emits X-rays that are **10,000 times more powerful** than those from the Sun.
- These X-rays change the **polarization** characteristics, i.e. **degree and angle**.
- Researchers studied LMC X-3 using the **Imaging X-ray Polarimetry Explorer (IXPE)**, the Neutron Star Interior Composition Explorer (NICER) Mission, and Nuclear Spectroscopic Telescope Array (NuSTAR).
- **IXPE – 1st mission of NASA** to study the polarization of X-rays from celestial objects.
- **ISRO's X-ray Polarimeter Satellite (XPoSat)** – will be the 2nd satellite in a row.

**About X-ray polarimetry:**

- It is a unique observational technique to identify **where radiation comes from near black holes**.
- It helps in studying the **origin of cosmic rays in the universe, the nature of black holes, and the interaction of matter with the highest physically possible magnetic fields**.

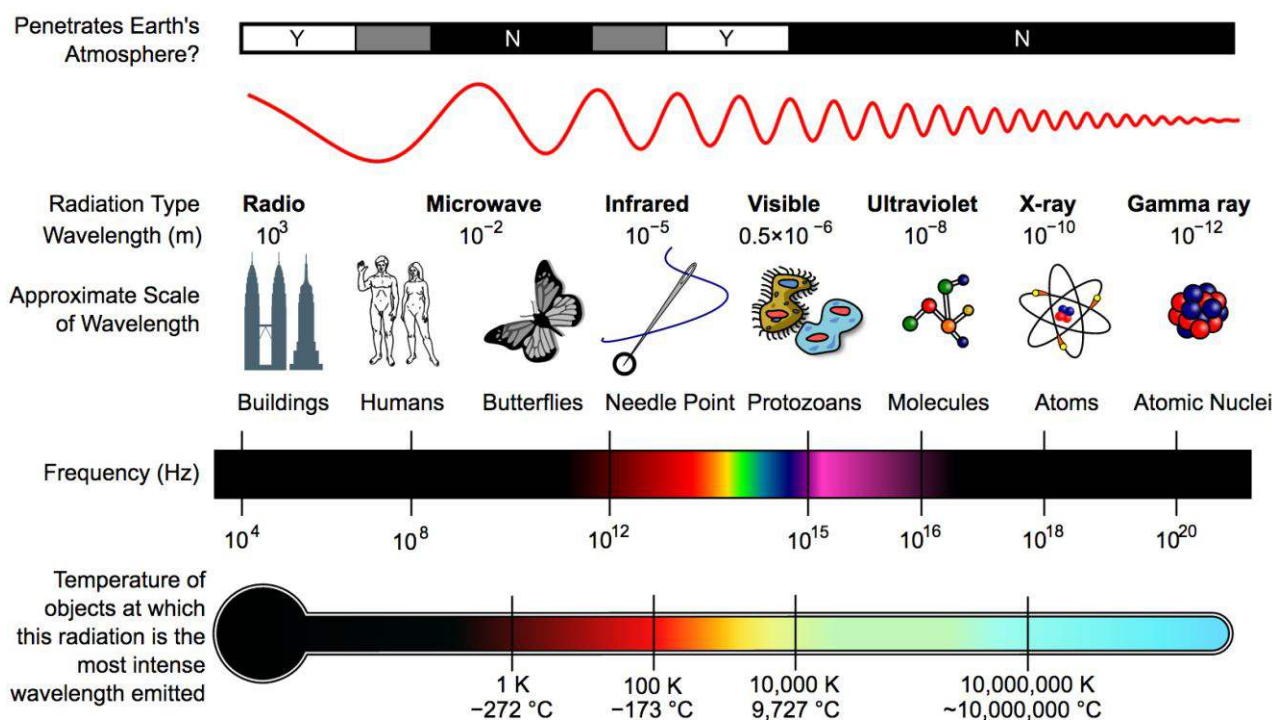
**XPoSat****Science & Technology****Why in news?**

- ISRO is hoping to have the 60th PSLV launch by December. This mission will have as payload the XPoSAT

**About XPoSAT**

- **India's 1st** dedicated **polarimetry mission** to study various dynamics of bright astronomical X-ray sources in extreme conditions.
- Orbit - **low earth orbit**
- The spacecraft will carry two scientific payloads in a low earth orbit.

