



IAS PARLIAMENT

Information is Empowering

A Shankar IAS Academy Initiative

CURRENT AFFAIRS MAGAZINE

JULY 2023

News Analysis & Prelim Bits



SCAN TO
DOWNLOAD



SINCE 2004

www.shankariasacademy.com

www.iasparliament.com

INDEX

1. IMPORTANT TOPICS OF THE MONTHS

- 1.1 Flood Management..... 5
- 1.2 Cheetah Reintroduction Project..... 8
- 1.3 6 years of GST..... 9
- 1.4 Uniform Civil Code..... 11

G.S PAPER I..... 13

2. GEOGRAPHY 13

- 2.1 Indian Ocean Dipole and its effect on El Nino. 13
- 2.2 Heat Waves across the World..... 14
- 2.3 Marine Heat Waves..... 15

3. SOCIAL ISSUES..... 17

- 3.1 A Roadmap to Eliminate Poverty 17
- 3.2 Technology-Facilitated Sexual Violence 19
- 3.3 Problem of Migrants in Maharashtra Sugar Fields 21
- 3.4 Reservation for transgender community..... 22
- 3.5 National Multidimensional Poverty Index..... 23

G.S PAPER II..... 25

4. INDIAN POLITY 25

- 4.1 No Confidence Motion..... 25
- 4.2 Adjournment Motion..... 26
- 4.3 Rule 267 of the Council of States 28
- 4.4 Governor's Position on dismissal of Ministers 29
- 4.5 Role of Deputy Chief Minister..... 30
- 4.6 Role of Opposition Party..... 31
- 4.7 Reforming Anti-defection Laws 33
- 4.8 Abrogation of Article 370..... 34
- 4.9 Enforcement directorate..... 35
- 4.10 Allahabad High Court's Comments on Live-in Relationships 37

5. GOVERNMENT POLICIES AND INTERVENTIONS..... 39

- 5.1 Biological Diversity (Amendment) Bill, 2021... 39
- 5.2 Forest (Conservation) Amendment Bill, 2023.. 41
- 5.3 National Research Foundation (NRF) Bill, 2023. 42
- 5.4 The Jan Vishwas (Amendment of Provisions) Bill, 2023..... 44

6. GOVERNANCE..... 46

- 6.1 Whistle Blowing..... 46
- 6.2 NIRF India Rankings 2023 47
- 6.3 Digitisation of Land Records..... 48
- 6.4 Lax Response of the States to Mob Lynching ... 50

7. HEALTH..... 52

- 7.1 The Need to Focus on Palliative Care..... 52
- 7.2 Indian Drug Makers under Lens..... 53
- 7.3 Bedaquiline for TB 55
- 7.4 Oral Polio Vaccine and VDPV..... 56

8. BILATERAL ISSUES..... 58

- 8.1 Revisit Indus Water Treaty 58
- 8.2 India-Sri Lanka Ties: Promoting Connectivity, Catalysing Prosperity 60
- 8.3 25 years of India-France Strategic Partnership61
- 8.4 A New Chapter in India-Africa Ties 62
- 8.5 India-Egypt relations: PM's Egypt Visit 64
- 8.6 India-Philippines Relationship 66

9. INTERNATIONAL ISSUES 67

- 9.1 India in Mineral Security Partnership..... 67
- 9.2 Key Takeaways from SCO Summit 68
- 9.3 Need for India's Entry to NATO-Plus 70

G.S PAPER III 72

10. ECONOMY..... 72

- 10.1 India- The Fastest Growing Economy..... 72
- 10.2 Debt Dilemma..... 73
- 10.3 Fiscal Health of the States..... 74
- 10.4 Need for reform in CPI basket..... 76
- 10.5 Tackling 'Twin Balance Sheet Syndrome' 77
- 10.6 NPAs, Write-Offs and Recoveries..... 78
- 10.7 Manufacturing Productivity in India 79
- 10.8 Changes to Liberalised Remittance Scheme (LRS) 81
- 10.9 GST on Online Gambling 83
- 10.10 A New Palette for Creative Economy 84
- 10.11 Unprecedented WTO Dispute Settlement method. 86
- 10.12 Ethanol Blending in India..... 88
- 10.13 Reforming Multilateral Banks 89
- 10.14 India-Russia Payment Crisis 91

11. AGRICULTURE 92

11.1 GM Mustard 92
11.2 Crop Diversification in Trans-Gangetic Plain. 94
11.3 FL 2027 patent case: Delhi HC Vs PepsiCo 96
11.4 Threats of Plasticsulture 97

12. ENVIRONMENT 98

12.1 Issues with Green Hydrogen 98
12.2 Green Credit Programme (GCP) 99
12.3 Conservation of Small Rivers 100
12.4 Deep Sea Mining 101

13. SCIENCE & TECHNOLOGY..... 103

13.1 All about Chandrayaan-3 103
13.2 Newborn Genome Sequencing 105
13.3 Role of Moon in the Development of Life on Earth
..... 107
13.4 Atmanirbhar Bharat in Defence Production .. 109
13.5 New Scorpene class submarines 110

PRELIM BITS 112

14. HISTORY, ART & CULTURE..... 112

Bonalu Festival 112
Zo Peoples 112
Lambani Art 112
Namda Art 113
Rudragiri Hillock 113
Agariyas of Kutch 113
Kanwar Yatra 114
Janjaitya Darpan 114

15. GEOGRAPHY 115

Pangong Tso Lake 115
Indian Ocean Geoid Low (IOGL) 115
Khazans of Goa 115
Pakkasuran Malai 116
Kaas Plateau 116
Anthropocene epoch 117
Kodava Community 117
Batagaika Crater 118
Sub Glacial Over deepening 118

16. POLITY 119

Article 226 119
Kui Language 120
Reservation for Transgender Persons 120

17. GOVERNMENT INTERVENTIONS & SCHEMES 121

eSARAS 121
Scheme on minor rape survivors 121
Dark Patterns 122
Report Fish Disease App 122
Atal Vayo Abhyuday Yojana 122
PM-WANI 123
Atmosphere & Climate Research-Modelling Observing
Systems & Services (ACROSS) Scheme 124
Manual Scavenging 124
Microsites by National Health Authority 125
Meri Mati Mera Desh Campaign 125

18. INTERNATIONAL RELATIONS..... 125

Shangri La Dialogue 125
Colombo Security Conclave 126
Acceleration Agenda 126
Grand Cross of the Legion of Honour 127
U.S. Senate Committee's Resolution on Arunachal
Pradesh 127
Black Sea Grain Initiative 128
Crimea Bridge & Kerch Strait 128
Stapled Visa 129
Association of World Election Bodies (A-WEB) 129
Global Gibbon Network (GGN) 129
Comprehensive and Progressive Agreement for Trans-
Pacific Partnership 130
World Cities Culture Forum 130

19. ECONOMY 131

Intellectual Property Rights Policy Management
framework 131
Pronab Sen Committee 132
India-Russia Oil Trade 132
CBDC transactions through UPI QR 132
White Label ATMs (WLAs) 133

20. ENVIRONMENT 133

2023 IMO Greenhouse Gas Strategy 133
Underground Climate Change 134
Ocean Colour 134
Tire Particulate Pollution 135
Zombie fires (Arctic Soil Fires) 135
Silvopasture Systems 136
Resource Efficiency Circular Economy Industry Coalition
(RECEIC) 136
Merger of Project Tiger & Project Elephant 136

<i>National Adaptation Fund for Climate Change</i>	137
<i>White-rumped Vulture</i>	138
<i>Oriental white-backed vulture</i>	138
<i>Candida Auris</i>	138
<i>Desiccation-tolerant (DT) vascular plants</i>	139
<i>Silver Cockscomb</i>	140

21. SCIENCE AND TECHNOLOGY 140

<i>NASA's Parker Solar Probe</i>	140
<i>Granite under moon's surface</i>	141
<i>VSS Unity</i>	141
<i>Zhuque-2 carrier rocket</i>	142
<i>Different Kinds of Moon Missions</i>	142
<i>Dark stars</i>	143
<i>NASA's DIMPLE Instrument</i>	143
<i>X-ray Auroras</i>	144
<i>Markarian 421</i>	144
<i>PSLV C-56</i>	145
<i>National Sickle Cell Anaemia Elimination Mission</i> ...	146

<i>Cucumber Mosaic Virus (CMV) & Tomato Mosaic Virus (ToMV)</i>	146
<i>Biosimilar Guideline (2016)</i>	147
<i>Crimean- Congo Haemorrhagic Fever</i>	148
<i>HERVH</i>	148
<i>Claude 2</i>	148
<i>Lithium Titanate Battery</i>	149
<i>Bharat 6G Alliance (B6GA)</i>	150
<i>Nano Knife</i>	150
<i>Immersive Reality</i>	151

22. INDEX AND REPORT 152

<i>Performance Grading Index</i>	152
<i>UN's Multidimensional Poverty Index</i>	152
<i>World Drug Report 2023</i>	153
<i>Heat Index</i>	154
<i>Global Education Monitoring Report 2023</i>	154
<i>Export Preparedness Index (2022)</i>	155
<i>All India Tiger Estimation Report, 2022</i>	155

JULY 2023

1. IMPORTANT TOPICS OF THE MONTH

1.1 Flood Management

Why in news?

Recently, North India including Delhi witnessed heavy rainfall resulting in flood.

What is flood?

- Flooding is an *overflowing of water* onto land that is normally dry.
- **Types of Floods**
 - **Flash floods** - It is caused by rapid and excessive rainfall that raises water heights quickly, and rivers, streams, channels or roads may be overtaken.
 - **River floods** - It is caused when consistent rain or snow melt forces a river to exceed capacity.
 - **Coastal floods** - It is caused by storm surges associated with tropical cyclones and tsunamis.

What are the causes of flooding?

- Flood is often caused by
 - **Natural causes** - Heavy rainfall, rapid snowmelt, storm surge from a tropical cyclone, tsunami in coastal areas, etc.
 - **Manmade causes** - Factors such as population growth, rapid urbanisation, increased developmental and economic activities in flood plains.

Urban flooding - Inundation of property in a built environment, particularly in more densely populated areas, caused by increased rainfall on impervious surfaces and overwhelming the capacity of drainage systems.

CAUSES OF FLOODING

Meteorological Factors

- **Extreme rainfall** - It results in [flash flood](#) which is a cause of concern in low lying areas and urban cities where the damage inflicted is huge.
- **Sea surge** - Storm surge is caused by tropical cyclones where it causes sea water to overflow into coastal regions.
 - As per the Intergovernmental Panel on Climate Change (IPCC), it is estimated that before 2030, large parts of Kolkata could face immense flooding, causing the city to submerge.
- **Cloud Burst** - It occurs due to intense precipitation in a short duration which can sometimes be accompanied by hail and storm and can cause a flood.
 - **Example** - In 2022, several people were killed in the cloud burst and flash flood incident in Himachal Pradesh and Uttarakhand.
- **Global Warming** - Due to the increased rise in global temperature, glaciers of the Himalayan range start to melt.
- As a result, the seawater level also rises, causing floods in surrounding years.
- **Earthquakes and Landslides** - A shift in tectonic plates can lead to alteration in the volume and course of surface water resulting in flood hazard.
 - **Example** - In 2013, heavy rain in Uttarakhand caused flood due to landslide and flash flood.

Physical Factors

- **Insufficient drainage management** - Due to this, areas are flooded by accumulation of water from heavy rainfall.
- **Change in river course** - Due to erosion of the banks, rivers change course and causes flood.

- **Example** - Recent Yamuna flooding in Delhi 2023 one of the reason is change in river course.
- **Catchment area** - During monsoon, when excess water exceeds the limit of holding capacity of the catchment area (area from where the rainfall water flows into a river), it leads to floods.

Human Factors

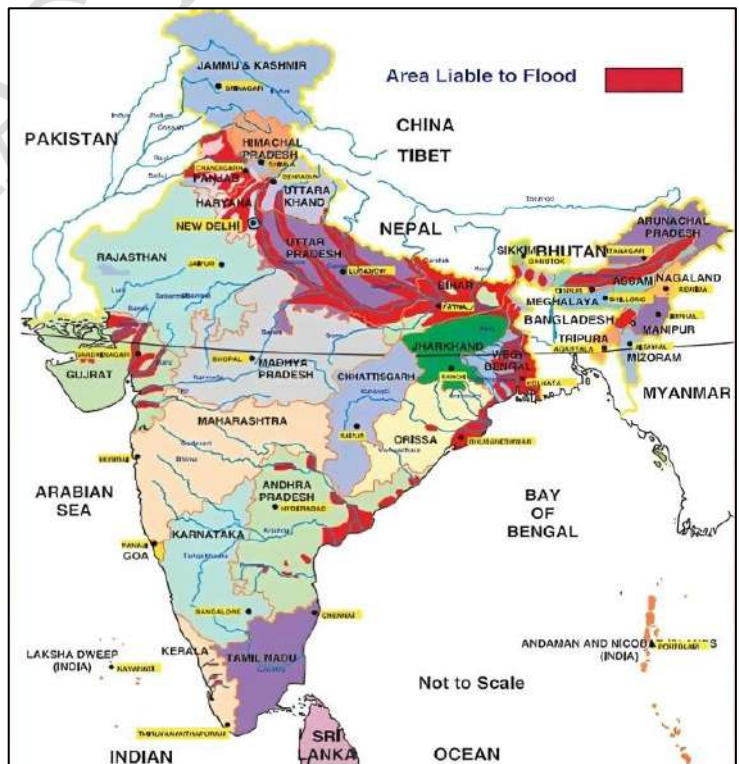
- **Siltation** - As particles remain suspended in the river and accumulated in the riverbed, it disrupts the flow of the river, causing a flood.
- **Improper Agricultural Practices** - Excessive irrigation applied to command areas and increase in ground water levels due to seepage from canals and irrigated fields lead to floods.
- **Deforestation** - Trees act like a sponge that helps to hold soil and water and prevent flooding.
- As trees are being cut down at a fast pace, more water runs towards a river during heavy rainfall and causes flood.
- **Collapse of Dams** - Dams are built to store water and provide water to people. As dams are human-made, these can be worn out and subsequently collapse causing floods.
 - **Example** - In 2018, Kerala flood is due to opening dam floodgate which is the worst flooding episode.
- **Floodplain encroachment** - This reduces the water carrying capacity of rivers which is brought from upper catchment areas and cause flooding.
 - **Example** - In 2015, Chennai was worst hit by floods, one of the reason is encroachment

What zones in India are prone to flood?

- According to the estimate of the National Commission on Floods, the area prone to floods in the country is of the order of 400 lakh hectares.
- As per the Geological Survey of India (GSI), the major flood prone areas of India cover almost 12.5% area of the country.
- The states falling within the periphery of "India Flood Prone Areas" are West Bengal, Orissa, Andhra Pradesh, Kerala, Assam, Bihar, Gujrat, Uttar Pradesh, Haryana and Punjab.
- The intense monsoon rains from southwest causes rivers like Brahmaputra, Ganga, Yamuna etc. to swell their banks, which in turn floods the adjacent areas.

What affects the rainfall pattern?

- Extreme rainfall events are increasing both in intensity and frequency as [climate change is heavily impacting the monsoon pattern in India](#).
- **Longer rainy season** - In recent times, rainfall in India is increasingly taking place in short, intense bursts.
- **Persistent warmer ocean currents** - Due to climate change oceans continue to remain warm even after the traditional monsoon season is over.
- **Global warming** - It is the reason for extreme rainfall events as the warm atmosphere can hold more water which may result in heavy downpour of rain.
- **Persistence of intense La-Nina** - It is further worsened by negative Indian Ocean dipole, warming of East Indian Ocean which results in prolonged monsoon.
- **Warming of Arabian Sea** - Due to global warming, temperature is 1.2–1.4 °C higher than the temperature witnessed four decades ago.
 - **Example**- In 2023 Gujarat witnessed heavy rainfall due to Cyclone Biparjoy which was formed in Arabian Sea.



What are the consequences?

- **Human loss and property loss** - Every year, millions of people become homeless and washed away due to floods.
- **Spread of communicable diseases** - Waterborne diseases (cholera, typhoid fever etc.), vector-borne diseases (dengue, malaria etc.) are caused during flood.
- **Impact on agriculture** - Floods destroy a large number of crops impacts the food security of the country. Livestock also gets displaced during floods.
- **Disruption of communication** - Flood damages transportation links such as bridges, rail, and power plants thus causing communication disruption.
- **Economic and social disruption** - The economy comes to a standstill as people are forced to move to another place.

What efforts were taken regarding flood management?

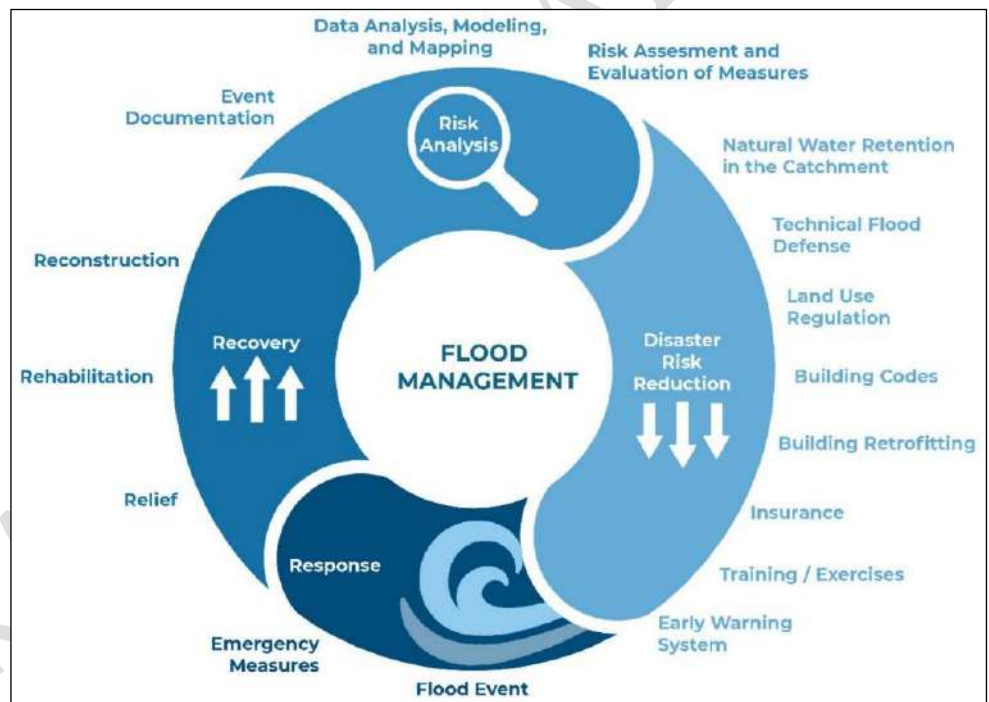
Government measures

- Flood management falls under the purview of **State Government**.
- The Union Government supplements the efforts of the States by providing technical guidance and also promote financial assistance for management of floods in critical areas.

- **NDMA** - National Disaster Management Authority was set up in 2005 for prevention and mitigation effects of disasters including flood disasters.

- **Central Water Commission (CWC)** - It was set up in 1945 for achieving the goal of furthering and promoting measures of flood control, conservation and utilization of water resources.

- **Ganga Flood Control Commission** - It was set up in 1972 for preparation of comprehensive plan of flood control for Ganga Basin States



- **Brahmaputra Board** - The Government set up Brahmaputra Board under Brahmaputra Board Act, 1980 to survey and conduct investigations in Brahmaputra and Barak valley.
- **National Water Policy (2012)** - It suggested that through reservoir operation, the flood cushion can be set up to reduce the trapping of sediment during the flood season.
- **National Hydrology Project (2016)** - World Bank funded Central sector scheme which gathers hydro-meteorological data that will be stored and analyzed on a real-time basis.
- **Flood Management and Border Areas Program (2017-20)** - It is implemented for effective flood management, and soil and anti-sea erosion.

Engineering /Structural Measures

- **Dams** - Example - Idukki dam across river Periyar, Gandhi sagar dam across river Chambal etc.,
- **Dykes** - Dikes, also called levees, are earthen embankments that are raised parallel to the river flow at some suitable distance from the deep river.

- **Reservoirs** - Reservoir is formed upstream when a dam or a bund is built across a river. Such a reservoir will store ample water that enters the river upstream of the dam.

Administrative / Non-structural Measures

- **Early warning system** - It will help in timely evacuation of people and movable property to safer grounds.
- **Flood plain zoning** - Flood-plain zoning measures aim at demarcating zones or areas likely to be affected by floods of different magnitudes or frequencies and probability levels.

What lies ahead?

- National Flood Commission (Rashtriya Barh Ayog 1980) had recommended solutions covering the entire gamut of the flood problem in the country like data collection, legislation enforcement, flood plain zoning etc.,
- Conducting monsoon audits regularly can mitigate the flood effects.
- Greening the cities is the need of the hour.
 - **East Kolkata's wetlands** have been an effective flood defence mechanism that help treat a large share of the city's sewage, produce half of the city's fresh vegetables.
- Adopt best practices from state like **Tamilnadu**, which is successful in implementing **Rain Water Harvesting (RWH)** structures.

1.2 Cheetah Reintroduction Project

Why in news?

Following the death of two cheetahs in three days at Kuno National Park in Madhya Pradesh wildlife officials suggested to remove radio collars from 10 free ranging cheetahs.

What is Project Cheetah?

- Project Cheetah is India's cheetah relocation programme.
- This is the first intercontinental reintroduction of a wild, large carnivore species.
- The project is to bring in 5-10 animals every year, over the next decade, until a self-sustaining population of cheetahs is established.
- Asiatic Cheetahs were once abundant in India but the last cheetah in the country died in 1952.
- The animals brought from Namibia and South Africa are the Southeast African cheetahs.

Cheetah

Scientific name - *Acinonyx jubatus*

Cheetahs are the fastest land animals.

Cheetah are large wild cats

IUCN Status - Vulnerable

CITES - Appendix I

- **Location** - Under Project Cheetah, the animals are translocated from the forests of South Africa and Namibia to the Kuno National Park in Madhya Pradesh.
- Since last year, Kuno National Park has received 20 cheetahs with the aim of establishing a free-ranging population.
- **Authorities** - The National Tiger Conservation Authority (NTCA) is the apex body entrusted with the implementation of Project Cheetah.
- NTCA comes under the Ministry of forest, environment and climate change.
- The Cheetah Conservation Fund (CCF) is also assisting the Indian government in reintroducing cheetahs in India.

National Tiger Conservation Authority (NTCA)

- The National Tiger Conservation Authority (NTCA) was established in 2005.
- NTCA is a statutory body under the Ministry of Environment, Forests and Climate Change.
- It has been constituted under Section 38 L (1) of Wildlife (Protection) Act, 1972.
- It is headquartered in New Delhi.
- The Union Minister of Environment, Forests and Climate Change is its Chairperson.

What is the debate?

- 20 cheetahs were translocated from South Africa and Namibia to Kuno National Park.
- Of the 20, six imported cheetahs including three new-borns have died.
- **Reasons** - The two cheetahs that died recently have a similar organ damage.

- The radio collar can be a contributing factor for the cheetah deaths.
- There is a possibility for an infection breaking out because of the radio collar due to the monsoon.
- Because of high moisture, the cheetah may scratch its skin, which can break out an infection.

Arguments in support of this project	Criticisms against this project
<ul style="list-style-type: none"> • Too early to judge - The Cheetah Conservation Fund (CCF) has expressed the progress in India is positive. • It underscored that the cheetah's <u>home ranges</u> can be accurately determined only after they firmly established their territories. • Knowledge - India is advancing its knowledge and understanding of cheetahs in a diverse range of <u>veterinary concerns</u> and <u>behavioural patterns</u> linked to cheetahs that roam freely. • Breeding conducive - Cheetahs from 2 distinct countries possess <u>varied genetic makeup</u> whose diversity can be preserved from careful breeding. • Cheetah exhibit <u>high reproductive rates</u> in favourable ecological conditions and the successful <u>birth of 3 female cubs</u> suggest the conducive environment of Kuno NP. • Protracted process - The efficacy of wildlife breeding initiatives necessitates an assessment conducted over extended time periods. • Like Project Tiger, conservation projects of rhinoceros and Asiatic lion a genetically viable population of cheetahs for a prolonged period is possible. • Hence, it is premature to make a judgement on the programme. • Damages - Fatalities are inevitable in any animal's reintroduction project. • Ecological Benefit - The cheetah reintroduction project enhances the value of grasslands and savannahs which has been neglected for a long time. • Biodiversity benefit - The Cheetah is the flagship species of grasslands and its conservation will enhance the grassland biodiversity. 	<ul style="list-style-type: none"> • Scientific basis - Wildlife specialists said that India's cheetah reintroduction strategy was based on an unfounded assumption. • They also claimed that the plan disregards critical scientific results from recent demographic research on free-roaming cheetahs. • Choice of site - Several wildlife and conservation experts contend that Kuno National Park may not be a suitable habitat for accommodating a large population of cheetahs. • Spatial requirements - Cheetahs typically require expansive habitats spanning thousands of square miles to roam freely but the area of Kuno NP is expected to be below 500 square miles. • Habitat requirements - Kuno is inadequate to accommodate such a large number of cheetahs. • The Supreme Court bench expressed concern over the high density of cheetahs in a particular location. • Alternatives - It further suggested exploring alternative habitats that may be more suitable than Kuno. • There are plans to develop a second reserve in Gandhisagar, Madhya Pradesh and also establish a cheetah rehabilitation centre. • Approach - The preservation of carnivores in environments that are heavily influenced by human activity needs a <u>multidisciplinary approach</u>. • Prolonged captivity - Quarantining cheetahs for extended periods have affected their adaptive capabilities and given them psychological adjustment problems, making them more vulnerable.

1.3 6 years of GST

Why in news?

Touted as one of the biggest tax reforms, India's Goods & Services Tax (GST) turned six years this year.

What is Goods and Service Tax?

- **History** - The idea of a Goods and Services Tax (GST) for India was first mooted during the Prime Ministership of Shri Atal Bihari Vajpayee.
- The Constitution (**122nd Amendment**) Bill was introduced in 2014 in the Lok Sabha and was passed by Lok Sabha in May 2015.
- The Constitutional amendment was passed and notified as Constitution (**101st Amendment**) Act 2016 which paved way for introduction of Goods and Services Tax in India.
- GST was launched with effect from **1st July 2017**.

- **Goods and Services Tax** - GST completely transformed the indirect tax structure of India.
- GST was born out of subsuming of 17 taxes and 13 cesses levied by the Central and State governments.
- Apart from zero-rated goods, the new structure has just four tax slabs 5%, 12%, 18 and 28%.
- **GST Council** - The GST Council is a joint forum of the Centre and the States which makes recommendations to the Union and the States on GST.
- Every decision of the GST Council is taken at its meeting by a majority of not less than 3/4th of the weighted votes of the Members present and voting.

Quick Facts
<ul style="list-style-type: none"> • <i>Over the last 5 years, the Value of Goods Transported Inter-State (Domestic Only) increased by 44% and the Cumulative Value of Imports and Domestic Goods increased by 34%.</i> • <i>The taxpayer base has witnessed a remarkable increase, surging from 63.9 lakh in 2017 to approximately 1.40 crore currently.</i>

Why was GST launched?

- GST was launched with the motto, "**One nation, One market, One tax**".
- It aimed to bring unity and benefits for all stakeholders, governments, taxpayers, and administrators alike.
- It also simplifies the compliance for businesses and makes the tax system more transparent with several features.
- **Features of GST**
 - Unified taxpayer base governed by a uniform set of laws and procedures;
 - Common management of business records and filing returns;
 - An uninterrupted input tax credit chain through the mechanism of Integrated Goods and Services tax (IGST);
 - Completely automated and faceless administration with all processes being online.

Benefits of GST	Challenges of GST
<ul style="list-style-type: none"> • Despite the introductory challenges, one cannot deny the benefits that GST has provided to businesses and the Indian economy. • Few highlights of the GST regime <ul style="list-style-type: none"> ○ Single indirect tax regulatory framework for businesses ○ GST eliminated the cascading effect of taxes and reduced manufacturing costs. ○ Reduction of cascading effect of taxes ○ Digitization of compliances ○ Federal cooperation and enhanced economic integration of the States. • Revenue standpoint - this tax reform has witnessed a considerable increase in average revenue per month including in most cases during the pandemic year 2020-21. • It simplified the processes of return filing through technological advancement in GST continues. • E-invoicing today covers a taxpayer base which contributes more than 80% of GST revenue. 	<ul style="list-style-type: none"> • Initially the tax regime's technical, structural and procedural challenges took a while to sort out. • Bogus firms and <u>fake invoices</u> causes revenue loss and also adversely affects the competitiveness of honest taxpayers. • Dispute resolution remains a pain point for industry, with <u>GST appellate tribunals</u> still not set up. • There is <u>no road map</u> in sight on the rate rationalisation exercise or the inclusion of excluded items such as electricity, petroleum and real estate, without which the efficiency gains from the GST remain constricted. • The GST Council needs to <u>meet more often</u> and turn its to-do list into a must-do list expeditiously. • Extension of GST <u>Compensation cess</u> levies till at least March 2026, instead of the initial 5-year tenure.

What is the way forward?

- The risk parameters for the new applicants are continuously refined through use of data analytics and AI to control the rogue players.
- Taxation of online gaming activities and transactions involving cryptocurrency are few new areas that deserve attention under GST.

- Setting up of Centralised Authority to address the issues arising from contradictory orders passed by the Authority for Advance Rulings (AARs) in different states.
- A National Appellate Authority for Advance Ruling with the inclusion of judicial members in bench may improve this tax reform.
- A white paper for each industry with clarifications on major issues should help further improve the certainty index.
- Operationalization of the GST Appellate Tribunal to help taxpayers in getting quicker cost-effective resolution.

E-invoicing

- A system of electronic, standardised invoicing that enables seamless data sharing and tracking between businesses and the government.

1.4 Uniform Civil Code

Why in news?

Prime Minister Narendra Modi had called for the enactment of a Uniform Civil Code (UCC), pointing out the anomaly of having varying laws for different categories of citizens.

What is the Uniform Civil Code?

- Uniform Civil Code (UCC) provides for **one law for the entire country** across all religious communities in their personal matters such as marriage, divorce, inheritance, adoption etc.
- UCC is defined in **Article 44** as part of the **Directive Principles of State Policy** (DPSP), in part of **Part IV** of the Constitution.
- **Article 44** - It states that 'The State shall endeavour to secure for the citizens a **Uniform Civil Code** throughout the territory of India'.
- UCC aims to enforce a uniform legal framework to all citizens, irrespective of their religion.
- UCC aims to safeguard the fundamental rights of all citizens and reduce social inequalities and gender discrimination.
- **Legality** - The legality of UCC is rooted in the Constitution of India, Constituent Assembly debates and also Supreme Court of India judgments.
- Though DPSP is fundamental to the country's governance, it is not enforceable or justiciable in a court of law.

Article 25

- Lays down an individual's fundamental right to religion.

Article 26(b)

- Upholds the right of each religious denomination or any section thereof to manage its own affairs in matters of religion.

What is the status of UCC in Indian States?

- **States** - None of the states have adopted UCC, except Goa, a version of the UCC is in place in Goa.
- It follows the *Portuguese Civil Code of 1867*, under which people of all religions in Goa are subject to the same laws on marriage, divorce, and succession.
- After Goa joined the union as a territory in 1961, the *Goa Daman and Diu Administration Act of 1962* was passed which gave Goa permission to apply the Civil Code.

What did the Constituent Assembly say about UCC?

- The UCC had been recommended by the authors of the Indian Constitution under the Directive Principles of State Policy.
- **For** - B.R.Ambedkar, the chief architect of the Indian Constitution, stressed the importance of a UCC in ensuring gender equality and eradicating prevailing social evils.

In Shah Bano Begum Judgement of 1985, where a divorced Muslim woman demanded maintenance from her former husband, the apex court while deciding whether to give prevalence to the CrPC or the Muslim personal law, called for the implementation of the UCC.

- Other distinguished members of the Constituent Assembly such as Alladi Krishnaswamy Ayyar and K.M. Munshi also advocated the enactment of a UCC.
- **Against** - Many other members including Nazirrudin Ahmad were against it.
- They claimed that the religious laws of different communities should not be tampered with, without their consent.
- Since a consensus on a UCC could not be reached in the Constituent Assembly, UCC was placed under the Directive Principles.
- **Government's stance** - [Evolved over years since 1991](#)

Arguments in favour of the UCC	Arguments against the UCC
<ul style="list-style-type: none"> • A common civil code would reinforce the principles of <u>secularism</u> in India. • UCC is important for national <u>integrity</u> and equality of genders and religions. • UCC would <u>eliminate discriminatory practices</u> that deprive women of their rights and provide them with <u>equal opportunities</u> and protections. • Uniformity in personal laws will empower women and ensure <u>gender equality</u> in matters of marriage, divorce, and inheritance. • UCC will make legislation in terms of <u>succession and divorce</u> easier and reduces complexities, contradictions and legal ambiguities. • A unified legal framework is required to foster <u>social cohesion</u> and <u>national integration</u> in a diverse society like India. • Ensures equality before the law for all Indians under Article 14 of the Constitution. 	<ul style="list-style-type: none"> • UCC could infringe upon <u>religious freedom</u> and might clash with religious practices. • Implementing UCC would destroy the essential fabric of India, diversity, which is a mosaic of 22 official languages, 398 dialects, and 645 tribes. • India is a diverse nation and different communities should have the <u>right to maintain their distinct customs and practices</u>. • A law should not be implemented on <u>minority</u> communities without their consent. • The “ambit and scope” of <u>religious freedom</u> itself is not yet decided. • The minority bodies think that a common civil code is not in tune with Article 25, which provides protection and freedom for all to practice their religion and customary laws.

What is the way forward?

- The factors that must be placed in the common civil code after including all communities in the process of formulating are
 - Process of registration of marriages,
 - Abrogation of polygamous rights,
 - A transparent system of divorce which upholds the dignity of women,
 - A right to maintenance and alimony to the spouse and children in case of separation and divorce,
 - A civil process for divorce,
 - A right to remarry,
 - An equal right to inheritance for all children in parental property, whether inherited or self-acquired,
 - Right to adoption and rights of adopted children being the same as biological children.
- **Recognition of difference** - The existence of difference does not imply discrimination, but is indicative of a robust democracy as world moves towards recognising differences.
- **Law Commission Report** - The consultation paper of the [21st Law Commission of India \(2018\)](#), recommends a balancing act between the equal treatment of all religions and religious diversity by codifying personal laws.
- It has also pointed to the dangers of forcing uniformity and the necessity for voluntary reforms in the matter of personal laws.
- **Reiterate Ambedkar's position** - If implemented, UCC should also “make a provision that the Code shall apply only to those who make a declaration that they are prepared to be bound by it”.

G.S PAPER I

2. GEOGRAPHY

2.1 Indian Ocean Dipole and its effect on El Nino

Why in news?

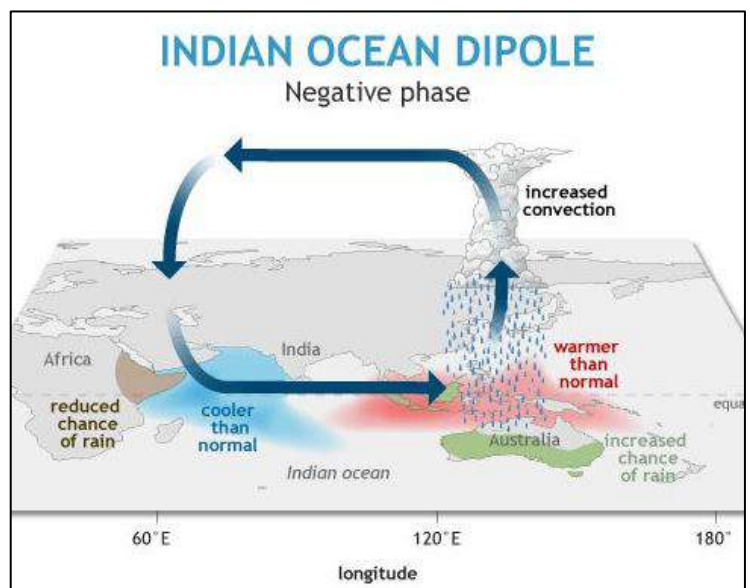
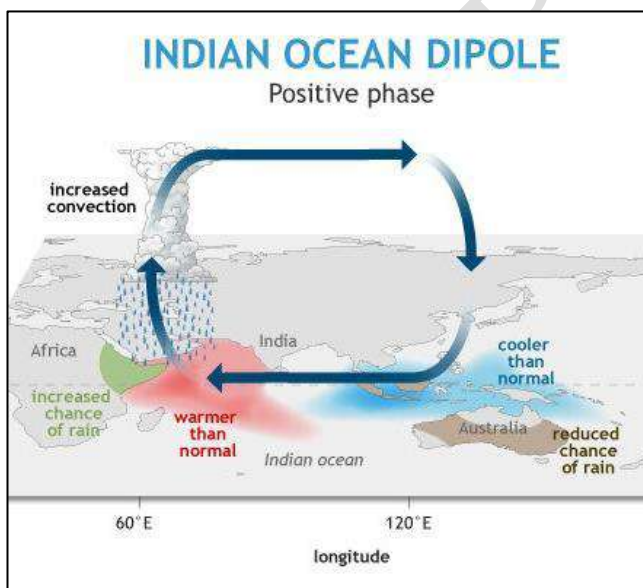
Experts have predicted a positive Indian Ocean Dipole in the coming months.

The Indian Ocean Dipole is currently neutral. The India Meteorological Department (IMD) has said that there was an 80% chance of a positive IOD in the coming months.

What is Indian Ocean Dipole?

- The Indian Ocean Dipole (IOD) is a coupled ocean atmosphere phenomenon in the Indian Ocean.
- IOD is defined by the difference in sea surface temperature between the western pole in the Arabian Sea (western Indian Ocean) and an eastern pole in the eastern Indian Ocean south of Indonesia.
- What is Indian Ocean Dipole, how it will impact Monsoon this year?
- The IOD is sometimes called *India's El-Nino* and its impact can be seen in weather and climate patterns in India and as far as Indonesia, Australia, New Zealand and Africa.

Positive event	Neutral event	Negative event
<ul style="list-style-type: none"> • Warmer sea surface temperatures in the western Indian Ocean relative to the east. • It brings <i>more rainfall to India</i>. 	<ul style="list-style-type: none"> • Water flows from the Pacific between Indonesia's islands, keeping seas warm to the northwest of Australia. • Air rises above this area and falls across the western half of Indian Ocean basin, blowing westerly winds along the equator. • This has <i>very less impact of Indian monsoon</i>. 	<ul style="list-style-type: none"> • Cooler sea surface temperatures in the western Indian Ocean relative to the east. • It brings <i>less rainfall to India</i>.



What is ENSO?

- **El Nino** - El Nino is the warming of sea waters in Central-east Equatorial Pacific that occurs every few years (Warm phase off the coast of Peru).
- Over India, the El Nino has the impact of suppressing monsoon rainfall.

- **La Nina** - La Niña sees cooler than average sea surface temperatures in the equatorial Pacific region (Cool phase).
- In the Indian context, La Nina is associated with good rainfall during the monsoon season.
- Both these conditions, together called El Nino Southern Oscillation or ENSO, affect weather events across the world.

To know more about El Niño-La Niña Weather Patterns, click [here](#)

What is the effect of IOD on ENSO?

- A *positive IOD event* is often seen developing at times of an *El Nino*, while a *negative IOD* is sometimes associated with *La Nina*.
- During El Nino, the Pacific side of Indonesia is cooler than normal because of which the Indian Ocean side also gets cooler.
- That helps the development of a positive IOD.
- If both IOD and ENSO are strong their circulation can impact each other.
- Compared to ENSO events, the impacts of IODs are *much weaker*.

2.2 Heat Waves across the World

Why in news?

Continents like North America, Africa, Asia and Europe have been experiencing heat waves, caused by either formation of heat domes or arrival of anticyclones in most cases.

What is a heat wave?

- A heat wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs.
- Heat waves typically occur between March and June, and in some rare cases even extend till July in India.
- [Click here](#) to know more about heat waves.

How dangerous are the 'heat waves'?

- According to a study released recently, heat waves killed more than 60,000 in Europe last year.
- Heat waves are particularly lethal when they become wet bulbs.
- **Wet bulb** is a condition when high temperatures combine with high humidity.
- In such conditions, sweat from the human body isn't able to evaporate, failing to stabilise the body temperature.
- This could ultimately cause heat stroke and even death.

How different parts of the world are affected by heat waves?

- **North America** - The USA's Arizona, California and southern Nevada have been gripped by a blazing heat wave.

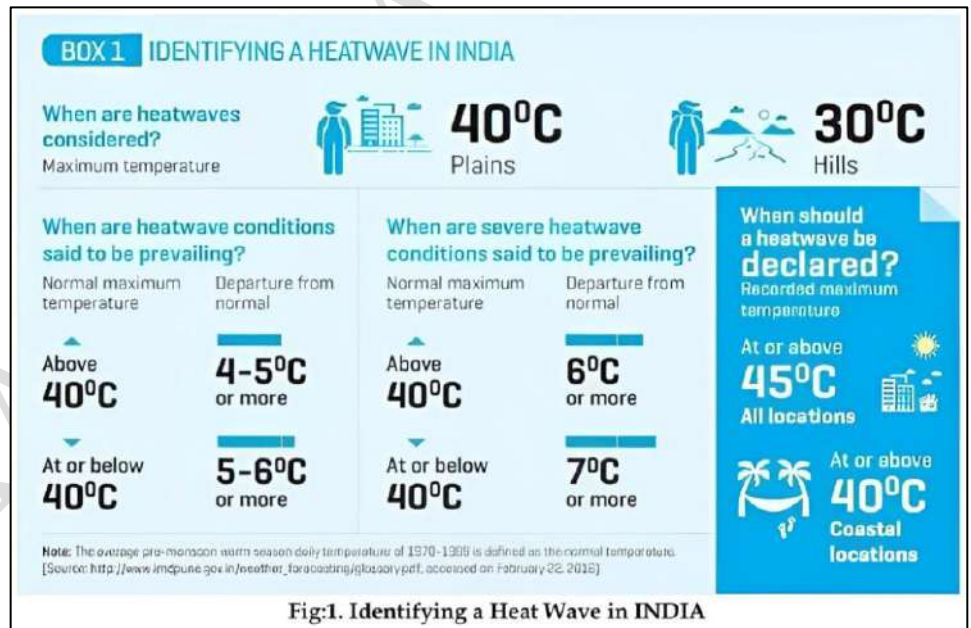
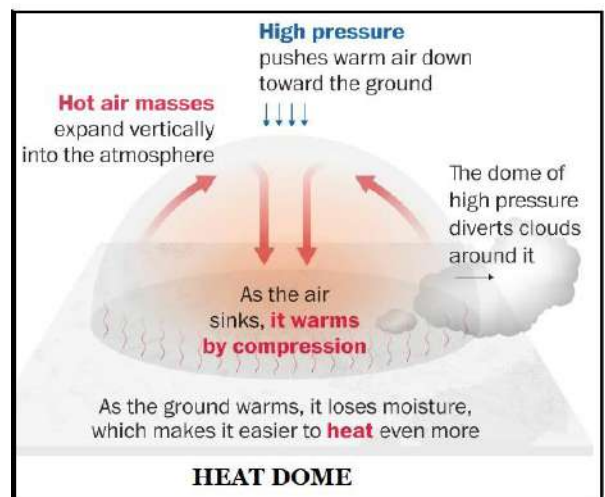


Fig:1. Identifying a Heat Wave in INDIA



- Southern, western and mid-western regions of USA continue to simmer due to unusually warm waters in the Gulf of Mexico and in the western Atlantic Ocean.
- Soaring temperatures have sparked wildfires in Canada which have so far burned nearly 25 million acres.
- **Europe** - Countries like Italy and Greece have been gripped by two consecutive heat waves within two weeks.
- Europe witnessed record-breaking temperatures and wildfires in different areas. [Click here](#) to know more about it.
- **Africa** - Record-breaking temperatures have been reported in North Africa's Algeria crossing 50 degree Celsius mark.
- Tunisia is also impacted by severe heat with some parts of it reaching 49 degree Celsius.
- **Asia** - China has been searing under the impact of a series of heat waves since June.
- West Asian countries like Iran and Saudi Arabia also saw soaring temperatures in several regions.
- **India** - The occurrence of heat waves is expected in the month of July, on contrary temperatures have been under control because of heavy monsoon rains.
- In June 2023, more than 60 people died in Uttar Pradesh's Ballia after the region was hit by a heat wave.

What is causing heat waves across the world?

- **Global warming** - Extreme weather events have a direct correlation with global warming.
- Climate change has increased the frequency and intensity of extreme weather events like heat waves and mass scale floods.
- **Heat domes** - Heat domes were responsible for unleashing heat waves the USA and Algeria.
- [Heat dome](#) occurs when an area of high-pressure stays over a region for days and weeks.
- It traps warm air, just like a lid on a pot, for an extended period producing warmer conditions with every passing day.
- Heat domes, if they last for a long period, may cause deadly heat waves.
- **Anticyclones** - Europe has suffered due to the arrival of two consecutive [anticyclones](#) that originated in Africa.
- Anticyclone is a high-pressure system in which the air goes downwards towards the Earth's surface.
- As the air sinks, its molecules get compressed, which increases the pressure, making it warmer and causing dry and hot weather.
- **High sea surface temperatures** - [El Nino](#) is a weather pattern that refers to an abnormal warming of surface waters in the equatorial Pacific Ocean.
- The El Nino conditions have developed for the first time in 7 years and are exacerbating the extreme heat around the world.

June 2023 was the Earth's hottest June since the record-keeping of global temperatures began 174 years ago by National Oceanic and Atmospheric Administration (NOAA).

2.3 Marine Heat Waves

Why in news?

An increase of 3 or 4 degrees Celsius in average temperatures can be catastrophic for marine life and cause marine heat waves.

What is Marine Heat Wave (MHW)?

- **Marine Heat Waves** - The IPCC Sixth Assessment Report defines marine heatwave as "a period during which water temperature is abnormally warm for the time of the year relative to historical temperatures, with that extreme warmth persisting for days to months.
- If the surface temperature of sea rises to 3 or 4 degree Celsius above the average temperature for at least 5 days, it causes MHW.
- The phenomenon can manifest in any place in the ocean and at scales of up to thousands of kilometres.
- **Occurrence**- Marine heatwaves can occur in summer or winter and are defined based on differences with expected temperatures for the location and time of year.