- The primary payload POLIX (Polarimeter Instrument in X-rays) will measure the polarimetry parameters in medium **X-ray** energy range of 8-30 keV photons of astronomical origin.
- The XSPECT (X-ray Spectroscopy and Timing) payload will give spectroscopic information in the energy range of 0.8-15 keV.
- The emission mechanism from various astronomical sources such as blackhole, neutron stars, active galactic nuclei, pulsar wind nebulae etc. originates from complex physical processes and is challenging to understand.
- The polarimetric observations along with spectroscopic measurements are expected to break the degeneracy of various theoretical models of astronomical emission processes.



## NISAR

## Science & Technology

### Why in news?

- NASA and ISRO successfully conclude crucial tests in preparation for the upcoming launch of NISAR early next year.

### About NISAR

- An **Earth-observing** mission
- Participating agencies - **NASA and ISRO**.
- Will be the first radar of its kind in space to systematically map Earth, using two different radar frequencies (L-band and S-band) to measure changes of our planet's surface, including **movements as small as centimeter**.
- Objective - to make **global measurements of the causes and consequences of land surface changes** using advanced radar imaging.
- NISAR's data can help
  - manage natural resources and hazards,
  - scientists to better understand the effects and pace of climate change.
  - add to our understanding of our planet's hard outer layer (crust)
- Planned Launch Date: 2024
- Data and product access – free and open



**Applications of NISAR:** Data can be used to study

- Mountain Glaciers and Snow Hydrology
- **Earthquake tracking from Space**
- Soil Moisture and Water Resources
- Changes in Permafrost
- Sinkholes and Cavern Collapse
- Volcanic Hazards, landslides, floods
- Induced Seismicity
- Flood Forecasting

## Atmospheric Wave Experiment | Airglow | Atmospheric Gravity Waves

S&T

### Why in news?

- NASA set to launch Atmospheric Wave Experiment (AWE) mission to the International Space Station (ISS).

### Atmospheric Waves Experiment (AWE):

- Launched by – **NASA**
- Planned under NASA's **Heliophysics Explorers** Program
- Aim – To explore the interplay between **terrestrial and space weather**.
- Objective – To examine **airglow** (colourful bands of light in Earth's atmosphere) and to determine what **combination of forces** drives space weather in the upper atmosphere.
- It will also measure **Atmospheric Gravity Waves (AGWs) at mesopause** (a region between the mesosphere and thermosphere).

### Significance

- To understand how gravity waves in the upper atmosphere interact with the jet stream,
- Better understanding of polar vortex and other phenomena
- Improved weather predictions and climate models.

### Atmospheric Gravity Waves

- There are a wide variety of waves, travelling both horizontally and vertically in the atmosphere.
- AGWs are one such kind of **vertical wave** which are mostly generated when there is an **extreme weather event or a sudden disturbance** leading to a vertical displacement of stable air.
- AGWs form as buoyancy lifts air upward, and gravity brings it back down.
- The upward movement encourages cloud formation, while the downward movement promotes clear skies.
- These waves result from various processes like airflow over mountains, convection (e.g., thunderstorms), and frontal systems.
- They serve to connect different parts of the atmosphere, such as a surface storm causing can cause changes in the ionosphere.

## Euclid Space Mission

Science & Technology

### Why in news?

- European astronomers released the first images from the newly launched Euclid space telescope

### About Euclid Space Mission

- Space agency - **European Space Agency (ESA)**
- Partner agency - **NASA**
- Designed to unlock the secrets of dark matter and dark energy - hidden forces thought to make up 95% of the universe.
- Designed to last 6 years
- Designated location in space: Sun-Earth **Lagrange point 2**, 1.5 million km from Earth



- **Aims**

- To study the composition and evolution of the dark Universe.
- The space telescope will generate a comprehensive map of the large-scale structure of the Universe, observing billions of galaxies up to 10 billion light-years away.
- Euclid covers over a third of the sky, exploring the expansion of the Universe and the formation of its structure throughout cosmic history.
- The mission provides insights into the roles of gravity, dark energy, and dark matter in shaping the Universe.
- The spacecraft has a 1.2 metre-wide telescope and 2 instruments — a **visible-wavelength camera** (the VISible instrument) and a **near-infrared camera/spectrometer** (the Near-Infrared Spectrometer and Photometer).