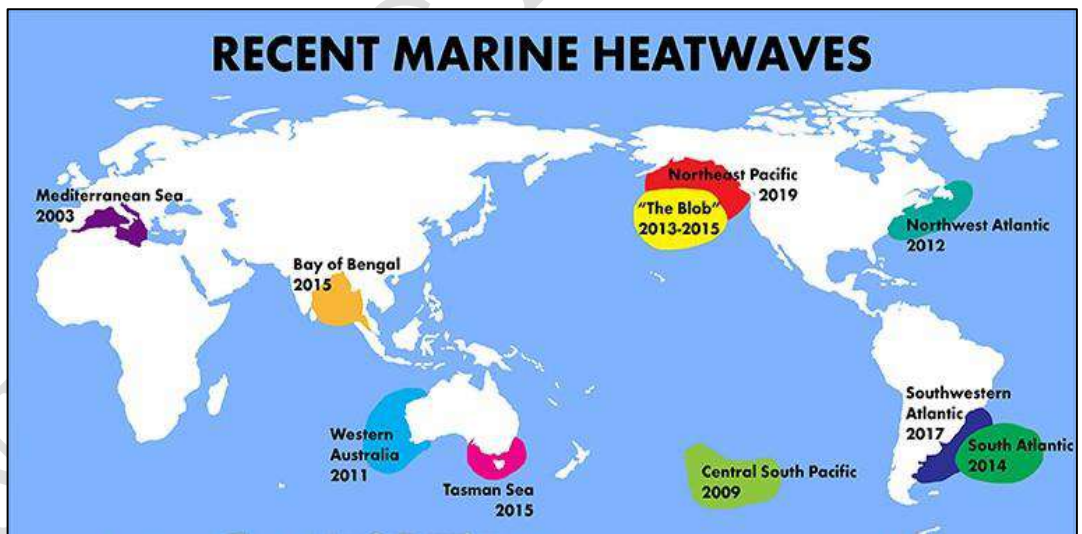
To know more about heat waves, [click here](#)

Future Projections

- **Intensity** - MHW is 10x in intensity compared to pre-industrial times, it has increased 50% in past 10 years.
- Sea surface temperatures have increased at a rate of nearly 0.6°C per century since 1880 and the warming in the upper ocean is projected to be between 0.6°C and 2°.
- **Frequency** - 20 to 50 more MHWs is predicted by 2100.

What are the causes of MHW?

- **Global warming**- The planet is heating up fast, with 70% of water distribution in Earth, its impact as MHWs is huge.
- **Ocean currents**- It has major influence on the ocean, it can drive MHWs by moving around warm water.
- **Winds**- Warm air (normal heatwaves) can drive MHWs by warming the ocean surface.
- **El Nino models**- It is a climate phenomenon that causes warm water to shift to Pacific Ocean.
- This regional climate pattern caused MHWs event Blob in North eastern Pacific.



What are the impacts of MHW?

- **Extreme weather events**
 - Warm water increase the tropical cyclones and hurricanes.
 - Example - *The Blob event (2013-15)* caused unseasonably warm weather in Pacific Northwest of USA and Canada.
- **Increased ocean stressors**
 - **Stratification**- Heatwave leading stratification due to wind mixing, anomalous sea surface temperature etc.,
 - **Acidification**- It leads to change in ocean water chemistry, as it absorbs increasing carbon di oxide.
 - **Deoxygenation**- It results in reduction of oxygen content in the oceans.
- **Biodiversity and Habitat loss**
 - **Habitat destruction**-In 2016, marine heatwaves across northern Australia led to severe bleaching of the Great Barrier Reef.

87% of MHWs are attributable to human-induced warming.

- **Food web disruption**- MHWs fuel the growth of invasive alien species and destroy the kelp forests thereby altering the ecosystem of the coast.
- **Species migration**- In 2011, Western Australia witnessed 3 degree Celsius warmer than average so seaweeds, fish and shark moved south
- **Mass mortalities**- In 2003, Mediterranean Sea was 4 degree Celsius warmer than average 30 days witnessed mass mortality of marine life in rocky reefs.
- **Economic loss**
 - **Industry**- It impacts aquaculture and fisheries.
 - **Tourism**- There will be a loss of revenue to the Government due to loss of biodiversity and habitat destruction.

What lies ahead?

- Raising general awareness of MHWs among the people to foster community participation.
- Improve scientific understanding of their physical properties and ecological impacts.
- Reduce the global warming by keeping the temperature within **1.5 degree Celsius** target.

3. SOCIAL ISSUES

3.1 A Roadmap to Eliminate Poverty

Why in news?

India must raise the per capita income, estimated in 2022-23 at 2,379 USD, by almost six times and grow at 7 % over the next 25 years to have a higher standard of living and eliminate poverty.

What is poverty?

- Poverty is a condition wherein an individual *lacks the financial resources & essential conditions* for meeting the *minimum standard of living*.
- It refers to the condition wherein the economic condition of a person is so low that even the most basic needs are not met

TYPES OF POVERTY	
Absolute Poverty	Relative Poverty
<ul style="list-style-type: none"> ● It refers to the condition wherein an individual is deprived of even the basic necessities, including food, shelter, and clothing to meet the basic living standards ● According to the World Bank, those who are unable to earn 2.15 dollar per day are living in extreme poverty. 	<ul style="list-style-type: none"> ● It refers to the condition in which people lack the minimum amount of income needed to maintain the average standard of living in their respective society. ● Hence, it is a measure of income inequality within a country.

What are the global challenges?

- **Ukraine- Russia War**- It deteriorated peace which is necessary for growth in the economy and disrupts supply of critical imports like oil which can cause a severe setback to both developing and developed countries.
- **Global trade**- The WTO was set up to create an environment of low tariffs and restrictions.
- But rich countries that earlier preached to the developing countries to adopt a free trade model, are backing out for one reason or another and putting restrictions on imports.

Status of Poverty in India
<ul style="list-style-type: none"> ● Global MPI- It was first launched in 2010 by UNDP and Oxford Poverty and Human Development Initiative (OPHI).

- According to Global MPI 2021, India's rank is 66 out of 109 countries.
- The country's poverty rate decreased from 55.1% in 2005-06 to 16.4% in 2019-21.
- The reduction in poverty in South Asia has been largely attributed to improvements in India's MPI.
- **National MPI**- Niti Aayog is the nodal agency to release MDP report for states and Union Territories.
- As per 2023 report there has been steep decline in the poverty, India has achieved a remarkable reduction in its MPI value and headcount ratio between 2015-16 and 2019-21.
- It registered a decline in the number of "multidimensionally poor" individuals, from 24.85 % in 2015-16 to 14.96 % in 2019-2021.

How is poverty defined in India?

- Poverty is measured based on Consumption Expenditure Surveys (CES) of the **National Sample Survey Organisation (NSSO)** that are conducted every 5 years.
- The conventional approach to measuring poverty is to specify a minimum expenditure required to purchase a basket of goods and services necessary to satisfy basic human needs. This expenditure is called the **poverty line**.
- Poverty line estimation in India is based on the **consumption expenditure** and not on the income levels.
- The survey was last conducted in 2017-18 but the government junked its results citing "quality" concerns.
- As a result, data from the **2011-12** CES is the only available consumption tool to calculate official poverty estimates.

Important Committees on Poverty Estimation

- **Alagh Committee (1979)** - Poverty line is based on a minimum daily requirement of **2400 and 2100 calories** for an adult in Rural and Urban area respectively.
- **Lakdawala Committee (1993)** - It recommended that
 - Consumption expenditure should be calculated based on **calorie consumption** as earlier
 - State specific poverty lines should be constructed and should be updated using the Consumer Price Index of Industrial Workers (**CPI-IW**) in urban areas and CPI Agricultural Labour (**CPI-AL**) in rural areas
- **Tendulkar Committee (2009)** – It recommended
 - A shift **away from calorie consumption based** poverty estimation
 - To have a **uniform poverty line basket** for rural and urban India
- The Committee recommended using **Mixed Reference Period (MRP)** based estimates, as opposed to Uniform Reference Period (URP) based estimates that were used in earlier methods for estimating poverty.
- **Rangarajan committee (2012)** - It estimated a monthly per capita expenditure of **Rs. 1407** in urban areas and **Rs. 972** in rural areas.

What are the initiatives taken by India to eliminate poverty?

Poverty alleviation

- **Sansad Adarsh Gram Yojana (SAGY)**- It was implemented in 2014 for the social and cultural development of villages, to develop model villages providing basic amenities.
- **National Rural Livelihood Mission (NRLM)**- It was launched in 2011 to provide the impoverished with stable monthly income.
- **Deendayal Antyodaya Yojana- National Urban Livelihood Mission (DAY-NULM)**- It was launched in 2013 to reduce poverty and vulnerability by providing access to self-employment and skilled wage employment opportunities.
- **Pradhan Mantri Jan Dhan Yojana**- It was launched in 2014 with the aim of financial inclusion and affordable financial services.

Employment generation

- **MGNREGA**- The Mahatma Gandhi National Rural Employment Guarantee Act was launched in 2005 to provide 100 days of guaranteed wage employment.

- **Atmanirbhar Bharat Rojgar Yojana**- It was launched in 2020 to incentivize employers for the creation of new employment along with social security benefits.
- **PM- SVANidhi Scheme**-(Street Vendor's AtmaNirbhar Nidhi) It was launched in 2020 to provide affordable working capital loans to street vendors.
- It is provided to resume their livelihoods that have been adversely affected due to the Covid-19 lockdown.
- **Prime Minister's Employment Generation Program** – It was launched to establish micro enterprise in both rural and urban areas.

What India can do to eliminate poverty?

- **Multi-dimensional strategy**- With strong foothold in services sector, India must adopt a holistic approach by focusing on agriculture and allied activities, manufacturing and exports.
- **Absorb new technologies**- New technologies like AI may lead to automation and increase in unemployment.
- **Skill development** - The need of the hour is to reorient our educational system to enable students to acquire the required skills.
- **Employment generation**- There is a need to create employment by identifying labour-intensive economic activities.
- **Environment sustainability**- The burden of pollution reduction must be borne by developed economies that have exploited natural resources significantly in the last century and a half.
- **Provision for basic income**- This can be done by cut in the subsidies other than those on food.

3.2 Technology-Facilitated Sexual Violence

Why in news?

As internet access has become a basic human need, sexual violence facilitated using technology is an issue that requires immediate attention.

What is Technology-Facilitated Sexual Violence (TFSV)?

- It is a *digital violence* committed and amplified through the use of information and communications, technologies or digital spaces against a person based on gender.
- **Forms**
 - Sextortion - blackmail by threatening to publish sexual information, photos or videos
 - Image-based abuse -sharing intimate photos without consent, morphing
 - Doxing -publishing private personal information
 - Cyberbullying, online gender and sexual harassment
 - Cyberstalking, online grooming for sexual assault
 - Hacking, hate speech, online impersonation
 - Using technology to locate survivors of abuse in order to inflict further violence
 - Digital flashing, rape threats etc.,

Picture of TFSV in India

- As per a research, online abuse *disproportionately affected young women*.
- Out of 400 students surveyed from 111 Indian higher education institutions (HEIs), it is found around *60% of women* experienced some form of TFSV compared to only *8% of men*.
- A global study by *Economist Intelligence Unit* found that 38% of women have had personal experiences of online violence, and 85% of women who spend time online have witnessed digital violence against other women.

What are the causes of TFSV?

- **Internet penetration**- According to Statista, the internet penetration in India is 48.7% in 2022 from just 4% in 2007.
- **Safety concerns**- Online platforms will steal the information from the mobile phone without one's knowledge.

- **COVID-19 induced lockdown-** The pandemic induced lockdown increased the rate of online abuse as there was no social interaction.
- **Lack of awareness-** Many people who use internet are not aware of the online abuse and its impact.
- **Lack of reporting-** It is witnessed due to fear of reporting and the stigmatisation associated with it.
- **Targeting the weak-** Children, young women, LGBTQI+ are the most vulnerable.

What are the effects of TFSV?

- **Psychological issues-** It leads to anxiety, depression, post-traumatic stress, suicidal thoughts etc.,
- **Impact on studies-** It will lead to loss of academic or career prospects, social isolation, lack of concentration to focus on studies.
- **Disempowerment-** It leads to self-censoring, reduced public participation due to safety and privacy concerns.
- **Economic impacts-** The work productivity is reduced and this has impact on the worker participation rate in the economy.
- **Magnifies existing social inequalities-** As per research, it is found that only 22% of women surveyed felt safe online compared to 73% of men.

Steps taken to mitigate Technology-Facilitated Sexual Violence

- **Information Technology Act, 2000-** Its objective is to create an enabling environment for effective use of the internet along with reporting the cybercrime in India.
- **Cybercrime cell-** One can file complaint directly in the police station of the city where the crime has taken place.
- **Internal Complaint Committee-** Employers are required to constitute an ICC at each workplace with 10 or more employees to receive and address complaints of sexual harassment.
- It is constituted under *Protection of Women from Sexual Harassment Act 2013 (POSH Act)* which is based on *Vishaka guidelines* provided by the judiciary in 1997.
- **SHe-Box-** It is an effort to provide a *single window access* to every woman, irrespective of her work status, whether working in organised or unorganised, private or public sector.
- It facilitates the registration of complaint related to sexual harassment, provided under POSH Act 2013.

What are the challenges associated with TFSV?

- **Poor law enforcement** - Foreign social media companies like Meta don't adhere to Indian context laws.
 - Meta's safety moderation algorithm is limited to only American English it doesn't cover the abusive content in Indian languages.
- **Lack of institutional support-** Internal Complaints Committees (ICCs) is a legally mandated mechanism to investigate incidents of sexual harassment, but many institutions struggle to form, train, and manage these committees.
- **Under-reporting-** Students reported low awareness and utilisation of ICCs in their academic institutions.
- 44% of students surveyed were unsure whether they could report online harassment to their college at all.

How to tackle TFSV?

- **Proper law enforcement-** With the upcoming Digital India Act 2023, India should strengthen its regulations and make the social media companies accountable for TFSV.
- **Crucial intervention point-** Students should be made aware institutional support mechanisms like ICCs to report the incidents related to TFSV.
- **Gender sensitisation programs-** Conduct regular workshops, safety training, facilitated discussions, and designating student organisations to lead education and to empower their community.
- **Focus on survivor's need-** It is not just gender but too many factors like caste, religion, and ethnicity also widens the TFSV, hence address this discrimination present in the society.
- **Open discussions-** This should be done without shaming or blaming survivors.
- **Awareness-** UNFPA empower survivors and advocates for increased accountability and regulation through interactive feature "*The Virtual Is Real and Bodyright Campaign*".

3.3 Problem of Migrants in Maharashtra Sugar Fields

Why in news?

The High Court of Bombay has recently taken Suo motu cognizance of the intra-State workforce exploitation who have migrated from the drought-affected Marathwada to the sugar-belt region of western Maharashtra.

Status of Sugarcane Production

- **Global level** - India is the world's top producer and consumer of sugar.
- India is the 2nd largest exporter of sugar in the world after Brazil.
- **National level** - Maharashtra and Uttar Pradesh are the leading sugar producing States in India.
- **Maharashtra's status** - According to the Maharashtra Sugar Commissioner, in 2022-23, the net area under sugar cane was 1.487 million hectares.
- There were 203 crushing factories in the State that has the capacity to produce 138 lakh metric tons of sugar.
- Maharashtra has set a record for itself by producing 137.28 lakh tonnes of sugar in 2021-22, which is nearly 31 lakh tonnes more than the previous year.
- In 2022-23 the State stands next to Brazil in terms of production

Why there is significant migration in Maharashtra?

- **Prolonged unemployment**- After sowing rabi crops, millions of small and marginal peasants of the Marathwada region migrate to the sugar-belt districts to work in cane harvesting and factories.
- **Debt**- Due to unemployment, crop failure farmers get caught up in debt trap, they migrate for better employment opportunities to pay off the debt.
- **Prolonged drought** - Marthawada region is a water scarce region which forces the peasants to migrate.
- **Crop failure**- Due to drought conditions it results in repeated crop failure which makes the peasants to migrate.
- **Dependence on Mukadam**- It is an exploitative structure of recruiting migrant workers in the sugar cane industry.
- The Mukadam is a man with political influence who has a contract with sugar factories to supply 'Koytas' (labour couples) and takes an advance to pay workers.
- The Mukadam system assures sugar factories a supply of a large volume of temporary, cheap, reliable, and efficient workforce.

Migration Tracking System (MTS)

- It is a technology aided application launched in 2022 by the Maharashtra Government.
- It is said to be the first of its kind initiative in the country which initially focused seasonal migrants in the tribal districts.
- **Objectives:**
 - To enumerate and track children, pregnant women, and lactating mothers at source and destination areas.
 - To ensure nutrition, immunisation and early childhood care, and continuity of the Integrated Child Development Services

What are the issues faced by interstate migrant workers?

- **Lack of awareness**- Interstate migrants are exploited by the mukadam with cheap wages, sexual abuse etc.,
- **Inadequate data**- The data especially of women and children is invisible and unenumerated and it blocks the framing of policies for seasonal migrants.
- **Failure of Migration Tracking System** - It failed to create a comprehensive picture of seasonally migrating families, their current employment status, wage structure and entitlement coverage.
- **Women health**- They are engaged in vigorous work such as headload cane bundles that adversely impacts their body, causing musculoskeletal disorders and several gynaecological issues.
- **Early marriages**- At 12-13 years of age, girls are married off because the field employs only couples.

In the Beed district of Maharashtra, the women are forced to get a hysterectomy to avoid complications of pregnancies and periods while working in the fields.

- **Gender based violence-** Many studies have reported recurring violence and sexual harassment cases linked to the Mukadam and male workers.
- **Child labour-** The children accompany their parents to sugar cane fields and there is no sufficient alternative schooling models.

What lies ahead?

- **Periodic databank-** A time bound enumerating exercise is critical to create a databank for seasonal migrants that is credible.
- **Revise MTS-** Expand its scope that can be used in the State's sugar belt and other seasonal migration corridors.
- **Gender equality-** There is a need to address the plight of migrant women workers to ensuring their health, safety and employment in the sugar cane labour market.
- **Strict implementation of NEP 2020-** There should be strict adherence to National Education Policy (NEP) 2020 which emphasises equitable and inclusive education for all.
- **Access to justice-** There is a need to guarantee safe and healthy working and living conditions.
- **Political will-** There is a need to create a favourable legal environment to protect the rights of migrants by strengthening the labour administration.
- Employment should be generated through schemes like MNREGA and the government should find the solution to the problem of water scarcity in the drought prone region.
- **Promote Amrit Kal Vision-** Its aim is to an empowered and inclusive economy to fulfil all its humanitarian obligations.

The sugar which sweetens the lives of people, in reality, bitters for those who toil in producing it.

3.4 Reservation for transgender community

Why in news?

Trans-persons in India have been fighting for the right to horizontal reservation for a long time.

How reservations are given in India?

- Reservation in India is given to historically oppressed and disadvantaged communities so that they have a right to affirmative action policies.
- Reservation in education and employment can be divided into two broad categories, namely, vertical and horizontal.
- **Vertical reservations** are provisions aimed at addressing social asymmetry arising out of caste hierarchy or social and educational 'backwardness' (in the case of OBCs).
- Includes: Reservations for Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Classes (OBC).
- **Horizontal reservation** provides affirmative policies for disadvantaged groups within categories cutting across all vertical groups.
- For example, disabled persons are guaranteed horizontal reservation in all the aforementioned vertical categories alike.

A study conducted by the National Human Rights Commission revealed that in 2017, only 6% of transgender people were formally employed.

What is the NALSA judgement?

- In the *National Legal Services Authority of India (NALSA) vs Union of India (2014) case*, the Supreme Court ruled that transgender persons have a right to reservation.
- It also directed the Centre and the State Governments to take steps to treat them as *socially and educationally backward classes of citizens* and extend all kinds of reservation in education and employment.
- The NALSA judgment entitles trans persons to reservations on constitutional grounds.
- But it does not, mention the nature of reservations - whether they are to be vertical or horizontal.
- **Interpretation** - It has largely been interpreted as directing reservations for transgender people in the OBC category as the bench identifies the community as 'a socially and educationally backward class'.
- Such 'backwardness based' reservation for trans people will come at a loss for them.

- **Dilemma** - Dalit, Bahujan and Adivasi transgender persons will have to make a choice between availing reservation either based on caste and tribal identity or gender identity.
- Under such conditions, they will have to choose between a rock and a hard place.
 - Either compete with cis-gendered SC, ST persons.
 - Or compete with other caste transgender persons, and cis-gendered persons from OBC communities.
- **Demand** - SC, ST trans people should be able to avail internal reservation in their categories (Horizontal reservations).

What has happened so far on horizontal reservations?

- There has been no direction from the Central government on delivering on the right to reservation for trans persons so far.
- The Transgender Persons (Protection of Rights) Act of 2019 did not have any mention of reservation neither vertical nor horizontal.
- **Earlier attempts** - The Rights of Transgender Bill, 2015 (private bill) which had provisions for reservation for trans persons in the public and private sector was rejected in the Lok Sabha.
- The Transgender Persons (Protection of Rights) Bill, 2016 (introduced by the Centre) had no provision for reservations.
- A parliamentary standing committee set up under the Ministry of Social Justice in 2018, recommended reservations for transgender persons.
- **In States** - In 2015, the Tamil Nadu government decided to categorise (only) transwomen under the Most Backward Classes (MBC) category.
- After Sangama v State of Karnataka case, Karnataka became the first and only state to offer 1% horizontal reservation to transgender persons in 2021.
- In 2023 April, transgender persons were included in the OBC category in Madhya Pradesh.

What is the status of the case in Maharashtra?

- The Bombay High Court is hearing a petition filed to include transgenders for recruitment in MahaTransco.
- The state government had earlier issued a government resolution (GR) for recruitment of transgenders in employment and education.
- The GR stated that an expert committee would be set up under the social justice department comprising 14 members.

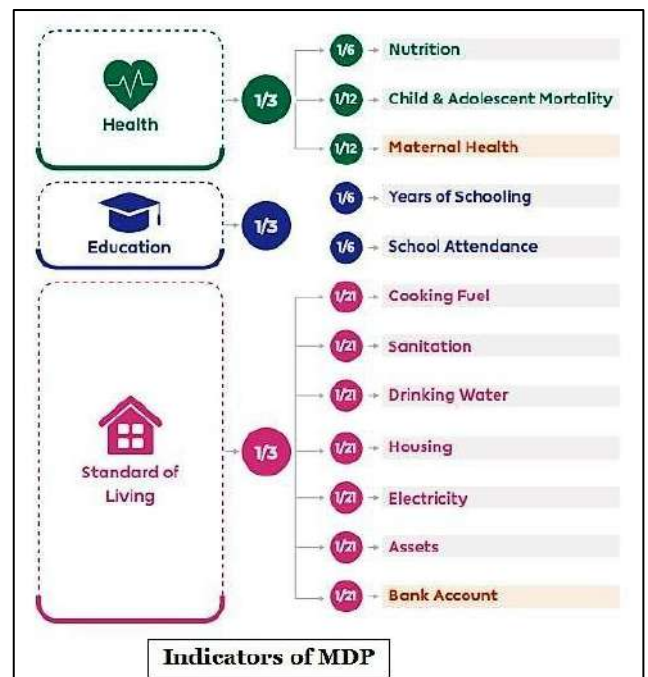
3.5 National Multidimensional Poverty Index

Why in news?

Recently, Niti Aayog has released a report titled “National Multidimensional Poverty Index: A Progress Review 2023”.

What is Multidimensional Poverty?

- **Poverty** – According to the World Bank, those who are unable to earn 2.15 dollar per day are living in extreme poverty.
- As per UNDP, it is the measure of poverty that considers various deprivations experienced by people in their daily lives including *poor health, insufficient education and low standard of living*.
- It is a means to capture the complexity of poverty that considers dimensions of well-being beyond just monetary poverty.
- **Global MPI Report** – It is jointly published by the *Oxford Poverty and Human Development Initiative (OPHI)* and the *United Nations Development Programme (UNDP)*.



- It is based on the **Alkire-Foster (AF) methodology** that captures overlapping deprivations in health, education, and living standards.

What is the Niti Aayog's MPI report about?

- National Multidimensional Poverty Index: A Progress Review 2023** - In national level, **Niti Aayog** is the nodal agency to release MDP report for states and Union Territories.
- It plays a pivotal role in assessing advancements towards Sustainable Development Goals (SDGs) 1.2 - **Reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions.**
- It presents the changes in multidimensional poverty between the survey periods of NFHS-4 (2015-16) and NFHS-5 (2019-21).
- Source data - Data inputs are taken from **National Family Health Survey (NFHS-5).**
- Indicators** - India's national MPI has 3 equally weighted dimensions - Health, Education, and Standard of living – which are represented by 12 indicators.

Sub-indices of National MPI

- Headcount ratio (H): How many are poor?
- Intensity of poor (I): How poor are the poor?

$$MPI = H * I$$

- If the deprivation score (sum of the weighted status of all the indicators) for an individual is more than 0.33, then an individual is considered multidimensionally poor.

What are the key findings?

- Poverty in India** - There has been **steep decline in the poverty**, India has achieved a remarkable reduction in its MPI value and headcount ratio between 2015-16 and 2019-21.
- It registered a decline in the number of “multidimensionally poor” individuals, from 24.85 % in 2015-16 to 14.96 % in 2019-2021.
- Around 13.5 crore Indians escaped poverty between the 5-year time period due to improvements in indicators like access to cooking fuel, sanitation, drinking water etc.,

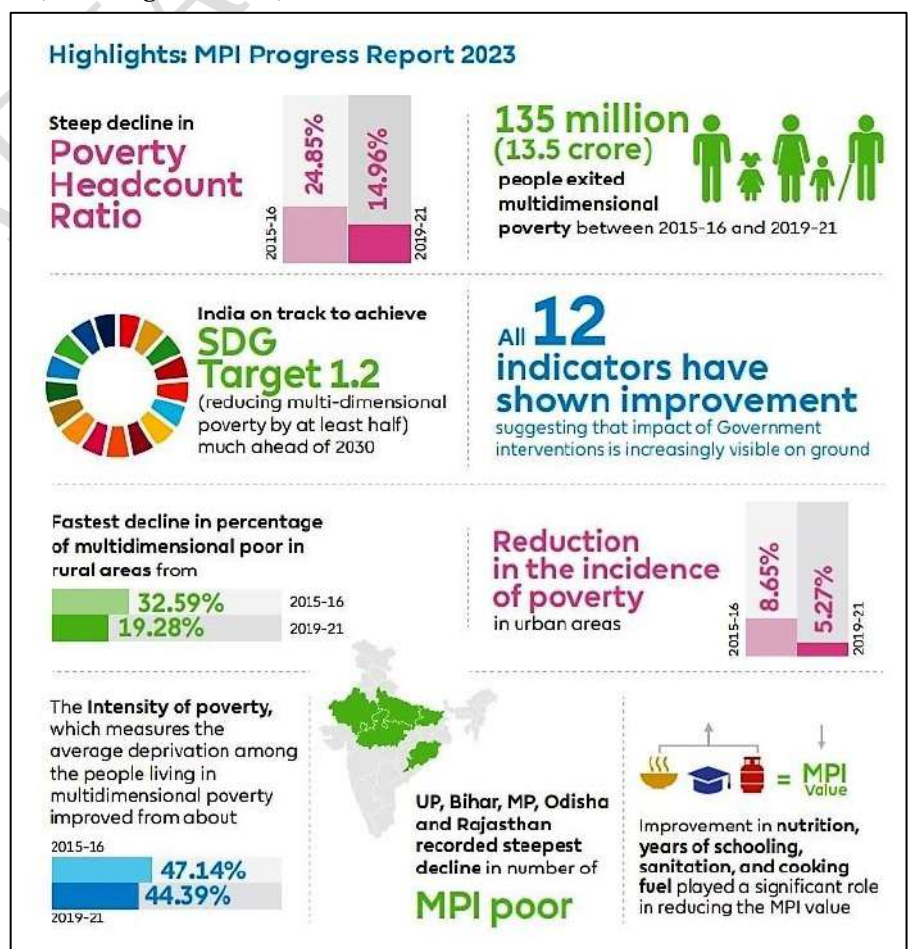
- 1 in 7 Indians multidimensionally poor due to marginal improvement in indicators like nutrition and access to education.

- Regional disparity**- Rural areas witnessed faster decline in poverty from 32.59% to 19.28% than urban area,

- Poverty in States** - The number of states with **less than 10%** people living in multidimensional poverty **doubled in the five years** between 2016 and 2021.

- The poverty struck states are Mizoram, Himachal Pradesh, Punjab, Sikkim, Tamil Nadu, Goa, and Kerala, Telangana, Andhra Pradesh, Haryana, Karnataka, Maharashtra, Manipur, and Uttarakhand.

- No other state in India has **more than one-third of its population** living in multidimensional poverty other than **Bihar.**



What is keeping Indians multidimensionally poor?

- **Lack of uniformity**- Poverty reduction is not equally represented in the three main indicators of standard of living, health, and education.
- **Marginal health performance**- Three sub-indicators of health which are nutrition, child and adolescent mortality, and maternal health showed only moderate improvement.
- **Nutrition deprivation**- It contributes close to 30% the highest in calculation of MPI which results in nearly 1/3rd of multidimensional poverty in India.
- **Lack of education**-It is due to lack of years of schooling (16.65%), and less-than-desired school attendance (9.10%).
- **Cooking fuel**- Though it marked a significant improvement, around 44% of Indian population is still deprived of it.
- **Sanitation**- Despite its improvement, sanitation services are still deprived to around 30% of the population.
- **Access to housing**- In India, 41% of the population is still deprived of housing.

G.S PAPER II

4. INDIAN POLITY

4.1 No Confidence Motion

Why in news?

Recently, Lok Sabha Speaker accepted the Opposition's no confidence motion against the Government.

What is no confidence motion?

- In a parliamentary democracy, a government can be in power only if it commands a majority in the directly elected House.
- It is a parliamentary process that allows the opposition to challenge the government's majority.
- If the no-confidence motion is passed in the Parliament, then the government must resign.
- **Article 75(3)** of our Constitution embodies this rule by specifying that the Council of Ministers are collectively responsible to the Lok Sabha.
- For testing this collective responsibility, the **rules of Lok Sabha** provide a particular mechanism – a motion of no-confidence.
- A no confidence motion can **only be moved in the Lok Sabha**.

Why is NCM adopted now?

- **Manipur Issue** - Since the beginning of the Monsoon Session, opposition parties have been demanding that Prime Minister Narendra Modi make a statement in Parliament on the violent situation in Manipur.
- After several days of protests and washouts, the opposition gave two separate notices to move motions of no-confidence against the government, hoping to force the Prime Minister to reply to the debate

History of No Confidence Motion (NCM)

- Since Independence, **27 NCMs** have been moved in the Lok Sabha
- **First NCM** - During the 3rd Lok Sabha in 1963, moved by Acharya J B Kripalani against the government headed by Jawaharlal Nehru.
- **Highest number of instances-**
 - Indira Gandhi- Faced NCMs 15 times.
 - Lal Bahadur Shastri- Faced 3 times.
 - PV Narashima Rao- Faced three times.
- In 1979, Prime Minister Morarji Desai realised that he did not have the support of the majority of MPs, and therefore resigned before the House voted on the motion.
- Governments fallen due to NCM
 - V P Singh government in 1990
 - H D Deve Gowda government in 1997
 - Atal Bihari Vajpayee government in 1999
- Most recent NCM was moved in 2018 by Telugu Desam Party against the National Democratic Alliance (NDA) government.

What is the procedure for passing an NCM?

- **Support** - Any Lok Sabha MP who can garner the support of 50 colleagues can introduce a motion of no-confidence against the Council of Ministers.
- It is moved in writing and must be signed by the member moving it, the motion is submitted to the Speaker of Lok Sabha on any day on which the House is sitting.
- **Power of Speaker** - He will decide whether to admit the motion for discussion and debate.
- If the motion is admitted, the Speaker will decide on the date and time for discussion.
- **Date** - This date for discussion should be within 10 days from the date the motion was accepted in the House.
- **Time for discussion** - The Speaker may grant time for discussion of the motion under Rule 198 of Lok Sabha.
- **Debate** - The motion will be debated in the Lok Sabha and it will be moved by the member who submitted it.
- Government will respond to the motion, the opposition parties will then have the opportunity to speak on the motion.
- **Vote** - After the debate, the Lok Sabha will vote on the NCM, it will be passed if it is supported by the majority of the members of the House.

Censure Motion	No Confidence Motion
It should state the reasons for its adoption in the Lok Sabha.	It need not state the reasons for its adoption in the Lok Sabha.
It can be moved against an individual minister or a group of ministers or the entire council of ministers.	It can be moved against the entire council of ministers only.
It is moved for censuring the council of ministers for specific policies and actions.	It is moved for ascertaining the confidence of Lok Sabha in the council of ministers.
If it is passed in the Lok Sabha, the council of ministers need not resign from the office	If it is passed in the Lok Sabha, the council of ministers must resign from office.

If NCM is passed	If Government wins the vote
The Government must resign	The motion is defeated and the Government remains in power

4.2 Adjournment Motion

Why in news?

Recently opposition parties moved an adjournment motion in the Lok Sabha, citing the need for urgent discussions on the ethnic violence in Manipur.

What is adjournment motion?

- The adjournment motion is a form of censure of the government.
- It originated in the House of Commons in the United Kingdom.
- It was established through *Government of India Act, 1919* in India under the rules of the pre-independent bicameral legislature.
- **Lok Sabha** - It is introduced only in Lok Sabha to draw attention of the House to a definite matter of urgent public importance.
- It involves an element of censure against the government, so Rajya Sabha is not permitted to use the motion.
- **Support** - An adjournment motion needs the support of 50 members to be admitted.

When adjournment motion can be moved?

Normal Business	Adjournment Motion
To raise matters in the House, MPs must inform the presiding officers in advance	The Scheduled business can be set aside by a procedural mechanism called the "adjournment motion".

It is available in both houses	Only Lok Sabha has this provision as it involves an element of censure
MPs inform to speaker of Lok Sabha and Chairman of Rajya Sabha in advance	The Speaker has to decide whether to allow the MP to move the motion.
This requirement ensures the government can collect information to respond to the MPs, the information of bills and budget in the agenda of the government is passed to MPs to prepare for debate.	This Rule in Lok Sabha allows an MP to urge the Speaker to adjourn the House's business "to discuss a definite matter of urgent public importance".
MPs can only discuss a matter that is on the day's business.	It results in the House dropping its scheduled list of business to discuss this urgent matter.

What are the criteria for adjournment motion?

- **Time** - The discussion on the Adjournment motion must be at least two hours and thirty minutes (*2hrs and 30 minutes*).
- **Coverage** - It should *not cover more than one topic*.
- It should be restricted to one issue which had a recent occurrence.
- It should not be a topic that is already discussed or under discussion, in the same session.
- It should not involve the matter of privileges.
- It should not contain topics that are under adjudication by the court.
- It should not be a matter that can be raised under a distinct motion.

What is the significance of adjournment motion?

- **Collective responsibility** - Article 75 says that the Council of Ministers is collectively responsible to the House of the People.
- **Rule Book** - Due to doctrine of collective responsibility, in 1952 adjournment motion found a place in Lok Sabha rule book.
- **Urgent action** - G.V.Mavlankar the first speaker of Lok Sabha called the adjournment motion a very exceptional thing.
- The members should resort to this procedural device when the "occasion is of such a character that something very grave, something which affects the whole country, its safety, its interests and all that is happening, and the House must pay its attention immediately".
- **Accountability** - It ensures a responsive and responsible character of the Government, to address the matter of urgent public importance.

*The main issue with the adjournment motion is the reluctance of the Lok Sabha Speakers to allow these motions. Most Lok Sabha have spent **less than 3%** of their time on adjournment motions. The only exception being the 9th Lok Sabha which spent almost 5% (36 hours) of its time on adjournment motion.*

What is the issue in Rajya Sabha?

- Since Rajya Sabha Rule Book does not provide for an adjournment motion, hence rule 267 was used to suspend pre decided agenda in the House to raise urgent matters.
- To know more about Rule 267 - [Click here](#)
- **Amendment** - In 2002 it was amended to only allow the suspension of a Rule for a matter related to the business listed before the Council of that day.

Ways for the MPs to draw attention of the house		
About	Lok Sabha	Rajya Sabha
Short duration Discussion- A debate without voting	Rule 193	Rule 176
A motion with a vote	Rule 184	Rule 167
To discuss urgent matter	Adjournment motion	Rule 267
Collective responsibility	No confidence motion	Not available

- So now, rule 267 can be used only to suspend to take up matters that are already on the list of business.
- But opposition parties want to invoke Rule 267 of Rajya Sabha which favoured a longer period of discussion.
- The Rajya Sabha agrees only to invoke short duration discussion to discuss Manipur issue.

What is a short duration discussion?

- As per rule 176 of Rajya Sabha, if the Chairman is satisfied that the matter is urgent and is of sufficient public importance to be raised in the Council at an early date.
- He may admit the notice and in consultation with the Leader of the Council fix the date on which such matter may be taken up for discussion and allow such time for discussion, not exceeding two and a half hours.

4.3 Rule 267 of the Council of States

Why in news?

The Opposition's demand for a 'Short Duration Discussion' under Rule 267 to take up the Manipur issue was declined in Rajya Sabha.

What is Rule 267 in the Rajya Sabha?

- Rule 267 of the ***Rules of Procedure and Conduct of Business in the Council of States*** gives special power to a Rajya Sabha member to suspend the pre-decided agenda of the House.
- This comes with the approval of the Chairman of the Rajya Sabha.
- Under this rule, Rajya Sabha MPs can give a *written notice* to suspend all listed business and discuss an issue of importance the country is facing.
- If an issue is admitted under Rule 267, it signifies it's the most important national issue of the day.
- Also, the government will have to respond to the matter by replying during the discussions under Rule 267.
- No other form of discussion entails suspension of other business.

Rule 267

"Any member, may, with the consent of the Chairman, move that any rule may be suspended in its application to a motion related to the business listed before the Council of that day and if the motion is carried, the rule in question shall be suspended for the time being."

Why has Rule 267 been a contentious issue?

- Recently, 12 MPs from 8 opposition parties including Leader of opposition submitted notice under Rule 267 demanding suspension of business in the upper house to discuss Manipur issue.
- Vice-President Jagdeep Dhankhar, the ex-officio chairperson of the Rajya Sabha, declined the notice under 267 saying he will accept the notices on merit.
- The Opposition has complained that none of its notices under Rule 267 are being taken up.
- The last time a discussion under Rule 267 was accepted was in November 2016 when Md. Hamid Ansari was the chairperson.
- It was summoned to discuss demonetisation.
- After 2016, no notice under Rule 267 had been allowed by the Chairman of the Rajya Sabha.
- M Venkaiah Naidu (predecessor to present Chairman) also did not accept any discussion under Rule 267 during his five-year tenure from 2017 to 2022.
- **Precedence** - The Chairman's rulings constitute precedents which are of a binding nature.
- There were 11 instances between 1990 up till 2016 that this rule was invoked for various discussions.

Not a single notice under the rule 267 moved by the Opposition has been accepted in the last Winter Session of the Parliament.

What is Rule 176?

- **Short Duration Discussion** - Rules 176-179 of the Rajya Sabha explains about the short duration discussion.
- **Rule 176** - Any member can raise discussion on a matter of urgent public importance and may give notice in writing to the Secretary-General specifying clearly and precisely the matter to be raised.
- If the Chairman is satisfied, that the matter is urgent and is of sufficient public importance to be raised in the Council at an early date, he may admit the notice and fix the date for discussion.
- **Mandates** - The notice should be accompanied by an explanatory note stating reasons for raising discussion on the matter in question.
- Provided further that the notice should be supported by the signatures of at least two other members.

History of Rule 267

Shankar Dayal Sharma (1987-1992)	4 times (between 1990 to 1992)
<ul style="list-style-type: none"> •The Jammu and Kashmir situation •The 66th Constitution Amendment Bill, (Land Reforms- Ninth Schedule) •The Gulf War situation •The demolition of the Ayodhya temple 	
Bhairon Sigh Shekawat (2002-2007)	3 times (In 2004)
<ul style="list-style-type: none"> •Issues of corruption •Consideration and return of the Appropriation (Railways) No. 3 Bill •Consideration and return of the Appropriation (No.3) 	
Hamid Ansari (2007-2012 & 2012-2017)	4 times
<ul style="list-style-type: none"> •Role of CBI in Coalgate scam •Attack on the secular fabric of the country •Agrarian crisis •Demonetisation of currency 	

What are the other ways for MPs to question the government?

- There are other ways to question the government and seek a response other than Rule 267 and Rule 176.
- **Question Hour** - MPs can ask questions related to any issue during the Question Hour in which the concerned minister has to provide oral or written answers.
- **Zero Hour** - Every day, 15 MPs are allowed to raise issues of their choice in the Zero Hour.
- **Special Mention** - An MP can even raise it during Special Mention where Chairman can allow up to 7 Special Mentions daily.

4.4 Governor's Position on dismissal of Ministers

Why in news?

The Governor of Tamil Nadu, R.N. Ravi, has dismissed a Minister in the Council of Ministers of Tamil Nadu.

What is the issue?

- V. Senthilbalaji, a TN minister dismissed by the Governor of Tamil Nadu, R.N. Ravi.
- He stated that the continuation of the Minister in the Council of Ministers will adversely impact the due process of law as the reason for the dismissal.
- The Governor later backtracked on his decision late in the night, keeping the 'dismissal' order in abeyance.
- Similar Issue - [Kerala Governor](#)

There is no executive function which a Governor can perform independently under the Constitution.

-B.R.Ambedkar



Why the Governor's move is dangerous and unconstitutional?

- The Governor's move is unprecedented and deliberately provocative.
- The act of dismissing a Minister without the recommendation of the Chief Minister of the State will set a dangerous precedent.
- If Governors are allowed to exercise the power of dismissal of individual Ministers at his discretion the whole constitutional system will collapse.
- It has the potential to destabilise State governments putting the federal system in jeopardy.
- To know more about the recent tussles between Governor and Chief Minister, [click here](#).

What is the position of Governor in independent India?

- Under Indian constitutional system, a Governor is a mere constitutional head whereas the real power lies with the Chief Minister of the State.
- He can act only on the aid and advice of the Council of Ministers headed by the Chief Minister.
- To know about Office of Governor - [click here](#).
- **Powers** - He is the vital link between the Union and State government.

- He enjoys both the constitutional as well as situational discretionary powers.
- He has Constitutional discretionary powers under Article 167, [Article 200](#) and Article 356.
- The Governor promulgates [ordinances](#) during recess of the state legislature under Article 213.

How is the dismissal of Ministers carried out under the Indian Constitution?

- Under [Article 164](#), the Chief Minister is appointed by the Governor without any advice from anyone.
- **Appointment** - The Governor appoints the individual Ministers only on the advice of the Chief Minister.
- The Article implies that the Governor cannot appoint an individual Minister according to his discretion.
- The Chief Minister alone has the discretion to choose his Ministers.
- **Dismissal** - Logically, the Governor can dismiss a Minister only on the advice of the Chief Minister.
- The Constitution has not transferred the discretion of the Chief Minister to the Governor.

What was the power of dismissal during colonial rule?

- The **Government of India Act of 1935** confers on the Governor the absolute discretion to choose as well as dismiss the Ministers.
- **Hire** - Under [Section 51\(1\)](#) of this Act says that the Ministers shall be chosen by the Governor and they hold office during his pleasure.
- It says, 'the Governor's Ministers shall be chosen and summoned by him, shall be sworn as members of the council and shall hold office during his pleasure'.
- **Fire** - The ministers chosen by the Governor are dismissed by him at his discretion.
- [Section 51\(5\)](#) says, 'The functions of the Governor under this section with respect to the choosing and summoning and the dismissal of Ministers and with respect to the determination of their salaries, shall be exercised by him in his discretion'.

Judicial Clarifications on the position of Governor

- **Shamsher Singh and Anr vs State of Punjab (1974)** - The Constitution Bench declared the Law on the Powers of a Governor.
- The Governor and his powers under various Articles, shall, by virtue of these provisions, exercise his formal constitutional powers only.
- **Nabam Rebia vs Deputy Speaker case** - The bench reaffirmed the law laid down in Shamsher Singh.
- It further held that the discretionary powers of the Governor are limited to the postulates of Article 163(1).

4.5 Role of Deputy Chief Minister

Why in news?

Recently, Ajit Pawar was sworn in as Deputy Chief Minister (CM) in Maharashtra.

What is the structure of the post of Deputy CM?

- **Constitutional provisions**- Deputy CM is a political post, and it's not a constitutional post like Vice President of India.
- Its origin can be traced to the post of Deputy Prime Minister which was appointed in 1947 post-independence, **Sardar Vallabhai Patel** is the first Deputy PM of India.
- This led to the development of post of Deputy CM in India.
- **Appointment and removal**- The appointment and removal of Deputy CM is entirely at the discretion of Chief Minister.
- Chief Minister can appoint more than one Deputy CM.
 - For example: Maharashtra has two Deputy CMs and Andhra Pradesh has five Deputy CMs.
- **Tenure** - There is no fixed tenure as Chief Minister may reshuffle the portfolio or remove a deputy CM at any point of time.

What are the powers of Deputy CM?

- **Rank**-Deputy CM rank is ***equivalent to the rank of cabinet minister*** in the state, and has same pays and perks as Cabinet Minister.
- The post is considered as ***second highest ranking Executive officer*** of the State Council of Ministers.
- **Portfolios**- It holds ***relatively smaller portfolios*** as compared to the Chief Minister and the actual importance of Deputy CM is based on the portfolio which he holds.
- **Financial Powers**- The deputy CM ***does not enjoy*** any specific financial power and holds the same financial powers as other cabinet ministers.
- Even for his own portfolio, the Deputy CM has to take approval of the chief minister for any expenditure over and above the allocated budget.
- Deputy CM has no authority to see the files earmarked for CM and the portfolios allotted to Deputy CM are routed to CM via Deputy CM.

Anugrah Narayan Sinha from Bihar was the first leader to hold the post of deputy CM post-Independence. As of July, 2023, 12 states in India have the post of Deputy CM.

What is the significance of Deputy CM?

- **Reduce the incidents of Anti-Defection** by acting as bridge between ruling party and its allies, hence brings more political stability in coalition government.
- It reflects ***the political compulsion*** and importance of individual/party holding the post.
- **Improves Governance** and simplifies administration by allocating portfolios.
- **Better representation of the community** which further enhances the public trust in the Government.
- It is a ***balancing power equation*** signalling representation of caste or community,
 - A post to accommodate coalition parties or
 - When there is no single leader who commands unchallenged authority in the party in power, and loyalty across all the key interest groups in the state.
- **Potential successor to Chief Minister** and ensures transparency and accountability.

Deputy Prime Minister
<ul style="list-style-type: none">• Deputy Prime Minister is the second highest ranking minister of the Union Council of Ministers, which is not a constitutional post.• The <i>first and longest served Deputy PM</i> of Independent India is <i>Sardar Vallabhai Patel</i>.• Since 1947, India has 7 deputy PMs, of which none having at least one full term.• <i>Lal Krishna Advani</i> was the <i>seventh and last person</i> to serve as the Deputy PM of India.

What are the concerns?

- It ***doesn't have a constitutional backing***, no clarity in their role and function hence can be exploited by the Chief Minister according to his whims and fancies.
- Deputy CM is a political post which ***doesn't have limit on number*** of Deputy CMs a CM can appoint which may lead to more appeasement of coalition parties and allies.
- Deputy CM role is ***equivalent to Cabinet minister***, already there is a separate post of cabinet minister which may lead to complexities in governance and administration.

What lies ahead?