#### About Dark energy

- Its hypothetical existence was established only in the 1990s by studying exploding stars called supernovas.
- We know how much dark energy there is because we know how it affects the universe's expansion. Besides, it is a complete mystery.
- Roughly **68% of the universe is dark energy**.

### Near Space Region

### Science & Technology

#### Why in news?

- China sets up Near-Space Command for Hypersonic Weapons Force.

#### About Near Space Region:

- A region **above and adjacent** to the national airspace.
- Extends from **18 km up to 160 km** above sea level.
- At present, Near Space region is a "**no man's land**."
- **Characteristics –**
  - **Air is too thin** to support flight by most operational military aircraft
  - **Gravity is too strong** for a satellite to sustain itself in orbit and hence, very few aircraft fly there.
- **Significance –**
  - Systems in this region **can operate for weeks or months** as opposed to Unmanned Air Vehicles, whose missions last 24-40 hours.
  - Satellites in this region are **less costly** than those in geostationary orbits.
  - System in Near Space could function as a **surrogate satellite** of shorter transmission distances, better communications, reconnaissance, and surveillance.
  - Deployed equipment has small radar and thermal cross-sections making them **relatively invulnerable to most traditional tracking and targeting** methods.
- **Threats –**
  - It may become next **battleground** (establishment of Near-Space Command, U.S. shooting down Chinese spy balloon)
- **Limitations –**
  - **Controlling and maintaining** near-space equipment is challenging due to the **turbulent lower atmosphere**.
  - **Militarisation** of this region poses significant diplomatic challenges.

### Deep Space Optical Communications (DSOC)

### Science & Technology

#### Why in news?

- NASA successfully experimented Deep Space Optical Communications (DSOC).

#### About DSOC:

- **NASA's 1st** demonstration of optical communications beyond the **Earth-Moon system**.
- A system that consists of a flight laser transceiver, a ground laser transmitter, and a ground laser receiver.
- Launched with **Psyche spacecraft**



- Configured to send **high-bandwidth** test data to Earth.
- Aim – To demonstrate data transmission rates **10 to 100 times greater** than the state-of-the-art radio frequency systems used by spacecraft today.
- **Significance** –
  - It uses **near-infrared light packs** which facilitates higher rate of data transmission.
  - High-definition imagery transmission.
  - It will enable **human exploration** of deep space like sending humans to Mars.

## Environmental DNA (eDNA)

## Science & Technology

### Why in news?

- Recently, scientist estimated that the total taxonomic diversity of Chilika lagoon in Odisha is about 1,071 families across the tree of life using environmental DNA (eDNA) method.

### About eDNA:

- It is the **nuclear or mitochondrial DNA** that is released from an organism into the environment through natural processes during their lifetime or after death.
- Sources of eDNA – Secreted feces, mucous, and gametes; shed skin and hair; and carcasses.
- eDNA method – A **non-invasive method** to assess the total biodiversity of any ecosystem by sequencing the DNA found in the environments.
- Developed by – **Laboratory for the Conservation of Endangered Species (LaCONES)**, a CSIR-Centre for Cellular and Molecular Biology (CCMB) laboratory headquartered in Hyderabad.
- Sample size – Just a few litres of water, soil, or even air.
- Working mechanism – A molecular approach is applied
- to filter out eDNA from environmental samples, read their sequences, and thus, identify the source of the eDNA.

### Significance

- It is cheaper, faster, and highly scalable to large freshwater and marine ecosystems which can help in monitoring and conserving the rich biodiversity of our country.
- It can detect all kinds of organisms, including viruses, bacteria, archaea, and eukaryotes.
- eDNA can also reveal the presence of human remains.