- A proper definition and details regarding the role and function of Deputy CM must be framed.
- There should ***be limit on the number of Deputy CMs*** a Chief Minister can appoint, this would simplify the complexities associated with the post.
- Proper political literacy and awareness regarding this post must reach the Citizens of India.

4.6 Role of Opposition Party

Why in news?

The 26 Opposition political parties from across India have formed the INDIA coalition (the Indian National Developmental, Inclusive Alliance) for the 2024 Lok Sabha election.

What is INDIA coalition?

- The Indian National Developmental, Inclusive Alliance (INDIA) is a coalition of 26 Opposition political parties (so far) from across India.
- They have joined hands to take on the ruling National Democratic Alliance (NDA) for the 2024 Lok Sabha election.
- The coalition had two meetings so far which saw participation of Chief Ministers of seven states and several former Chief Ministers.
- The parties part of INDIA coalition are -

INDIA Alliance

The Indian National Developmental, Inclusive Alliance, made up of 26 parties, has a collective strength of 142 members in the lok sabha

What is the history of opposition in India?

- The first general elections to the Lok Sabha after independence were conducted in 1952 and the Congress won the elections.
- The Congress the dominance the Lok Sabha elections during the period 1952-1962.
- None of the opposition parties could win one-tenth of the number of seats.
- In the first general election, CPI won 16 seats and emerged as the largest opposition party.
- In December 1969, the Congress Party's (O) leader Ram Subhag Singh was recognised as the opposition leader for the first time.

Constitutional Position of Opposition Party

- Leader of largest opposition party which is having at least 1/10th seats of the house is appointed as the Leader of opposition.
- It is not mentioned in the Constitution but mentioned in Parliamentary statute.
- Coalition is not possible in the opposition party.
- **Leader of opposition** - The post is recognised by the speaker.
- Leader of opposition (LoP) in Lok Sabha and Rajya Sabha has statutory status since 1977.
- LoP got their statutory recognition through Salaries and allowances of Leaders of opposition in Parliament Act of 1977 (both RS and LS)
- They receive salary and allowances equivalent to Cabinet Minister.
- **Present status** - The post of Leader of Opposition in Lok Sabha is vacant since 2019 parliamentary election as none of the opposition party could fulfil 10% quorum.

What is the role of opposition in a democracy?

- Opposition plays a crucial role in maintaining the democratic character of the system.
- Negates one-party dominance in Parliamentary houses.
- They provide a democratic political alternative in a Parliamentary system.
- They offer a sustained and principled criticism of the policies and practices of the ruling party.
- This kept the ruling party under check and balances the power.
- They uphold accountability of government in the legislature.
- They put forth the public opinion in the Parliament.
- Conventionally Deputy Speaker of Lok Sabha is from opposition.
- From 1967, Chairman of Public Accounts committee is from opposition by convention.
- They also forms part of several other Parliamentary committees.
- Opposition or LoP is part of the appointment committees of NHRC, Lokpal, CIC, CVC, CBI, etc.

How the opposition in UK different from India?

- India borrowed the parliamentary system from the British Constitution.
- In the British parliament, the leader of opposition is referred to as the 'shadow prime minister'.

- They also form a *shadow cabinet* to balance ruling cabinet.
- They not only oppose and criticise the government but always in a state of readiness to take over the government if the government falls.
- **India** - There is no such shadow cabinet in India.
- In a multi-party system, the second largest party in the legislature is the opposition.

What is the significance of Opposition?

- The leader of the opposition is one of the key parliamentary functionaries whose role is not defined in any rule.
- Opposition gives a ready alternate government without fresh elections in case of any failure.
- Strong opposition is necessary for success of parliamentary democracy.
- Opposition's role is crucial in maintaining the productivity of the Parliament.

4.7 Reforming Anti-defection Laws

Why in news?

Ajit Pawar being sworn in as the Deputy CM of Maharashtra raises several questions about the health of our democracy.

What was the issue?

- Ajit Pawar was the Leader of the Opposition in Maharashtra from the Nationalist Congress Party (NCP).
- The intraparty dissent in NCP led to the switch of Ajit Pawar from NCP to the BJP-Shiv Sena government.
- Pawar took 8 MLAs with him from the NCP, which is currently in opposition in the state Legislative Assembly.

What is anti-defection law and how it is governed in India?

- The Tenth Schedule to the Constitution does not allow a legislator to switch party loyalties through voting against party direction on the floor of the House or through actions outside the House.
- The political party can choose to condone the actions of a legislator in case of voting against party direction.
- But a merger of two-thirds or more legislators in that House with any other party is not considered defection.
- **Political party Vs Legislature party** - The SC clarified a few points under the anti-defection law in Subhash Desai v Principal Secretary, Governor of Maharashtra (2023).
- The Court drew a distinction between a political party and legislature party.
- Only the political party can appoint the leader of the legislature group and the whip.
- **Issue** - Dispute in determining which is the political party that gets to decide on the appointment of leader of the group and whip.

Role of ECI in regulating Political parties

- Election Commission of India (ECI) fundamentally draws its power from **Article 324** of the Constitution.
- The article provides the power of “superintendence, direction and control of elections” to ECI.
- **Register & deregister** - ECI under **Section 29A** of the Representation of People Act of 1950, has the power to register political parties.
- The Supreme Court in Indian National Congress (I) vs Institute of Social Welfare & Ors (2002) made it clear the ECI cannot deregister a party for violating the Constitution.
- The ECI also cannot deregister a party for breaching the undertaking given to it at the time of registration.
- The ruling makes the ECI a mere spectator to the violation of the core principles of the Constitution which derives its powers from.
- **Adjudicate** - The ECI has the power to decide disputes between factions of a political party, in case of a “split” under Para 15 of the Election Symbols (Reservation and Allotment) Order, 1968.
- The Supreme Court in *Sadiq Ali v Election Commission of India* (1971) said, in such cases the “test of majority”, “test of party constitution”, and the “test of aims and objectives” can be used.

Why do we need reforms?

- Gaps in anti-defection laws is used to dislodge governments, to break parties apart and to lure leaders.
- **Intraparty regulations** - Lack of regulations in the internal functioning of political parties is the fundamental problem in anti-defection.
- With people coming up with newer forms of subverting the constitutional order and innovative ways of avoiding defection using loopholes in the way parties are organised.
- Solving this could help strike a balance between dissent within the party and constitutional morality.
- **Absence of party constitution** - Not all parties have a constitution, even if they have they are not relevant and comprehensive.
- Not having a constitution may leave the members vulnerable to the realpolitik of defections.

Out of more than 2,500 registered parties, Election Commission website shows constitutions of 34 parties.

What should be done to solve this conundrum?

- The regulation of internal party democracy can be seen on a large scale in European countries.
- Few have provided the right to dissent and have an internal arbitration body.
- A party constitution that lays down procedures beyond the existing requirement at the time of registration under Section 29A should be mandatory.
- It should outline the role of the political party in relation to the legislature party
 1. Appointment of whip, etc.
 2. Removal and suspension of members
 3. Leadership challenges
 4. Involvement of members in questions of leadership
- The ECI must be empowered to suspend registration or deregister a party on non-compliance with basic requirements.
- An empowered ECI can ensure the enforcement of these rules to promote internal party democracy.

The 170th Law Commission Report had recommended the addition of a Part IVC to the Representation of People Act to regulate the internal functioning of parties.

4.8 Abrogation of Article 370

Why in news?

A five-judge Constitution Bench is set to hear the pleas about the abrogation of Article 370 for the first time since March 2, 2020.

What is Article 370?

- Article 370 of the Indian Constitution accorded a special status to Jammu and Kashmir (J&K).
- It substantially limited Parliament's power to legislate for the State as compared to other States.
- The provision came into force as a result of the Instrument of Accession signed by erstwhile ruler of J&K Maharaja Hari Singh in 1947.
- It was intended to be a temporary provision to allow the State to transition from an independent princely state to a democratic state under the dominion of India.

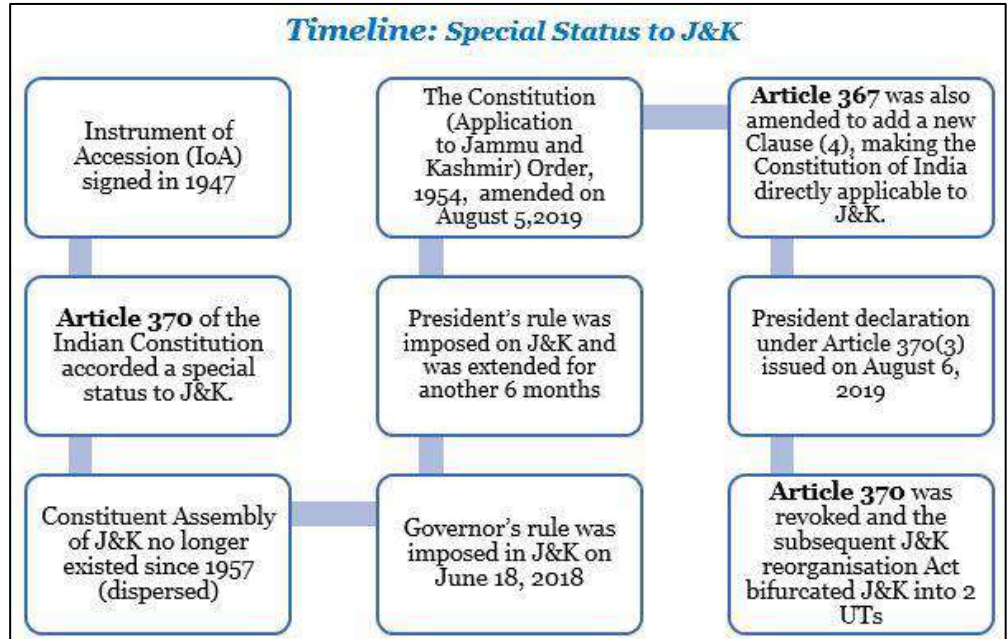
How can changes be made to Article 370?

- Any changes to the special status of J&K and provisions of the Article 370 can be made in two ways -
- **Clause (1)(d) of Article 370** empowered the President of India to extend other provisions of the Constitution through an executive order with the concurrence of the government of J&K.
- **Clause 3 of Article 370** empowered the President to 'declare that this article shall cease to be operative' completely or partially but only if the Constituent Assembly of J&K recommended such an action.

How did the abrogation of Article 370 happen?

- The Constituent Assembly of J&K and no state government either in J&K and the President had no way to acquire the concurrence of the state government.

- **New way** - The Centre, used the President's powers under Article 370(1)(d) to amend **Article 367**, which provides guidelines to interpret the Constitution.
- A new clause was added to Article 367, replacing "Constituent Assembly of the State" referred to in Article 370(3) by "Legislative Assembly of the State".
- **Promulgate Order** - On August 5, 2019, the President of India under Article 370(1), promulgated [the Constitution \(Application to Jammu and Kashmir\) Order, 2019](#).



- Thus, the presidential order route under Article 370(1)(d) was used to amend Article 370 itself.

How the state of J&K was downgraded to Union Territory?

- On August 9, 2019, the President gave his assent to the [Jammu and Kashmir Reorganisation Act, 2019](#) (2019 Act).
- The Act bifurcated J&K into two Union Territories (UT)
 - J&K, an UT with a Legislative Assembly;
 - Ladakh, an UT without an Assembly.
- The Union territory of Ladakh comprises Kargil and Leh districts while the Union territory of Jammu and Kashmir comprises all the remaining territories of the erstwhile State of Jammu and Kashmir.

What do the petitions contend?

- The petitions challenge the Presidential Orders of August 5 and 6, 2019, as well as the 2019 Act, contending that they are 'unconstitutional, void and inoperative.'
- Under **Article 147 of the J&K Constitution**, the *Legislative Assembly of J&K had no power to recommend any amendment to any provision of the Constitution of India*.
- Hence, the J&K Legislative Assembly wasn't legally competent to give consent to the President's order.
- The challenge is also based on the argument that the constitutional changes are "colourable legislation" and thus legally untenable.
- The petitioners have highlighted that the abrogation is a gross violation of the quasi-federal balance and defeats the principle of pluralistic federalism.
- **2019 Act** - The Centre's decision has been challenged on the ground that it violates **Article 3** of Indian Constitution.
- It mandatory under Article 3, for the President to refer any Bill proposing the reorganization of a state to its legislature if the Bill "affects the area, boundaries or name of any of the states".

The doctrine of colourable legislation is the legal principle that says what cannot be done directly cannot be done indirectly.

4.9 Enforcement directorate

Why in news?

There is a spike in the activity of the Enforcement Directorate (ED) in Tamil Nadu which can be seen in the arrest and investigation of two Ministers from the state.

What is the Enforcement Directorate (ED)?

- Enforcement Directorate (ED) is a premier financial investigation agency and economic law enforcement agency of the Government of India.
- Headquarter** - New Delhi
- History** - In 1956, an 'Enforcement Unit' was formed in the Department of Economic Affairs.
- It handled the Exchange Control Laws violations under Foreign Exchange Regulation Act of 1947 (later FERA 1973)
- In the year 1957, this Unit was renamed as 'Enforcement Directorate'.
- In 1960, its administrative control was transferred from the Department of Economic Affairs to the Department of Revenue.
- It was regulated under Foreign Exchange Regulation Act (FERA) of 1973 (repealed later).
- The ED currently draws its statutory powers from 3 different acts -
 - Foreign Exchange Management Act, 1999 (FEMA)
 - Prevention of Money Laundering Act, 2002 (PMLA)
 - Fugitive Economic Offenders Act, 2018 (FEOA)
- Director** - Director is the head of the Enforcement Directorate assisted by special directors.
- The director is appointed in accordance with the provisions of the Central Vigilance Commission Act 2003.
- The Centre appoints the director on recommendation of a high-level committee headed by the Central Vigilance Commissioner.
- The director has a fixed tenure of 2 years and a maximum 3 annual extensions.

Police Investigation	ED Investigation
First Information Report (FIR) is required for a cognisable offence before conducting an investigation.	They undertake their investigation for the purpose of gathering materials and tracing the 'proceeds of crime' by issuing summons.
Statement made by an accused to the police is inadmissible as evidence in court.	A statement made to an ED authority is admissible.
A copy of the FIR is accessible to the accused.	The Enforcement Case Information Report is seldom available.

What are the powers and functions of ED?

- Functions** - ED is mandated with investigation of offence of money laundering and violations of foreign exchange laws.
- Enforces the provisions of the PMLA
 - Conducts investigation to trace the assets derived from proceeds of crime and provisionally attach the property.
 - Ensure prosecution of the offenders.
 - Confiscation of the property by the Special court.
- Enforces the provisions of the FEMA
 - Conduct investigation into suspected violations of foreign exchange laws.
 - Adjudicate and impose penalties on those adjudged violations.
- Enforces the provisions of the FEOA
 - ED is mandated to attach the properties of the fugitive economic offenders and confiscate their properties for the central government.
- It is also a sponsoring agency under Conservation of Foreign Exchange and Prevention of Smuggling Activities Act, 1974 (COFEPOSA).
- Quasi-judicial powers** - Section 50 of the PMLA provides powers of a civil court to the ED authorities for summoning persons suspected of money laundering and recording statements.
- Section 19 and Section 45 of the PMLA permits ED authorities to arrest and grant bail.

The Vijay Madanlal Choudhary v. Union of India (2022) case observes that the power under Section 50 of PMLA is of the nature of 'inquiry' against the proceeds of crime and is not 'investigation' in strict sense.

What are the differences between CBI and ED?

	CBI	ED
Nature	Not a statutory body	Statutory body
Ministry	Ministry of Personnel, Ministry of Personnel, Pension & Public Grievances	Department of Revenue under the Ministry of Finance
Acts governing	Derives powers from the <u>Delhi Special Police Establishment Act of 1946</u>	<ul style="list-style-type: none"> Foreign Exchange Management Act, 1999 (FEMA) Prevention of Money Laundering Act, 2002 (PMLA)
Investigates	Anti-Corruption crimes and special crimes under IPC apart from economic crimes.	Only economic crimes. Can carry out searches and confiscate assets.
Economic Crimes	Investigates crime of corruption, economic offences	Investigates offences of money laundering and foreign exchange laws violation
Central Government's role	Needs Central Government notification to initiate investigation	Does not need such notification.

What are the present issues with ED?

- ED cannot be credited with taking timely action against corruption.
- Of late, ED to impart fear among political opponents of the Union government.
- The investigation and prosecution of the predicate offence is done typically by the Central Bureau of Investigation (CBI) or the State Police.
- The ED's focus is shifted from recovering the proceeds of crime to effecting pre-trial arrests and investigating the predicate offence.
- Famous cases** - The ED has arrested several politicians including
 - Satyender Jain and Manish Sisodia - Ministers of the Delhi government.
 - Nawab Malik - Former Minister from the Shiv Sena.
 - Magunta Raghava Reddy - YSRCP MP Srinivasulu Reddy's son.
 - V. Senthil Balaji and K. Ponmudy - Ministers of the Tamil Nadu government.

In spite of several high-profile arrests, the ED has only filed charge-sheets after concluding investigation in only 1,142 cases out of the 5,906 cases registered since 2005.

What is the way forward?

- To justify their actions and demonstrate their fairness and impartiality it should put all facts in the public domain.
- The actions of ED should be timely, fair and impartial to command credibility among the public.
- The ED should focus more on recovering crime proceeds and redistribute the same to victims.
- The ED authorities must satisfy themselves of the need for arrest as under Section 19 of the PMLA.
- Such belief must pass the reasonableness test similar to the test that courts assessing the necessity of remand.

4.10 Allahabad High Court's Comments on Live-in Relationships

Why in news?

In ***Kiran Rawat vs State of UP***, the Allahabad High Court rejected a petition filed by an interfaith live-in couple seeking protection against alleged harassment by the police.

What is the issue?

- A Muslim man and a Hindu woman who were in a live-in relationship, filed a petition seeking protection from police harassment.
- They alleged that the local police have been torturing them on the basis of a complaint made by a family member.
- The Allahabad High Court declined their plea implying constitutional morality in personal relation against the Supreme Court's repeated affirmations on constitutional morality in personal relations.

The legality of live-in relationship stems from Article 21 - Protection of right to life and personal liberty

What are the interpretations made by the Allahabad HC?

- The court tried to reiterate the traditional beliefs on marriage and morals, in the guise of constitutional adjudication in ***Kiran Rawat vs State of UP case***.
- The High Court in its judgment implied that the live-in relationship is a **'social problem'**.
- It said that Supreme Court verdicts on live-in relationships such as *D. Velusamy (2010)*, *Indra Sarma (2013)* and *Dhanu Lal (2015)* were not intended 'to promote such relationships'.
- The court referred to the concept of **Zina** (any sexual intercourse except that between husband and wife includes both extramarital sex and premarital sex) in Islam and said that extramarital and premarital sex are **not recognised under the Muslim law**.
- The court made a reference to **Section 125 of the Criminal Procedure Code (CrPC)** which denotes the meaning of the word 'wife'.
- The court added that partners in a live-in relationship **do not enjoy an automatic right of inheritance to the property** of their partner and **dismissed the petition**.

Why are these interpretations criticized?

- Public's resentment against interfaith relationships has increased in recent times due to the spread of narratives of **'love jihad'** in the aftermath of the **Shraddha Walkar murder case**.
- The Allahabad HC's observation seems like an endorsement of the public's unreasonable and conservative views.
- **Violation of Article 141** - The court discarded several Supreme Court judgments, even after citing them, by giving invalid reasons.
- **Unacceptable** - The court is carried away by the notions of **conventional social morality** rather than the **constitutional principles on individual autonomy and personal liberty**.
- **Irrelevant personal laws** - The High Court relied on **personal laws on marriage** which were irrelevant.
- The court **presumed marriage is a condition precedent** for constitutional protection and the exercise of fundamental rights.
- It said the apex court is **not 'encouraging'** such relationships rather accepting them as part of a social reality.

Article 141 of the Constitution of India stipulates that the law declared by the Supreme Court shall be binding on all Courts within the territory of India.

Earlier Supreme Court Judgments

- **Thakur Gokalchand versus Parvin Kumari (1952)** - The Supreme Court reiterated 1920's verdict that a presumption of marriage may be drawn in live-in relationships.
- **Badri Prasad versus Director of Consolidation (1978)** - The Supreme Court held that in a case of long cohabitation, a strong presumption of marriage is formed.
- **Payal Sharma versus Nari Niketan (2001)** - The Allahabad HC recognised the legality of live-in relationships and drew a distinction between law and morality. It held that even if it is considered immoral by society, **it is not illegal**.
- **Lata Singh Vs State of UP case (2006)** - The judgment upheld personal liberty and the act of two majors living together cannot be considered illegal.
- **S. Khushboo Vs Kanniammal (2010)** - The SC held that a live-in relationship between two consenting adults of heterogenic sex does not amount to any offense.

- **D. Velusamy versus D. Patchaiammal (2010)** - The Supreme Court considered lack of statutory recognition and regulation on this matter and laid the criteria as prerequisites for relationship in the nature of marriage:
 - The couple must hold themselves out to society as being akin to spouses
 - They must be of legal age to marry
 - They must be otherwise qualified to enter into a legal marriage, including being unmarried
 - They must have voluntarily cohabited and held themselves out to the world as being akin to spouses for a significant period of time.
- **Shafin Jahan versus Ashokan K.M (Hadiya marriage case) 2018** - The Supreme Court declared that the choice of a partner whether within or outside marriage lies within the exclusive domain of each individual.
- **Issue** - The Supreme Court has *limited the applicability* to Hindu heterosexual relationships mainly by remaining silent on the applicability of this on other communities outside the Hindu mainstream.

What lies ahead?

- In recent years, many states have taken invasive action through the provisions of *anti-conversion statutes* like the one passed in *Uttar Pradesh in 2020*.
- The *Maharashtra government* set up a panel to monitor interfaith marriages in the aftermath of the *Walkar murder case*.
- In this context, the judgment of the Allahabad high court represents the continued downward regression of social views towards live-in marriages.
- It must be reiterated that a person’s reasoned choices *cannot be restricted due to societal pressure* and the judiciary must uphold the rights guaranteed by the Constitution, even if it goes against the conservative social *status quo*.

5. GOVERNMENT POLICIES AND INTERVENTIONS

5.1 Biological Diversity (Amendment) Bill, 2021

Why in news?

The Biological Diversity (Amendment) Bill was passed in the Lok Sabha, bringing in a number of changes to the over 20-year-old Biological Diversity Act of 2002.

What is the Biological Diversity Act, 2002 about?

- Biological diversity refers to all kinds of life forms - animals, plants and micro-organisms, their gene pools, and the ecosystems that they inhabit.
- The 2002 Act was a response to the global need to protect and conserve biological resources, which are under threat due to human activities.
- **Biological Diversity Act 2002**- It was enacted by the Parliament for
 - Conservation of biological diversity
 - Sustainable use of its components
 - Fair and equitable sharing of the benefits arising out of the use of biological resources.
- The Act provides for a 3 tier structure.
- **National Biodiversity Authority**- It is established as a regulatory body under the Act, which prescribes the conditions, purposes for which biological resources could be utilised.

Authority	Jurisdiction
National Biodiversity Authority (NBA)	At National level
State Biodiversity Boards (SBA)	At State level
Biodiversity Management Committees	At Local level

As per report of Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES), about 1 million animal & plant species, out of 8mn, were facing the threat of extinction.

What is the need for the amendment?

- **Simplification**- Over the years, the modification in 2002 law is pointed by multiple stakeholders.

- There is a need for simplification of the compliance requirement for ease of doing business, promoting research innovation and cooperation.
- **Triple crisis** - The world is facing triple crisis of climate change, desertification and loss of biological resources.
- **Indigenization**- Promotion of biological resources among the users of codified traditional knowledge and AYUSH practitioners.

How is the bill different from the existing Act?

Features	Existing Act	New Bill
Approval from NBA for access to biological resources	Foreign individuals, non-resident Indians, companies not registered in India, and companies registered in India and having non-Indian participation in share capital or management	Approval is not needed for companies registered in India and controlled by Indians
Exemption for prior intimation to State Biodiversity Boards regarding biological resources access	Use by local people and communities including growers and cultivators of biodiversity	Codified traditional knowledge, cultivated medicinal plants and their products and AYUSH practitioner
Approval of Intellectual Property rights	Approval of NBA is required before applying for IPR involving biological resources obtained from India, or sealing of patent.	Approval will be required before the grant of IPR instead of before the application itself.
Benefit sharing provision	Applicable to research, commercial utilisation, as well as bio-survey and bio-utilisation for certain entities. NBA is required to determine terms of benefit sharing while granting approvals for various activities.	Removes applicability to research, bio-survey and bio-utilisation. SBB will determine benefit sharing while granting approvals to domestic entities as per the regulations by NBA.
Offences and penalties	Offences are punishable with imprisonment of up to 5 years or fine or both.	Decriminalises the offences and makes offences punishable with a penalty between Rs 1 lakh - Rs 50 lakh.

What is the significance of the amendment?

- **Promotion of Indian Medicine** – Promotes Indian medicine as the practitioners of Indian systems of medicine, have been exempted from making payments towards the access and benefit-sharing mechanism.
- **Reduced restriction**- Treating the companies registered in India and controlled by Indians as Indian companies, even if they have foreign equity or partnership reduces the restrictions on them.
- **Speedy approval**- It will reduce the time taken for approval to use the biological resources in scientific research and for filing of patent applications.
- **Rationalized penalty provisions**- The penalty provisions for wrongdoing by user agencies have been rationalized through decriminalization of all the offences under the Act.

What are the issues of the amendment?

- **Ambiguity in the exemption**–It exempts codifies traditional knowledge from sharing benefits with the local communities but it has not defined the term ‘codified traditional knowledge’.
- **Curtail the role of local communities**- The bill removes the direct role of local bodies and benefit claimers in determining mutually agreed terms.
- **Penalty**- The bill decriminalized the offences and makes them punishable with penalty but there is a lack of substantive legislative guidance on adjudging the penalty. It also changes the adjudicating authority from judges to government officials.
- **Lack of clarity** - It is unclear whether certain activities require prior approval of SBA or its intimation.
- In certain cases, application process is not specified for NBA approval.

5.2 Forest (Conservation) Amendment Bill, 2023

Why in news?

Recently, Lok Sabha has passed the Forest (Conservation) Amendment Bill, 2023.

What is Forest Conservation Act 1980?

- The Forest (Conservation) Act was passed on October 25, 1980, which contain regulations concerning forest conservation and matters related to it.
- **Restriction on dereservation of forests** –No State Government or other authority shall convert forest land for non-forest purpose except with the *prior approval of the Central Government*.
- **Non-forest purposes**- It includes use of land for cultivating horticultural crops or for any purpose other than reforestation.
- **Appeals** - Any person aggrieved, by an order or decision of the State Government or other authority may file an appeal to the *National Green Tribunal* established under NGT Act, 2010.
- **Advisory Committee** - The Central Government may constitute a Committee consisting of such number of persons as it may deem fit to advise the Government.
- **Power to make rules** - The Central Government can make rules for carrying out the provisions of this Act.
- The Act has been amended only once before, in 1988.

What are the key features of the bill?

- **Restrictions on activities in forest** - The Bill adds more activities to the list of activities that will be excluded from non-forest purposes such as
 - Zoos and safaris under the Wild Life (Protection) Act, 1972 in forest areas other than protected areas
 - Eco-tourism facilities
 - Silvicultural operations
 - Any other purpose specified by the central government; it may specify exclusion of any survey.
- **Land under the Act** - The bill provides for 2 types of land to be under the purview of the Act.
 - Land declared/notified as a forest under the Indian Forest Act, 1927 or any law
 - Land not covered in the first category but notified as a forest on or after October 25, 1980 in a government record
- **Exempted land** – The Bill exempts
 - Forest land along a rail line or a public road maintained by the government up to a maximum size of 0.10 hectare
 - Land situated within 100 km along the international borders, Line of Control, or Line of Actual Control
 - Land proposed to be used for constructing security infrastructure and defence related projects (not exceeding 5 hectares in a left wing extremism affected area)
- **Assigning Forest land** - Requires prior approval of the central government to direct the assigning of forest land to any organisation not owned by the government.
- **Delegation of power** - The Central government may issue directions for the implementation of the Act to any other authority.

In 1976, forests were included in List III (Concurrent List) under the Seventh Schedule of the Constitution.

What are the issues associated with the bill?

- **Restricts Godarvarman judgement 1996**- It restricts the Act to *only legally notified forests and forests recorded in government records* on or after October 25, 1980.
- It is against the landmark verdict which extended the scope of the act to the dictionary meaning of forest (Areas with trees rather than just areas legally notified as forest).
 - Aravallis hills in Delhi which is ecologically significant will be affected by the amendment.
- **Excludes fragile ecosystem**- As it removes the need for forest clearances for security-related infrastructure up to 100 km of the international borders.

- It includes globally recognised biodiversity hotspots such as northeast India forests and high-altitude Himalayan forests.
- **Exemption for construction projects**- Zoos, safari parks, and eco-tourism facilities which are artificially created green areas and animal enclosures are very different from natural ecosystems.
- **Unrestricted powers**- It gives powers to the Union government to specify 'any desired use' beyond those specified in the original or amended Act.
- It will lead to potential exploitation of forest without adequate environmental scrutiny.
- **Disenfranchise forest people**- There is no reference to other relevant forest laws like [Scheduled Tribes and Other Traditional Forest-dwellers \(Recognition of Forest Rights\) Act, 2006](#).

What lies ahead?

- Forests and other natural ecosystems cannot be considered a luxury. They are an absolute necessity.
- The Government should ensure the balance between forest conservation and economic activities.
- Recent event in [Joshimath -Uttarakhand](#) has shown the need for proper geological and environmental assessments for all development projects.

5.3 National Research Foundation (NRF) Bill, 2023

Why in news?

The Union Cabinet has recently approved the introduction of the National Research Foundation (NRF) Bill, 2023.

Status of R&D in India

- **R&D expenditure** - India spends around **0.7% of GDP in R&D** which is lesser than many other countries.
- Gross expenditure on R&D in India is declined from 0.84% in 2008 to 0.69% in 2018.
- **Research funding** - Eminent institutions like the IITs and IISc get a bulk of research funding but State universities get very little *about 10% of the research funds*.
- **Patents** - According to the World Intellectual Property Organization (WIPO), although India registered a **16.5% growth in patent grants in 2021**, the patent applications are very much *less than China and US*.
- **Other challenges** - Other challenges that constraints the scientific community includes:
 - Inconsistent funding stream
 - Complex application processes (multiple guidelines & rules)
 - Bias towards established researchers and institutions
 - Straight-jacketed themes which allow little intellectual freedom

What are the features of NRF Bill, 2023?

- **NRF** - The bill will establish National Research Foundation as an apex body.
- **SERB** - The bill will repeal the *Science and Engineering Research Board (SERB)*, a statutory body that was established in 2008 to promote basic research in Science and Engineering and to provide financial assistance to persons engaged in R&D.
- SERB will be subsumed into NRF which has an expanded mandate and covers activities over and above the activities of SERB.

What is NRF?

- NRF is one of the key recommendations of the [National Education Policy \(NEP\), 2020](#).
- It is modelled on the lines of the hugely successful *National Science Foundation of the United States*.
- **Aim** - The NRF intends to act as a *coordinating agency* between researchers, various government bodies and industry, thus bringing industry into the mainstream of research.
- The NRF plans to seed, grow and facilitate research in India's universities, especially State universities, by funding research infrastructure and researchers.

- **Governance** - NRF will be administrated by the **Department of Science and Technology (DST)** and governed by a Governing Board.
- **Composition of Governing Board** -
- Ex-Officio President - Prime Minister
- Ex-Officio Vice Presidents
- Minister of Science and Technology and
- Minister of Education
- Executive Council will govern the functioning of NRF
- Executive Council will be chaired by the Principal Scientific Advisor to the Government of India.
- **Funding** – The NRF will operate with a budget of **Rs 50,000 crore** for five years, of which 28% will be the government’s share, and the remaining 72% will come from the private sector.

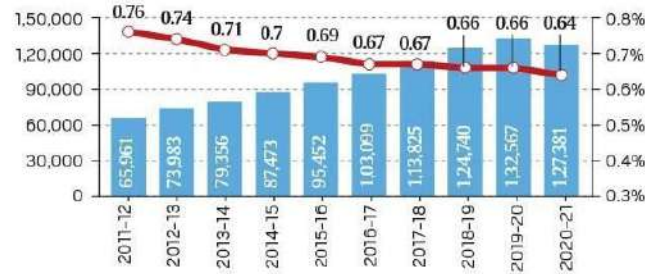
What is the significance of NRF?

- **Focus on universities** - The main objectives of the NRF are to get colleges and universities involved in scientific research.
- **Research in social sciences** - It promote research not just in natural sciences but also in humanities, social sciences and art.
- **National priorities** - It also aims to identify priority areas such as clean energy, climate change, sustainable infrastructure, etc. in which S&T interventions can help larger national objectives.
- **Democratization** - The focus area for NRF is peripheral, rural and semi urban areas which are often neglected.
- **Uniformity** – It also aims to bring uniformity in funding and reduce the bureaucratic hurdle associated in raising money.

Key indicators: How India compares with others

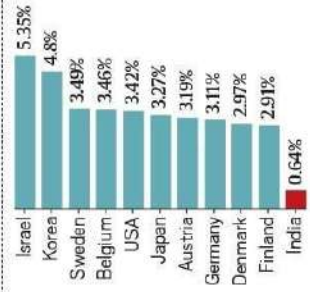
India compares unfavourably with the world's best on R&D expenditure as percentage of GDP – and the number has trended downward over the past decade. India has far fewer researchers per million population compared with China, Brazil, or the US

EXPENDITURE ON R&D (ALL PUBLIC PLUS PRIVATE)
■ R&D Expenditure (in current prices, in ₹ cr) ■ R&D Expenditure as percentage of GDP



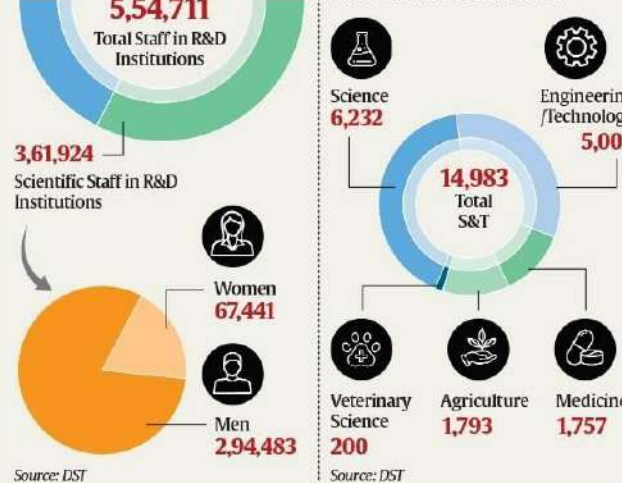
Source: Department of Science and Technology (DST)

TOP TEN COUNTRIES WITH MAXIMUM EXPENDITURE ON R&D AS % OF GDP



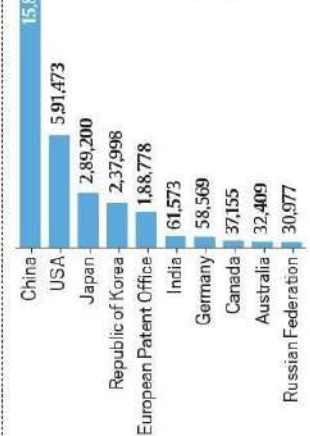
Source: UNESCO Science Report 2021

WOMEN IN SCIENCE (2021)
DOCTORATES AWARDED IN SCIENCE AND ENGINEERING IN 2020-21



Source: DST

PATENTS FILED IN COUNTRY OFFICE IN 2021



Source: UNESCO Science Report 2021

DOCTORATES PRODUCED IN 2018
■ All Doctorates ■ Science and Engineering Doctorates
■ % of Science and Engineering Doctorates



Source: UNESCO Science Report 2021

RESEARCHERS PER MILLION POPULATION



Source: UNESCO Science Report 2021

Graphic: Ritesh Kumar

Department of Science and Technology

- Established in 1971, it functions under the Ministry of Science and Technology.
- Its flagship programs are National Initiative for Developing and Harnessing Innovations (NIDHI), Vigyan Jyoti, INSPIRE etc.,

- **Internationalization** - It will promote international competition and find solution to complexities of Indian society.
 - University bureaucracy and procedures result in delays in decisions

What are the challenges associated with NRF?

- **Financial crunch**- 50% of the funding mechanism is dependent on private sector.
- While the participation of the private industry in the NRF is an important and welcome step, it is unclear how the government will raise Rs 36,000 crore from the industry.
- **Autonomy** - The top positions in the NRF board are reserved for members of the government, including the PM and the Ministers of Science, Technology and Education.
- **Time period** - Although the NRF draft mentions that the peer-review process will be completed within 6 months, releasing funds may take time, pending financial clearance.

What is the need of the hour?

- The time between applying for a research grant and receiving the money must be minimal.
- All the paperwork must be digitally processed without sending stacks of papers in hard copies to the NRF.
- All finance-related queries, paperwork, approval, and acceptance need to be between the NRF and the finance department of the university/research institution keeping the scientist free to focus on research.
- The NRF needs explicit spending guidelines away from the General Financial Rules (GFR) and the government's e-Marketplace (GeM) usage.
- Although the NRF draft mentions timely disbursement of funds, a mechanism needs to be in place to facilitate and implement this.

5.4 The Jan Vishwas (Amendment of Provisions) Bill, 2023

Why in news?

Recently, Lok Sabha has passed the Jan Vishwas (Amendment of Provisions) Bill, 2023.

What is the need for the amendment?

- **Compliance** - It aims to redefine the regulatory landscape of the country with decriminalization of minor offences under 42 Acts.
- **Simplification** - This will reduce compliance burden and promote ease of living and doing business in the country.
- **Economic growth**- MSMEs, the backbone of Indian economy, would be shifted to formal sector which would generate job and income.
- **Decision making** - It would accelerate investment decisions and attract more investment.

As per the Observation Research Foundation 2022, "The rules and regulations enacted by the governments have over time created barriers to the smooth flow of ideas, money, entrepreneurship and through them the creation of jobs, wealth & GDP".

What are the key features of the proposed Bill?

- **Decriminalization of offences**- It aims to decriminalize around 180 offences across 42 laws governing environment, agriculture, media, industry, trade, publication, and others.
- It seeks to completely remove or replace imprisonment clauses with monetary fines.
- **Periodic Revision** - The fines and penalties will be increased by 10% of the minimum amount every 3 years.
- **Grievance redressal mechanism**- The central government may appoint *Adjudicating Officers* to determine penalties to summon individuals for evidence and conduct inquiries into violations of the respective Acts.
- **Appellate mechanism**- It is provided for orders against adjudicating officers.
 - For Example- In Environment (Protection) Act, 1986, appeals against the Adjudicating Officer's orders may be filed with the National Green Tribunal within 60 days.

Act	Proposed amendments
The Environmental Protection Act, 1986	Penalty of 1 lakh to 15 lakh for inadvertent compliance breaches
The Copyright Act, 1957	It omits the penalty for making false statements for deceiving or influencing an authority or officer
The Motor Vehicles Act 1988	The bill proposes a person using a motor vehicle without a valid permit faces the jail term up to 6 months but omits the compulsion of paying a fine of Rs 10,000.
Indian Forest Act 1927	The bill removed imprisonment for trespassing, permitting cattle to trespass, cutting timber etc., in reserved forest but attracts a fine up to Rs 500
The Air (Prevention and Control of Pollution) Act, 1981	It replaced imprisonment for lapses with heavier penalties up to 15 lakh.
The Information Technology Act, 2000	For breach of confidentiality and privacy, the Bill proposes a penalty of Rs 5 lakh.

What are the benefits?

- **Rationalize criminal provisions-** It ensures citizens, businesses and the government departments operate without fear of imprisonment for minor, technical or procedural defaults.
- **Adherence to law-** It establishes a balance between the severity of the offence/violation committed and the gravity of the prescribed punishment.
- **Reduces the burden on judiciary-** The proposal of appointing adjudicating officers would reduce pressure on the justice system.
- It helps in reducing pendency of cases which would result in a more efficient and effective justice dispensation.
- **Cost effective-** The consolidated amendments in various laws with a common objective will save time and cost for both Government and Businesses alike.
- **Ease of doing Business-** It would be a landmark in the journey of rationalizing laws, eliminating barriers and bolstering the growth of businesses.

As per National Judicial Data Grid, as of July 2023, out of a total of 4.4 crore pending cases, 3.3 crore cases are criminal proceedings.

In the World Bank's Ease of Doing Business, India was ranked 63 in 2020, after which the rankings were discontinued.

What are the issues of the bill?

- **Decriminalisation-** The bill uniformly substitutes imprisonment clauses with monetary fines or penalties thus affecting the India's regulatory framework.
 - For example, the Bill removes all offences and penalties under the Indian Post Office Act, 1898.
- **Affects privacy -** Highly personal information, such as health insurance information and credit card statements, may be received by post.
- Deleting these offences would remove the safeguards against invasions of privacy which may go against the Right to Privacy recognised by the Supreme Court in 2017.
- **Competence of Adjudicating officers-** The adjudicating officers may lack the technical competence necessary to decide penalties under the Air (Prevention and Control of Pollution) Act and the Environment (Protection) Act, 1986.
- Whether the Adjudicating Officer, who would be an executive would be competent to decide the penalties (which is a judicial role) is a question.
- **Independence of Adjudicating Officers** – In 2022, the NGT penalised Singareni Collieries Company Limited, a coal mining company jointly owned by the central government and the Government of Telangana, for excess mining.

The Vidhi Centre for Legal Policy, a research centre says that the blanket removal of imprisonment provision might remove the deterrence effect of the environmental legislation.

- The question is whether government officers would be sufficiently independent as adjudicating authorities in such cases.
- **Functional overlap**- Already there is a fund to be used for education, awareness, research in environmental protection, as well as the expenses of implementing the Acts.
- Creation of a new Environment Protection Fund under EPA 1986 raises the question on the necessity of this fund.

6. GOVERNANCE

6.1 Whistle Blowing

Why in news?

Daniel Ellsberg, an American military analyst who had caused a public uproar in 1971 by releasing Pentagon Papers died recently.

What is whistle blowing?

- Whistleblowing is the act of drawing public attention, or the attention of an authority figure.
- It is done for perceived wrongdoing, misconduct, unethical activity within public, private or third-sector organisations.
- Corruption, fraud, bullying, health and safety violation, cover-ups and discrimination are common activities highlighted by whistle-blowers.
- **Types of whistle blowers**
 - **Internal Whistle blowers**- The whistle blowers inform or report to the higher authority of the organizations where the wrongful act is being done.
 - **External Whistle blowers**- They report illegitimate incidents to the external people- media, Government office etc.,

Status of Whistle blowing in India

- In 2011, Law Commission recommended a law should be in place for protection of Whistle blowers.
- In 2004, Government notified a resolution “Public Interest Disclosure and Protection of Informers Resolution (PIDPIR)”
- **Power** - The resolution gave the power to Central Vigilance Commission to act on complaints from Whistle blowing.
- In 2014, India enacted Whistle Blowers Protection Act to provide adequate safeguards for whistle blowers.
- **Companies Act 2013** - It makes it mandatory for the entities listed on the stock exchanges to set up an audit committee to investigate whistleblower complaints.
- **Institutional Support** - Securities and Exchange Board of India (SEBI) has guidelines to regulate the companies to have law for protection of Whistle blower.
- **International Convention** - In 2005 India become a signatory to the UN Convention against Corruption.
- It talks about the reporting of corruption done by the public or private entities and protecting the whistleblowers from the retaliation faced by them.

Whistle blowing Cases	About
Shanmugam Manjunath case	An Indian Oil Corporation Officer who was murdered after he exposed adulterated fuel.
Lalit Mehta case	An activist who exposed corruption in the National Rural Employment Guarantee Act (NREGA) scheme.
IPS Narendra Kumar Singh case-	An Indian Police Service Officer who was killed after he exposed illegal mining in Madhya Pradesh.
Vyapam Scam	It was one of the most notorious episodes in India’s educational and recruitment narrative exposed by Anand rai in Madhya Pradesh.

What are the provisions under Whistle Blowers Protection Act, 2014?

- **Aim-** To prevent corruption, asset misappropriation and misuse of power.
- **Applicability-** The law applies *only* to the public sector and targets the public servants.
- **Burden of proof-** Lies on the public authority.
- **Filing Complaint-** The complaint can be filed by a public servant or any other person to make a public interest disclosure.
- **Good faith requirement-** The report must be submitted in good faith so that the whistle blower may be exempted from defamation claims and prosecution in case the information him/her is incorrect.
- **Conditions for Whistle blower**
 - The whistle blower should act immediately after the act of misconduct was observed.
 - The whistle blower must identify himself. Otherwise, his report will not be considered.
 - Anonymous and false identity of complaints will not be encouraged.
- **Authority-** The report is submitted to the Competent Authority, who must conceal the identity of the whistle blower.
- The complaint is then forwarded to the Head of the Department.
- The whistle blower may choose to reveal the identity to the Head of the Department or provide the necessary evidence to the Authority.
- **Court of Appeal-** Any person aggrieved by the competent authority can approach the *High Court within the 60 days* from the date of order.
- **Exceptions-** The whistle blower can't report on matters which may harm the sovereignty of India or directly damage its national security.
- **Penalty-** There is a provision of penalty to any person who has disclosed the identity of complainant and penalty for false identity of the complainant.

What is the significance of Whistle blowing?

- **Improves transparency-** It will help to combat corruption, serious misconduct and illegal wrong doings.
- **Public trust-** It ensures accountability and enhances the public trust with the government.
- **Protect rights of the people-** People must know about the happenings in the government, there must be appropriate mechanism to whistle blow a serious misconduct.
- **Enables justice-** It provides an environment of safety and protection from the inevitable abuse of power.

Whistle Blower Protection in USA

- **Investigation Mechanism -** The investigation of complaints of retaliation against employees is conducted by investigators who are neutral.
- They are neutral fact-finders and they do not work for either the complainant or respondent.
- This practice can be adopted in India to give strong protection to the Whistle blowers

6.2 NIRF India Rankings 2023

Why in news?

The National Institutional Ranking Framework (NIRF) recently released the eighth edition of India Rankings for 2023.

What is NIRF rankings?

- The Ministry of Education in 2015 drafted and implements the National Institutional Ranking Framework (NIRF).
- The Education Ministry releases the NIRF Ranking every year since 2016 and 2023 is the 8th edition.

Categories (5)

- Overall
- Universities
- Colleges
- Research institutions
- **Innovation**

Subject Domains (8)

- Engineering
- Management
- Pharmacy
- Medical
- Dental
- Law
- Architecture and **planning**
- **Agriculture and allied sectors**

Parameters (5)

- Teaching, learning and resources
- Graduation outcome
- Research and professional practices
- Outreach and inclusivity
- Perception

- The NIRF rankings also known as the **India Rankings**, evaluates the 'quality' of educational programs offered by higher education institutions in colleges and universities in India.
- **Criteria** - NIRF ranks higher education institutions in 5 categories and 8 subject domains.
- The NIRF evaluates institutions on five parameters and 16-18 sub-parameters.
- Ranks are assigned based on the sum of marks secured by institutions on each of these parameters.
- The ranks helps universities in identifying areas for improvement in teaching, research, resources, and infrastructure.