## Langlands Program | Abel Prize

## Science & Technology

### Why in news?

- Recently, a report claimed that the Langlands Program can be likened to building bridges.
- About the prize
  - Πυρποσε □ Το φινδ χοννεχτιονσ βετωεεν νυμπερ τηεορψ ανδ ρεπρεσεντατιον τηεορψ.
  - Σταρτεδ βψ □ Δρ. Ροβερτ Λανγλανδς (Αωαρδεε οφ Αβελ Πριζε φορ τηε Λανγλανδς προγραμ)
- **Abel Prize** –
  - One of the highest honors for **mathematicians**
  - Established by – **Norwegian** Parliament in 2002.

## Fibre Optic Cables

## Science & Technology

### Why in news?

- Article in The Hindu – Fibre optic cables: its origins, working and different functions.

### About Fibre Optic Cables

- Made of thin cylindrical **strands of glass**.
- Carries information, such as text, images, videos, telephone calls, and anything that can be encoded as digital information, across large distances **almost at the speed of light**.



- Features – Strong, light, and flexible, easily buried underground, drawn underwater, or bent around a spool.
- **Applications** –telecommunication, medical science, laser technology, and sensing.

#### Working:

- **Air to Glass** –
  - When a beam of light falls on a glass surface, it passes through partially while the rest is reflected away.
  - When it passes through, its path **bends because the refractive index of glass is different** from that of air.
- **Glass to Air** –
  - When a beam travels from glass to air, it won't enter the air and instead, it will be **completely reflected back** within the glass. This is known as **total internal reflection**.
- Thus signals encoded as electromagnetic waves can be fed into one end of an optical fibre, and they will reflect and bounce many times between the glass walls as they traverse several kilometres bearing the information in the signals.

### Bletchley Declaration

### Science & Technology

#### Why in news?

- "Bletchley Declaration," recognized as the world's first agreement on Artificial Intelligence (AI), was signed at the UK AI Safety Summit.

#### News Highlights

- Bletchley Declaration – Named after **Bletchley Park** – Known for being **Britain's code-breaking centre** during World War II.
- Signed by – **European Union** and 28 other countries including **India**, US, UK, China, France, Saudi Arabia, and UAE.

#### Key highlights of Bletchley Declaration:

- Recognises AI's potential to enhance human well-being as well as risks posed by AI including **frontier AI**.
- Substantial risks may arise from **potential intentional misuse or unintended issues of control** relating to alignment with human intent.
- These issues are in part because those **capabilities are not fully understood** and are therefore hard to predict.
- Since such **risks are inherently international** in nature there is a need for international cooperation to address them.
- All actors including **companies, civil society and academia** will need to work together.
- **Agenda for mitigating risks** will focus on building a shared scientific understanding and risk- based policies across countries.

### ISPR-Cas9

### Science & Technology

#### Why in news?

- The latest developments in gene editing technology have the potential to be applied in the creation of animals that are resistant to diseases. Such an application could help in limiting the transmission of avian influenza, commonly referred to as bird flu.

#### About CRISPR-Cas9

- It is a **gene-editing technology**
- **CRISPR** - Clustered regularly interspaced palindromic repeats
- Involves 2 essential components:
  - A guide RNA to match a desired target gene,
  - Cas9 (CRISPR-associated protein 9)—an **endonuclease** which causes a double-stranded DNA break.
- Based on a simplified version of the bacterial CRISPR-Cas9 **antiviral defense system**.
- Considered highly significant in biotechnology and medicine
- It enables editing genomes in vivo very precisely, cheaply, and easily.



### Potential applications:

- **Biomedical Research** - Correction of genetic disorders and other diseases
- **Agriculture**: Development of genetically modified crops with improved traits, such as disease resistance, increased yield, and nutritional enhancements.
- **Cancer Research**: Creating cancer cell models to study tumor biology and develop targeted therapies. Disrupting oncogenes or tumor-suppressor genes for research purposes.
- **Drug Development**: Accelerating drug discovery
- **Infectious Disease Control**: Development of gene drives to control disease vectors like mosquitoes, potentially reducing the transmission of diseases like malaria or Zika virus.
- **Cell Therapy**: Editing immune cells for use in immunotherapy, such as CAR-T cell therapy for cancer treatment.
- **Biotechnology and Bioengineering**: Designing microbes for the production of biofuels, pharmaceuticals, and industrial chemicals.
- **Conservation Biology**: Preserving endangered species by modifying the genomes of individuals to increase their chances of survival in the wild.