What is new in the India Rankings for 2023?

- There are 3 distinct additions of the 2023 edition of India Rankings.
 1. Introduction of a new subject namely Agriculture & Allied Sectors
 2. Integration of the 'Innovation' ranking previously executed by the Atal Ranking of Institutions on Innovation Achievements (ARIIA) into the India Rankings.
 3. Expansion of scope of 'Architecture' to Architecture and Planning to include institutions imparting courses in Urban and Town Planning.
- The new additions have increased portfolio of India Rankings to 13 categories and subject domains.

What are the key findings of this ranking?

- **Participation** - Only 12.3% of higher educational institutions participated in the ranking process.
- There is near to no information on the parameters decided by NIRF for the remaining 87.7% of higher education institutions.
- **Rural-urban Divide** - AISHE data show that about 43% of the universities and 61.4% colleges are in rural areas.
- **Quantity and Quality** - According to AISHE, Uttar Pradesh has the highest number of colleges in the country, followed by Maharashtra and Karnataka.
- The list of top 100 colleges does not feature a single college from U.P. and features only 3 colleges from Maharashtra and 2 from Karnataka.
- **State Universities** - Quality differences are evident between private and government institutions as well.
- The highest rank secured by a private institution is 15 in overall rankings and 6 in university rankings.
- Government institutions finds top place in the list.
- **Faculty strength** - The average number of faculty in the top 100 universities is 645, while for the remaining universities it is only 242.
- **Scientific publications** - The 12.3% of institutions which have participated in the ranking contribute close to 90% of scholarly output in the country.

As per the All India Survey on Higher Education (AISHE) 2021, there were 1,113 universities and 43,796 colleges in 2020-21.

The AICTE-prescribes faculty-student ratio of 1:20. Only 33.98% of engineering colleges adhere to it.

What could be inferred from the findings of the report?

- The rankings underscore the urgent need for quality enhancement in the higher education system.
- China's share of world publications increased from 5% in 2000 to 26% in 2018, facilitated by massive research investments by the Chinese government.
- India's share in the overall world scientific publications is about 4.81% and requires immediate attention.
- In order to reap the demographic dividend, India needs higher budgetary outlays for higher education.

6.3 Digitisation of Land Records

Why in news?

Recently, while presenting Bhoomi Samman Award 2023, President Draupadi Murmu said that land digitisation will curb land-linked illegal activities.

What is land record digitisation?

- Land digitisation refers to the process of converting analogue or physical information about land into digital data.
- It involves capturing, storing, and managing land-related information in a digital format.
- **Goal-** To create a comprehensive and accurate digital representation of land parcels, boundaries, ownership records, and other relevant data.
- **Features** – It involves the use of Geographic Information Systems (GIS), satellite imagery, aerial photography, and other technologies to capture spatial data and attribute information about the land.

The subject of **'Land'** and its management falls under the **State List** provided under Entry 18 and Entry 45 of List II of Seventh Schedule of Indian Constitution.

Why is land digitisation so significant?

- **Secure land rights and ownership-** It provides individuals and communities with secure land rights.
- **Transparency** - It promotes transparency and reduces corruption in the land administration system.
- **Prevention of land disputes** - It reduces the chances of disputes arising from conflicting land claims or unauthorised encroachments and will reduce the pendency of cases in judiciary.
- **Ease of access and service delivery-**It facilitates easy access to land records for citizens, reducing bureaucratic hurdles and time-consuming procedures.
- **Integration with other e-governance initiatives-** Integration with Aadhaar will streamline the process, eliminates duplication of data and enhances the efficiency of government services.
- **Provision of institutional loans-** Digitisation of land records will provide legal land titles to farmers and it will be easier for them to access collateral loan in bank.
- **Economic growth-** Reduction in land disputes will improve faster infrastructure development.
- **Curb illegal activities-** Digitisation of land records will keep a check on benami transactions and the black money associated with it.
- **Monitor real estate sector-** Real estate sector which contributes *5-6% to the country's GDP*, needs electronic public register of land record for proper management
- **Calamities-** It would also be of great help in case of loss of documents due to calamities like flood and fire.

A NITI Aayog report showed that land disputes take an average of 20 years to resolve

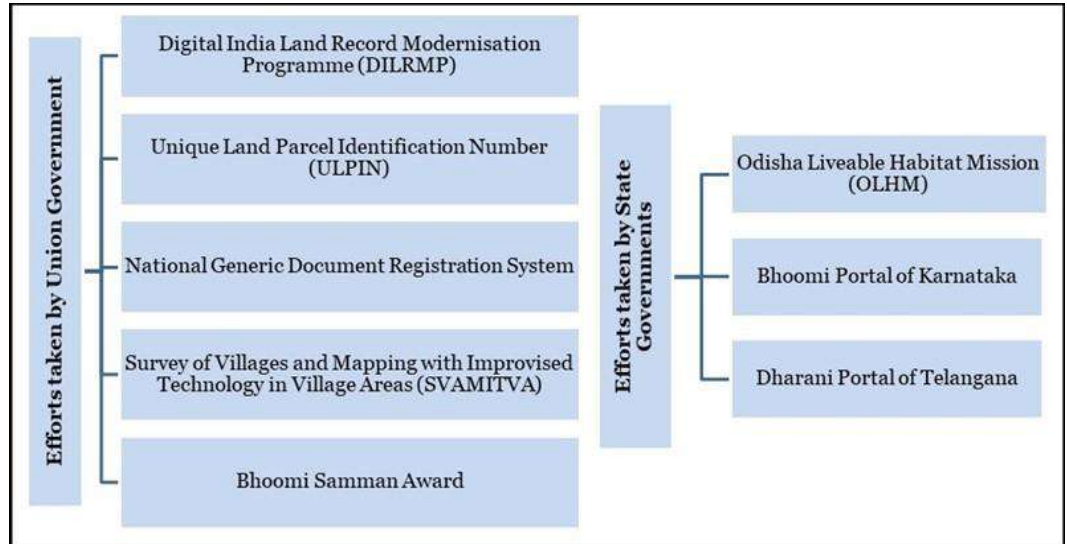
What efforts were taken to promote land digitisation?

- **Digital India Land Record Modernisation Programme (DILRMP)** - It is a *Central sector* scheme with 100 % funding by centre that was launched in 2016.
- It aims to develop *Integrated Land Information Management System (ILIMS)* across the country.
- Implemented by *Ministry of Rural Development* and its sub-components include ULPIN, NGDRS, etc.
- **ULPIN-** Unique Land Parcel Identification Number is a unique **14-digit authentication number** that will be assigned for every plot or parcel of land in the whole country.
- It is classified as *Aadhar for Land*, which contains ownership information, area and size of the plot.
- **National Generic Document Registration System** - It is a "*One-Nation One-Registration Software*".
- It is a common, generic and configurable application developed for registration departments across the country.
- **Bhoomi Samman Award-** It aims to acknowledge and encourage outstanding performance in the implementation of the DILRMP.
- It aims to achieve 100% saturation of the core components of digitization of land records in all districts of the country by March 31, 2024.
- *Platinum Grading Excellence* is given to districts that successfully achieve 100% target in the core components of the DILRMP.

Status of Land Digitisation in India

- The Government has achieved **94% digitization** targets pan-India, as per the Digital Indi Land Records Modernization Programme- MIS 2.0.
- As per NCAER's N-LRSI report, the top 5 performing states in land digitisation in 2021 are Madhya Pradesh, West Bengal, Odisha, Maharashtra, and Tamil Nadu.

- **SVAMITVA**
- Survey of Villages and Mapping with Improved Technology in Village Areas was launched in 2020.
- It aims to provide the 'Record of Rights' to village household owners possessing houses in inhabited areas in villages.



What are the issues with land digitisation?

- **Data quality**- Poor data quality and errors can hamper the accuracy and reliability of digital land records.
- **Fragmented land** -India has a complex land ownership structure with multiple stakeholders,
- **Lack of standardised formats** -It hinders the seamless exchange and integration of land-related data, leading to difficulties in data sharing and analysis.
- **Limited technical infrastructure** -In remote rural areas, insufficient access to computers, internet connectivity, and power supply poses challenges in implementing digitalisation of land records effectively.
- **Capacity building** - The lack of trained personnel can hinder the successful implementation of digitised land records.
- **Legal and policy frameworks**- There is a need to develop appropriate frameworks that support land digitisation.
- **Cultural factors**- Digitisation initiatives often face resistance from stakeholders accustomed to traditional land record systems.
- **Financial constraints**- Lack of finance will slow down the pace of digitisation efforts, particularly in resource-constrained regions.

The Standing Committee of Finance's 28th report on the Benami Transactions Prohibition (Amendment) Bill, 2015 highlights the impact of digital land records on the poor and vulnerable and the difficulty of genuine landowners in establishing their titles.

6.4 Lax Response of the States to Mob Lynching

Why in news?

The Supreme Court has asked several States to respond to the petition filed by National Federation of Indian Women for their consistent failure to act against mob lynching.

What is mob lynching?

- Mob Lynching is the act of violence by a group of people towards an individual without a legal trial.
- It is an illegal activity done by the crowd of people who turn aggressive and kill an individual on the assumption that he is a criminal and held him guilty without any legal trial.
- **Victims**- Generally, Muslims, dalits and minorities have been the victims of mob lynching.

What are the causes of mob lynching?

- **Intolerance**- People are intolerant in accepting the law and try to punish the alleged person assuming the act to be immoral.



- **Biases-** Mob lynching is said to be rising because of the biases or prejudices among various castes, class & religions.
 - The 24-year-old [Tabrez Ansari was brutally beaten](#) by a mob in Jharkhand for alleged theft, eventually leading to his death.
- **Cow vigilantism-** Cow vigilantism is a scenario where people create violence in the name of cow protection.
 - The memory of [murder of a dairy farmer, Pehlu Khan](#) and his sons by self-described cow vigilantes in 2017 in Rajasthan still stays afresh.
- **Lack of speedy justice-** Inefficient working of justice is also one of the prime reasons why people take law into their own hands without fearing of consequences.
- **Poor law enforcement-** Police officers play a significant role in protecting person's life & maintaining harmony, but due to ineffective investigation procedure, hate crime is in the rise.
- **Lack of awareness-** Easy spread of fake news due to increase in the internet penetration.
- **Lack of data-** In 2017, the National Crime Records Bureau (NCRB) collected data on mob lynching, hate crimes and cow vigilantism, but it was not published as these crimes are not defined and the data were found to be unreliable.

What are the concerns of mob lynching?

- **Growth of communalism-** A rampant rise in lynchings and mob violence against a particular religious community revealed police apathy.
- **Violation of Constitution**
 - Articles 14 - Equality before the law
 - Article 15 - Religious non-discrimination
 - Article 21 - Right to life
- **Breach of duty-** Due to inefficiency of police administration to stop mob lynching it leads to breach of a duty of care.

Manipur is the first state to have a law for mob lynching in 2018.

What is the issue now?

- **Contempt petition-** The Centre and States are facing a separate contempt petition in the Supreme Court for non-compliance with the *Tehseen Poonawala judgment*.
- National Federation of Indian Women (NFIW) also filed petition against several States for their consistent failure to act against mob lynching on Muslims by cow vigilantes.
- **Status report-** The apex court directed the States to file a status report containing year wise data from 2018 by September 30, 2023.

What were the remedial directives given by the Supreme Court?

- SC in 2018 described lynching as a “*horrendous act of mobocracy*” and laid down guidelines for the both Centre & state governments to frame laws particularly to deal with lynching.
- **Designated officer-** Appoint a designated nodal officer, not below the rank of Superintendent of Police to prevent prejudice-motivated crimes like mob violence and lynching.
- **Lodge FIR-** The immediate lodging of an FIR if an incident of lynching or mob violence comes to the notice of the local police.
- **Duty of Station House Officer-** To inform the nodal officer in the district about the registered FIR, to ensure that the families of the victims are secured from further harassment.
- The investigation of the crime should be personally monitored by the nodal officer.

Tehseen Poonawala vs Union of India in 2018

- Supreme Court held that it was the “sacrosanct duty of the State” to protect the lives of its citizens.
- It stated that no right is higher in a secular, pluralistic and multiculturalist social order than the right to live with dignity and to be treated with humaneness.
- Vigilantism cannot become the “new normal”. No citizen can assault the human dignity of another, for such an action would comatose the majesty of law.
- The court declared that the authorities of the States have the “principal obligation” to see that vigilantism does not take place.
- “Vigilantism cannot, by any stretch of the imagination, be given room to take shape”.

- **Duty of police officer** – It is the duty of every police officer to cause a mob to disperse that seems to cause violence, in their opinion.
- **Victim compensation** -There should be a scheme to compensate victims of such prejudice-motivated violence.
- **Negligence of duty**- Any failure to comply with the court's directions by a police or district administration officer, would be considered as an act of deliberate negligence and/or misconduct.
- Appropriate action will be taken for negligence of duty within 6 months.
- **Role of States**- States should take disciplinary action against their officials if they did not prevent the incident of mob lynching,
 - Despite having prior knowledge of it, or
 - Where the incident has already occurred,
 - Official did not promptly apprehend and institute criminal proceedings against the culprits.

What lies ahead?

- **Designated Fast Track Courts**- States need to set up a designated fast track court in every district to deal exclusively with mob lynching cases.
- **Special Task Force**- The court had said that there is a need to set up of a special task force.
- **Compensation** - NHIW has directed the government to pay a “minimum uniform amount” to the victims of lynchings and mob violence.
- **Separate law**- Each state should have a separate law to deal with incidents like mob lynching.
 - Presently, only 3 states - Manipur, West Bengal & Rajasthan, have enacted laws against mob lynching.

7. HEALTH

7.1 The Need to Focus on Palliative Care

Why in news?

The Government's revised non-communicable diseases guidelines were criticised for the lack of focus on palliative care.

What is palliative care?

- Palliative care is the branch of medicine focusing on *improving the quality of life* and preventing suffering among those with *life-limiting illnesses*.
- It aims to identify patients at risk of over-medicalisation at the expense of quality of life and financial burden on the family.
- It is an approach to care that addresses the person as a whole, not just their disease
- Palliative care is available at any time, regardless of the stage of the illness or life expectancy whereas *Hospice care* is available only at the end of life.

Prevalence of NCD

- **Global Scenario** - There is one death from non-communicable diseases (NCDs) every 2 seconds.
- NCDs, along with mental illnesses, kill 41 million people each year across all age groups.
- Of all NCD deaths, 77% are in low- income and middle-income countries (LMICs).
- **Indian Scenario** - 66% of all deaths can be attributed to NCDs, with cardiovascular diseases accounting for 28% of these deaths and chronic respiratory diseases 12%.
- In 2019, the report showed that India had one of the highest death rates from chronic respiratory diseases.

Why is palliative care so significant?

- **Symptom management** Palliative care specialists may help people with symptom and pain management.

- **Improved quality of life**- As per a report, amongst the Parkinson's disorder affected people, those who received palliative care scored three points higher in the quality of life.
- **Reduced risk of depression**-Early palliative care is associated with a lower risk of depression in people newly diagnosed with advanced cancer.
- **Longer survival**- Palliative care increases the survival of people with advanced cancer as there is a link between mortality and depression.
- **Emotional Support** -Palliative care can include instructional guidance and emotional support for family members caring for a loved one with a serious illness.

What steps were taken to promote Palliative care?

- **Policy** - Only three states have implemented the palliative care policy - Kerala, Karnataka, and Maharashtra.
- Among them, Kerala is the only state with a policy which integrates palliative care with the public health system and it is decentralized down to the primary health care.
- **National Program for Palliative Care**- It was launched in 2012 in line with 2014 World Health Assembly Resolution for achieving universal access to palliative care as part of Universal Health Coverage (UHC).
- **NP-NCD & NCD Guidelines**- In 2023, the revised operational guidelines of National Programme for Prevention of Non-Communicable Diseases for 2023 to 2030 was released.
- **75/25 initiative**- It is an initiative in which 75 million people with hypertension and diabetes is put on Standard Care by 2025, through the primary health care centres.
- **Shashakt Portal**- It was launched for training of 40,000 primary health care medical officers on standard treatment workflow.
- **Other programs** that have Palliative care as a component includes
 - National Program for Prevention and Control of Cancer, Cardiovascular Disease, Diabetes, and Stroke
 - National Program for Health Care of the Elderly
 - National AIDS Control Program
 - National Health Mission

What are the gaps in the revised NCD guidelines?

- **Accessibility**- Palliative care is accessible to only 1-2% of the estimated 7-10 million people who require it in the country.
- **Misconceptions**- As per *Global Atlas of Palliative Care*, in 2020, the need for palliative care was higher for non-cancer illnesses. However, the revised NCD operational guidelines, released in 2023, mentions palliative care is in synonym with cancer only.
- **Infrastructure deficit** – As per revised guidelines, generally palliative care service starts in district hospitals and there is no mention on home-based care.
- **Lack of dedicated budget**- There is no specific budget dedicated for the palliative care.
- **Lack of awareness**- It is due to lack of awareness among policy-makers, health professionals and the public about the palliative care and its benefits it can offer to patients and health systems.
- **Indicator to assess the programme's impact**- Including an indicator to assess morphine access is a welcome move, but an indicator focusing only on patients with cancer might lead to an inaccurate assessment of coverage of services.

What lies ahead?

- The 67th World Health Assembly in 2014 called for palliative care to be integrated into health systems at all levels. It is high time to realize the ongoing pandemic of non-communicable diseases in India and to strengthen our palliative care services.

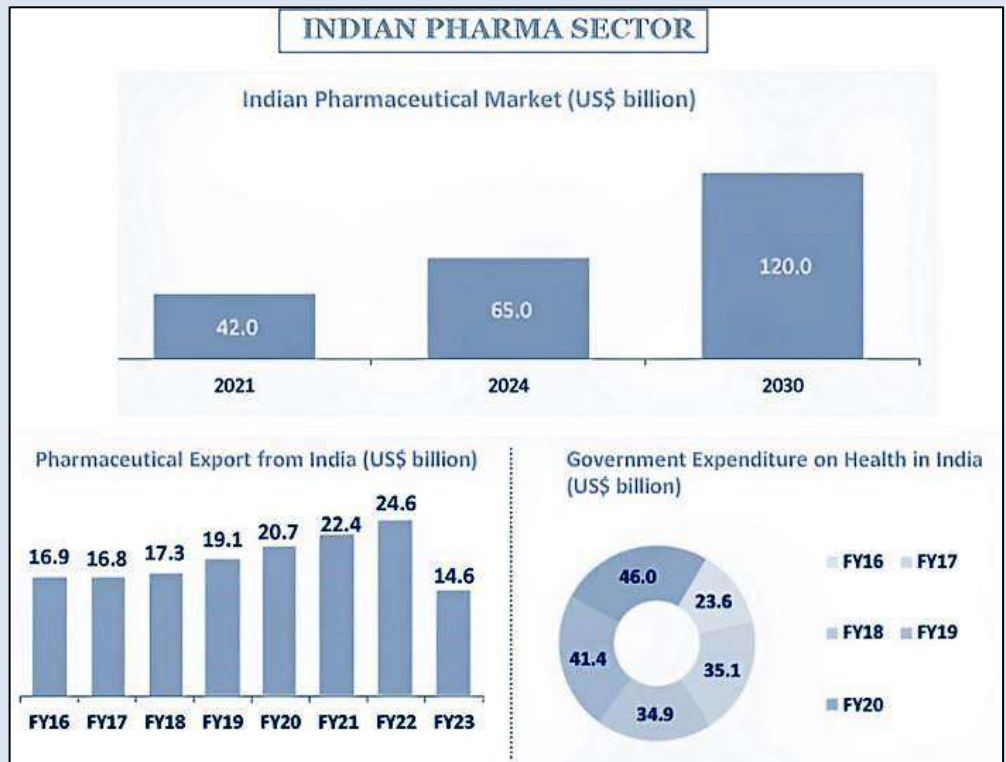
7.2 Indian Drug Makers under Lens

Why in news?

Recently, Gambia declared that from July 1, 2023, it is running strict quality control checks on all pharma products imported from India due to contaminated drugs.

Position of India in pharma Industry

- India is known as the "***pharmacy of the world***" due to the low cost and high quality of its medicines.
- The Pharmaceutical industry in India is the ***third largest*** in the world in ***terms of volume*** and ***14th largest in terms of value***.
- The Pharma sector currently contributes to around ***1.72% of the country's GDP***.
- India is the ***world's largest provider of generic medicines*** by volume, with a 20% share of total global pharmaceutical exports.
- It is also ***largest vaccine supplier*** in the world by volume, accounting for more than 50% of all vaccines manufactured in the world.
- India is the ***12th largest exporter of medical goods*** in the world.
- According to Economic Survey 2023, the turnover in the domestic pharmaceutical market is estimated to be at \$41 billion in 2021.
- 100% (Foreign Direct Investment FDI) is allowed under automatic route for Greenfield pharmaceuticals.



What is the issue with Indian Pharma products?

- In Gambia and Uzbekistan, it's reported that children died due to consumption of contaminated cough syrup.
- In Sri Lanka patients reported to have died after being administered with anaesthetic drug.
- So Indian drug makers were brought under international scrutiny due to alleged contaminated drugs.
- India has at least 5 major poisoning drug events since 1972.

What is the regulatory process in pharma industry?

- Central Drug Standard Control Organization (CDSCO)** - It is the apex drug regulatory framework. It
 - Ensures safety, efficacy and quality of the medical product manufactured, imported and distributed in the country.
 - Regulates the market authorization of new drugs and clinical trials standards.
 - Supervises drug imports and approves licenses to manufacture the products.
- Drugs and Cosmetics Act, 1945** - CDSCO is responsible for approval of New Drugs, Conduct of Clinical Trials. It
 - Lays down the standards for Drugs, control over the quality of imported Drugs in the country.
 - Coordinates the activities of State Drug Control Organizations by providing expert advice.
- Indian Council of Medical Research (ICMR)** - Formulates, coordinates, and promotes biomedical research and Ethical principles.
- Power of the Central Government-** It is responsible for imports and approving new drugs based on safety and efficacy data.
- Power of the State Government-** Deals with Licensing and prosecutions of pharma companies.

- **Legislation-** Under Drugs and Cosmetics Act 1945, manufacturers not adhering to good manufacturing practices can be subjected to a maximum punishment of imprisonment for life death.

What are the challenges ahead of Indian pharma industry?

- **Loss of international market value** -Due to international scrutiny, globally India may lose its pharma value market.
- **Poor track record-** Irregular management over drug contamination and there is no mandatory provision to disclose inspection reports.
- **Poor conviction rate-** Due to errors committed by drug inspectors including
 - Shoddy paperwork,
 - Failure to seize, record its condition of storage and label the samples properly,
 - Failure to complete the testing process of samples before its expiry date.
- **Less manpower-** CDSCO is under shortage of drug inspectors, which results in poor monitoring of drug regulations.
 - For example: Karnataka is working at nearly half its sanctioned capacity for drug inspectors.
- **Lack of Accountability-** Mere cancellation or suspension of license allows the owner to manufacture under new name.

What lies ahead?

- Robust management of pharma industry through mandatory provisions to disclose inspection reports
- Increase the expenditure in R&D
- Increase the penalty over violation
- Enhance accountability and transparency over regulatory framework

7.3 Bedaquiline for TB

Why in news?

Johnson & Johnson's patent on bedaquiline expired recently which will allow generic manufacturers to supply this crucial drug for Tuberculosis.



What is Tuberculosis (TB)?