## Chimeras of Nature

## Science & Technology

### Why in news?

- In a recent landmark study, scientists reported the successful generation of a live chimera in non-human primates.

### About Chimeras:

- **Chimerism** – It is defined as a **phenomenon of occurrence of more than one type of different and distinguished genotype in an organism.**
- **Chimera** – It is defined as an organism composed of cells with different genotypes altogether.
- **Natural Chimeras** – It also occurs in natural ways.
  - Example- Anglerfish, Sponges, Yellow Crazy Ants etc.,
- **Genetic Chimeras** – It happens when an individual is derived from two or more zygotes.
  - Types – Animal chimeras,
- Plant chimeras, Hybrid chimeras, Organ transplantation (Bone marrow transplantation).

### Key findings of the study:

- Successful chimera creation in **non-human primates**, close to humans.
- 1st time scientists have succeeded in producing a live infant chimeric monkey.

### Applications –

- Genetic and developmental biological studies.
- Fulfilling Growing demands of organs for transplantation e.g. use of animal heart valves.

## Mpox (Monkeypox)

## Science & Technology

### Why in news?

- UN confirms sexual spread of mpox in Congo for the 1st time.

### About Mpox

- An infectious disease
- Causative organism - monkeypox virus
  - **double-stranded DNA virus**
- Discovered in Denmark (1958) in lab.
- 1st reported human case - Democratic Republic of the Congo (1970)
- Mpox can spread from person to person or occasionally from animals to people.
- The natural reservoir of the virus is unknown

- After 1970, mpox occurred sporadically in Central and East Africa and West Africa
- In 2022, an outbreak of mpox appeared suddenly and rapidly spread across Europe, the Americas and then all six WHO regions - The global outbreak has affected primarily (but not only) gay, bisexual, and other men who have sex with men and has spread person-to-person through sexual networks.
- Treatment - supportive care. Vaccines and therapeutics developed for smallpox and approved for use in some countries can be used for mpox.

## Global Onchocerciasis Network for Elimination (GONE)

## Science & Technology

### Why in news?

- The inaugural gathering of the Global Onchocerciasis Network for Elimination (GONE) was held in Senegal, facilitated by the World Health Organization (WHO).
- GONE, launched in January 2023, empower countries to accelerate progress towards onchocerciasis targets set in 2030 Neglected Tropical Disease (NTD) roadmap of WHO.

### Onchocerciasis:

- Commonly known as "river blindness"
- Caused by – **Parasitic worm**
- Transmission – **bites of infected black flies** that breed in rapidly flowing rivers.
- **2nd leading infectious cause of blindness after trachoma.**
- **Status –**
  - **Africa** – Home to 99% of people at risk of onchocerciasis
  - Remaining 1% lives on border between Brazil and Venezuela.
  - Countries verified by WHO for **eliminating transmission of disease** – **Colombia, Ecuador, Guatemala and Mexico**

### About Neglected Tropical Diseases:

- A diverse group of **20 conditions** that are mainly prevalent in **tropical areas**
- Affects **more than 1 billion people** who live in impoverished communities.
- Caused by a variety of **pathogens** including viruses, bacteria, parasites, fungi and toxins.
- NTDs include: Dengue and chikungunya, Rabies, leishmaniasis; leprosy; lymphatic filariasis etc.
- **Status of India –**
  - India carries the largest burden of **at least 11** of these diseases.
  - India has successfully eliminated certain NTDs like guinea worm, trachoma, and yaws.

### Elimination efforts on NTDs:

- **Global Scenario –**
  - **London Declaration on NTDs.**
  - 30th January recognised as World NTDs Day.
  - **Kigali declaration on NTDs** adopts the targets to eradicate or control NTDs by 2030.







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