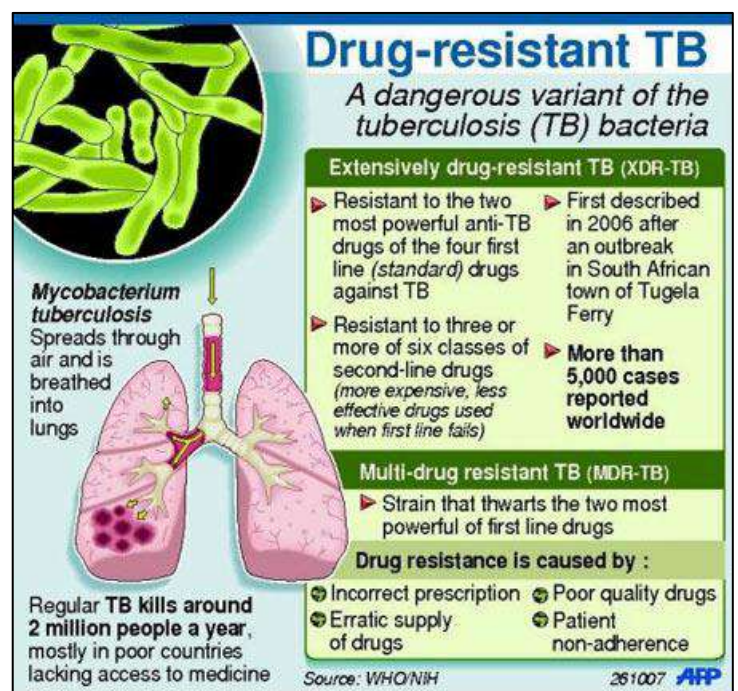
- Tuberculosis (TB) is an infectious disease that most often affects the lungs.
- **Cause** - A type of bacteria called *Mycobacterium tuberculosis*.
- **Transmission** - Through air from one person to another
- **Treatment** - Preventable and curable.
- Globally, DR-TB is a major contributor to antimicrobial resistance.

To know more click - [The Road to End Tuberculosis \(TB\)](#)

What is Bedaquiline?

- Bedaquiline is the core drug for the treatment of drug-resistant TB (DR-TB).
- Bedaquiline is a crucial drug in the treatment of multi-drug resistant TB (MDR-TB) patients for

Symptoms



Drug-resistant TB
A dangerous variant of the tuberculosis (TB) bacteria

Extensively drug-resistant TB (XDR-TB)

- ▶ Resistant to the two most powerful anti-TB drugs of the four first line (standard) drugs against TB
- ▶ Resistant to three or more of six classes of second-line drugs (more expensive, less effective drugs used when first line fails)
- ▶ First described in 2006 after an outbreak in South African town of Tugela Ferry
- ▶ More than 5,000 cases reported worldwide

Multi-drug resistant TB (MDR-TB)

- ▶ Strain that thwarts the two most powerful of first line drugs

Drug resistance is caused by :

- ❌ Incorrect prescription
- ❌ Erratic supply of drugs
- ❌ Poor quality drugs
- ❌ Patient non-adherence

Regular TB kills around 2 million people a year, mostly in poor countries lacking access to medicine

Source: WHO/NIH

261007 AFP

whom the first-line drug treatment has stopped working.

- It is also an oral medicine with minimal side-effects as compared to other such medicines like Kanamycin.
- Janssen Pharmaceutical (a subsidiary of J&J) made bedaquiline around 2002 and was approved in 2012.
- So far, J&J has claimed sole ownership of bedaquiline.

What is the issue with J&J patent?

- J&J has filed secondary patents over bedaquiline till 2027, which were granted in 66 low-and middle-income countries.
- It includes 34 countries with high burden of TB, multidrug-resistant TB (MDR-TB) and TB/HIV.
- J&J is maintaining its monopoly over the bedaquiline market through this patents.
- J&J has sought to extend its patent on bedaquiline and is facing has faced public outrage for it.
- **In India** - The Indian Patent Office rejected J&J's secondary patent which would have extended its monopoly for 4 more years.
- Indian measures against evergreening of patents -
 - **Section 3(d) of the Patents Act of 1970** does not allow 'evergreening' of patents to ensure that the monopoly does not exist.
 - This section prevents innovator pharma companies from extending the patent beyond the stipulated period of 20 years.

Each year, nearly half a million people develop drug-resistant TB and nearly 10.4 million people develop drug-sensitive TB.

What are the implications of J&J's patent expiry?

- On the expiry of Bedaquiline patent, the drug makers can make the generic versions as per the law.
- Generic competition of drug manufacturing will decrease the prices of the drugs.
- National TB programmes will benefit from the generic supply of bedaquiline from Indian manufacturers to reduce prices.
- With patent inforce, the drug was procured only through the government and costs about Rs.21,000 for a 6-month course.
- With the advent of generics at a lower price, the reach of the drug to the drug-resistant TB patients in the country will expand in due course of time.

Will the J&J-GDF deal make the generic of bedaquiline accessible?

- Eastern European countries and China with high burden of TB are out of the agreement.
- Countries like South Africa are not purchasing from GDF so far.
- South Africa cannot access generic Bedaquiline until 2047 as the ever-greening patent is still inforce.

Quick Facts

- A **primary patent** protects directly an active ingredient.
- A **secondary patent** protects a range of chemicals related to an active ingredient such as crystalline forms of the original compound, methods of use, formulations, dosages, etc.
- **Ever-greening of patents** - To extend the patent period when companies make slight changes to the formulation.

7.4 Oral Polio Vaccine and VDPV

Why in news?

The U.S., the U.K., and Israel, among others, recently reported polio cases in unvaccinated people after having been polio-free for more than a decade.

What is polio?

- Polio (*Poliomyelitis*) (commonly called polio) is a highly infectious viral disease that can leave patients disabled, and in some cases, even prove fatal.
- The virus enters the nervous system and can cause total paralysis in just a few hours.
- **Types of Polio virus** - Wild poliovirus (WPV) has three known strains – types 1, 2, and 3 – each with a slight difference in structure.

India was declared polio free in 2014 by WHO

- Immunity to one type does not guarantee immunity to others.
 - **Type 1 WPV** - remains in circulation and endemic to Pakistan and Afghanistan.
 - **Type 2 WPV** - declared eradicated in September 2015.
 - **Type 3 WPV** - declared eradicated in October 2019.
- **Spread** - The polio virus is most commonly spread through the faecal-oral route and through contaminated water or food.
- The virus multiplies in the host's intestine.
- **Treatment** - There is no known cure for polio. It can only be prevented by way of vaccination.
- **Vaccine** - Oral poliovirus vaccine (OPV) and inactivated poliovirus vaccine (IPV).
- Click here to know about [Polio resurgence](#)

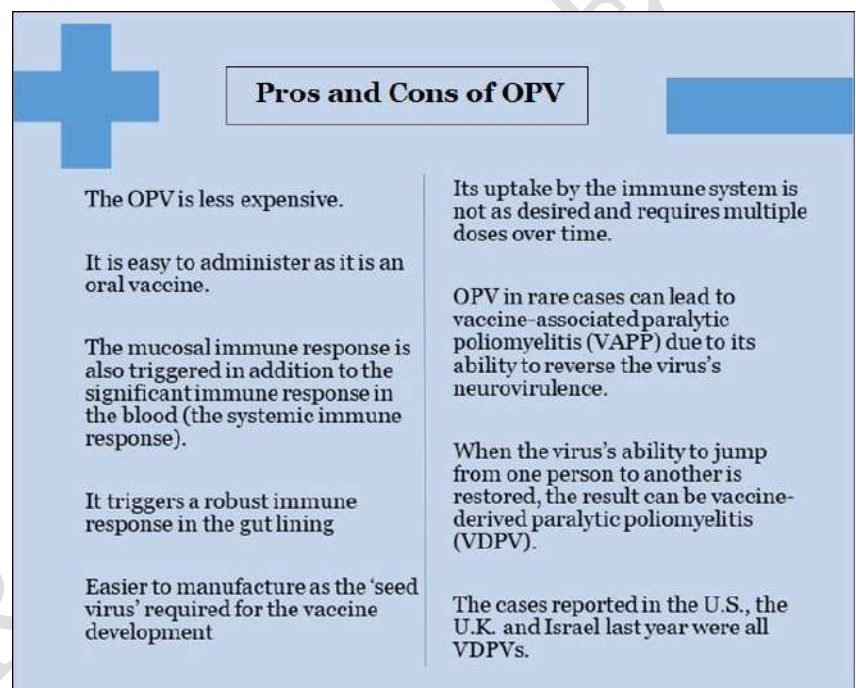
What is OPV and IPV?

- **Oral Polio Vaccine (OPV)** is a live attenuated vaccine for Polio.

- It contains weakened polioviruses (all three types – 1, 2, and 3) to induce an immune response in a human body without causing disease.
- **Inactivated Polio Vaccine (IPV)** contains inactivated polioviruses (all three types).
- IPV is administered by injection.
- It induces a strong systemic immune response, thus protecting against paralytic poliomyelitis, without any risk of causing VAPP or VDPV.

What is the inactivated polio vaccine?

- **Global switch** - Poliovirus Type-2 cause 90% of VAPP and VDPV cases.
- Type 2 virus was eradicated worldwide in 1999 and it was decided that OPV type-2 be discontinued.
- Since April 2016, the OPV has had attenuated versions of types 1 and 3 of the virus.
- This is accompanied by the introduction of the IPV in countries that still depended on the OPV in their national immunisation programmes.
- **VDPV after switch** - But the number of VDPV cases on contrary to expectation increased after April 2016.
- The previously existing type-2 VDPV began to circulate.
- In 2020, the VDPV Type-2 cases were at 1,081 from 26 countries, many of which were previously polio-free.
- **Reasons**
 - Limited supply/availability of the IPV
 - Cost and logistics of the IPV
 - Sudden increase in the demand for IPV after the switch.
 - The population immunity against type-2 virus dropped in OPV.



Pros and Cons of OPV	
The OPV is less expensive.	Its uptake by the immune system is not as desired and requires multiple doses over time.
It is easy to administer as it is an oral vaccine.	OPV in rare cases can lead to vaccine-associated paralytic poliomyelitis (VAPP) due to its ability to reverse the virus's neurovirulence.
The mucosal immune response is also triggered in addition to the significant immune response in the blood (the systemic immune response).	When the virus's ability to jump from one person to another is restored, the result can be vaccine-derived paralytic poliomyelitis (VDPV).
It triggers a robust immune response in the gut lining	The cases reported in the U.S., the U.K. and Israel last year were all VDPVs.
Easier to manufacture as the 'seed virus' required for the vaccine development	

What are the alternatives in development?

- **Novel OPV (nOPV)** – It has been recently in use in African countries.
- It is manufactured using attenuated polioviruses in which certain mutations have been introduced using genetic engineering.
- nOPV makes it 5 times harder for the virus to regain its neurovirulence.

- All clinical trials shows that novel OPV is safer and effective than monovalent oral polio vaccine type 2 (mOPV2).
- Even after administering the nOPV, a few VDPV cases have been reported.
- **Sabin IPV** - Researchers are trying to use attenuated viruses instead of wild viruses to make the IPV-manufacturing safer.
- Sabin IPV is currently undergoing clinical trials in Japan and China.
- **Adjuvant** - Experts are also testing specific adjuvants (substances that enhances the body's immune response to an antigen) to be added to the IPV to induce a mucosal immune response.

8. BILATERAL ISSUES

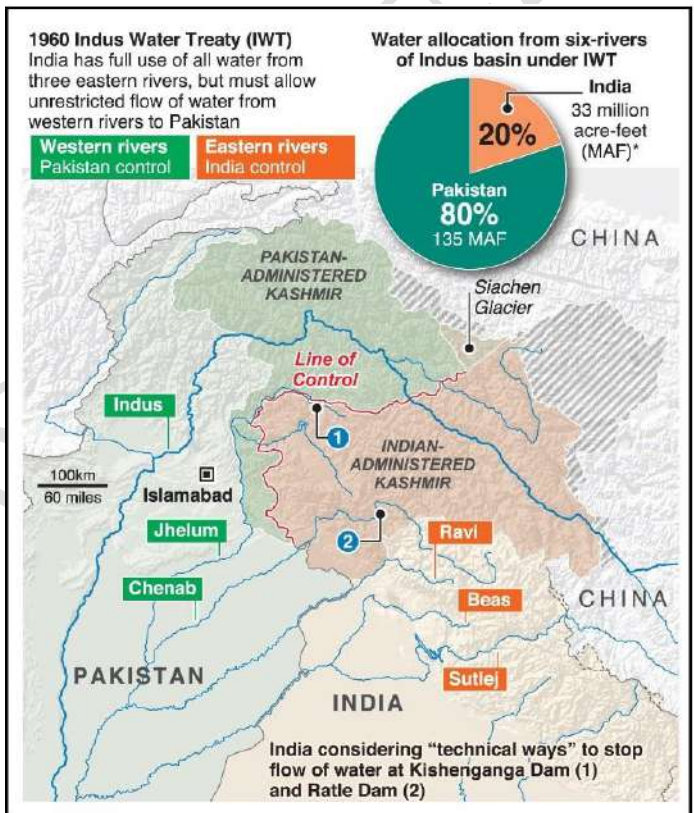
8.1 Revisit Indus Water Treaty

Why in news?

There is a need to revisit the Indus Water Treaty (IWT) rather than action of court of arbitration.

What is Indus-Water Treaty?

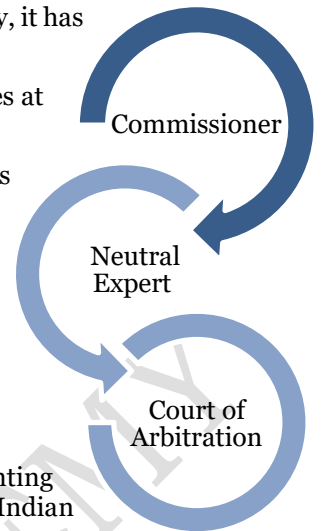
- **Indus Waters Treaty** - Signed in **1960** between India and Pakistan and brokered by **World Bank**.
- It administers how river Indus and its tributaries that flow in both the countries will be utilised.
- **India's rights - Eastern Rivers** - Sutlej, Beas and Ravi
- **Pakistan's rights - Western rivers** - Indus, Chenab and Jhelum
- India is under obligation to let flow the western rivers unrestricted. Since Indus flows from India, the country is allowed to use 20% of its water for Irrigation, Power generation and Transport purposes
- Both India and Pakistan have the right to non-consumptive use and rights of drainage issues and river conservation aspects.
- **Dispute resolution** - A **Permanent Indus Commission** was set up as a bilateral commission to
 1. Implement and manage the Treaty
 2. Solve disputes arising over water sharing
- **Article 8 of the treaty** - Both sides are expected to meet at least once a year to discuss bilateral problems.
- After **Uri terror attack in 2016**, India suspended bi-annual talks between Indus Commissioners of the two countries stating that **blood and water could not flow together**.
- **Withdrawal from the treaty** - Experts suggest that India can exercise the sovereign right of a state under **Article 64 of the Vienna Convention** to withdraw from any international treaty.



What is the dispute redressal mechanism laid down under the Treaty?

- **Article 9** of IWT is a graded, **3-level mechanism** under Commissioner, Neutral Expert and Court of Arbitration.

- **Commissioner** - Whenever India plans to start a project, under the Indus Water Treaty, it has to inform Pakistan that it is planning to build a project.
- If Pakistan oppose it and ask for more details, it has to be clarified between the two sides at the level of the Indus Commissioners.
- **Neutral Expert** - If it is not resolved, then the question becomes a difference, which has to be resolved by the Neutral Expert.
- It is at this stage that the World Bank comes into picture.
- **Court of Arbitration** - If it is not resolved by the Neutral Expert or that the issue needs an interpretation of the Treaty, then that difference becomes a dispute.
- It then goes to the Court of Arbitration.



What is the issue over the hydro-electric project?

- **Construction of hydel projects** - New Delhi accuses Pakistan's refusal in implementing the treaty as it repeatedly raises objections to the construction of hydel projects on the Indian side.
 - **Kishanganga** (Neelum in Pakistan) hydroelectric project in river **Jhelum, Jammu & Kashmir**.
 - **Ratle** hydroelectric project in river **Chenab, Jammu & Kashmir**
- **Authority to solve-** India wants to solve the contention with neutral expert but Pakistan approached the Permanent Court of Arbitration. It views that the PCA is incompetent to consider the views of Pakistan.
- However, the court determined that it is competent to consider and determine the disputes set forth in Pakistan's request for arbitration.
- In 2023, the court unanimously passed a decision which is binding on both parties without appeal rejecting each of India's objections.

Why there is a need to revisit IWT?

- **Future water availability-** World Water Council highlights the need to incorporate mechanisms that allow flexibility to changes in the quantity of water available for allocation among the parties.
- **Adopting the principles of water course-**
 1. Equitable and Reasonable Utilisation (ERU)
 2. No Harm Rule (NHR)
- **ERU** - It represents a compromise between two extreme and uncompromising positions regarding the right conferred upon States, by virtue of their territorial sovereignty, to use shared transboundary water resources found within or passing through their territory.
- **No Harm Rule-** It is a due diligence obligation which requires a riparian state undertaking a project on a shared watercourse having potential transboundary effect to take all appropriate measures.
- ERU and NHR are binding on both countries as they are customary international law rule generating the binding obligation to both parties.

Permanent Court Arbitration

- It is an intergovernmental organization established to facilitate arbitration and other forms of dispute resolution between member states, international organizations, or private parties arising out of international agreements.
- The cases involving territorial and maritime boundaries, sovereignty, human rights, international investment, and international trade.
- PCA has **no sitting judges**; instead, parties themselves select the arbitrators.
- PCA has 122 Contracting Parties including India, Pakistan, China, Russia, and the US.
- The organization is **not a United Nations agency** but has observer status in the UN General Assembly.
- The rulings of PCA are **binding** but the tribunal has **no powers for enforcement**.

PCA	
Founded in	1899
Headquarters	The Hague, Netherlands
India's membership	India is a party

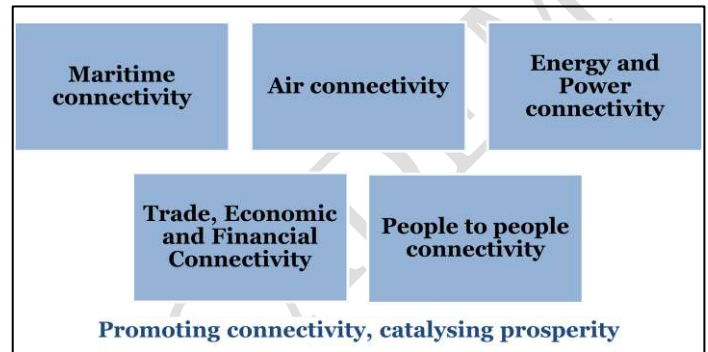
8.2 India-Sri Lanka Ties: Promoting Connectivity, Catalysing Prosperity

Why in news?

Amidst the Chinese influence and Sri Lankan financial crisis, Sri Lankan President Ranil Wickremesinghe visited India recently.

What are the outcomes of the visit?

- **Joint Statement** - During the visit, Indian and the Sri Lankan PM jointly released the statement titled “*Promoting Connectivity, Catalysing Prosperity: India-Sri Lanka Economic Partnership Vision.*”
- The document lays out the vision in 5 areas - maritime, air, energy, trade and people-to-people initiatives.
- **Maritime connectivity** - To cooperate in development of ports and logistics infrastructure at Colombo, Trincomalee and Kankesanthurai.
- **Passenger ferry services** - The ferry services will be resumed between Nagapattinam in India and Kankesanthurai in Sri Lanka and work towards early resumption of Rameshwaram-Talaimannar link.
- **Air connectivity** - To resume flights between Jaffna and Chennai that would enhance people-to-people ties.
- **Investment** - To encourage and strengthen the cooperation in civil aviation including augmentation of airport infrastructure at Palaly.
- **Energy and power security**- A MoU signed to develop Sri Lanka’s significant renewable energy potential, including offshore wind and solar energy.
- Explore cooperation in green hydrogen and green ammonia.
- To cooperate for construction of a multi-product petroleum pipeline from Southern part of India to Sri Lanka.
- To undertake mutually agreed joint exploration and production of hydrocarbons in Sri Lanka’s offshore basins.
- **Trade, Economic and Financial connectivity** - To undertake discussions on Economic and Technology Cooperation Agreement with an aim to comprehensively enhance bilateral trade.
- A MoU was signed to operationalise UPI digital payments in Sri Lanka and to designate the Indian Rupee as currency for trade.
- To leverage India’s *Digital Public Infrastructure* in accordance with Sri Lanka’s requirements and priorities towards effective and efficient delivery of citizen-centric services.
- **People to people connectivity** - To explore ways of enhancing tourism and cultural and religious travel, and educational collaboration.
- To promote awareness and popularize India’s Buddhist circuit, and Ramayana trail as well as ancient places of Buddhist, Hindu and other religious worship in Sri Lanka for enhancing tourism.
- To explore cooperation between educational institutions on both sides through establishment of new higher education and skilling campuses in Sri Lanka.
- To expand cooperation between research and academic institutes in areas of mutual interests such as agriculture, IT etc.,
- To establish land connectivity for developing land access to the ports of Trincomalee and Colombo, and to consolidate millennia old relationship between the two countries.



What are the few misses of the visit?

- **Sri Lankan Tamil Issue** - None of the provisions in the document acknowledged the previous commitments by Sri Lanka on honouring the 13th Amendment for devolution of powers to the North and Eastern provinces.

- **Indian Tamil Fisherman Issue** - There is no plan either to resolve the long-pending issues over arrest of Indian fishers.

What lies ahead for both countries?

- **Neighbourhood First policy** - India will be uplifted as South Asia's regional attractiveness, so that it will help to keep Sri Lanka away from China.
- **Consolidate aid programme** - India need to consolidate its fragmented aid programme with the potential single development bank like Japan Bank for International Cooperation.
- **Foster supply chains** - As India becomes a destination for manufacturing and services, it can foster supply chains in South Asia.
- **Digitalisation** - India's UPI is being rapidly adopted worldwide but it has not been exposed to its own South Asian neighbourhood. Sri Lanka should take steps to make use of India's digital public infrastructure.
- **Engagement with the Central bank** - Frequent meetings and an early warning system for economic crises are key to regional stability.
 - Example- ASEAN's approach in the Asian Financial Crisis of 1997.
- **Security** - China's cumulative investments and military presence in Hambantota Port is a strategic threat to both countries, they should work with Indian Ocean countries to keep the threat of China at bay.

8.3 25 years of India-France Strategic Partnership

Why in news?

The joint statement 25th Anniversary of the Strategic Partnership between France and India: towards a Century of Indo-French Relations, sets the course for the France-India bilateral relationship in all areas till 2047.

What is the history of the Indo-France bilateral relations?

- [India and France](#) are long-standing strategic partners in the Indo-Pacific.
- The two countries established their diplomatic relations in 1947 and upgraded it to the strategic level in 1998.
- **Trade** - France has emerged as a key trading partner with annual trade of \$12.42 billion and the 11th largest foreign investor in India.
- **Defence** - France has been a key supplier of defence hardware, especially combat jets, to India since the 1950s.
- Scorpene class submarines and Rafael fighter jets are classic examples of France's defence supplies to India.
- The two countries regularly hold joint exercises in all 3 forces - Varuna (navy); Garuda (air force); Shakti (army).
- **International efforts** - As part of their joint efforts on climate change, India and France launched '**International Solar Alliance**' in 2015.
- **Nuclear energy** - France has offered to build 6 nuclear power reactors in Jaitapur in Maharashtra which would be the world's most powerful nuclear power plant.
- **Technology** - The Indo-French Road map on Cyber security and Digital Technology was adopted in 2019.
- **Blue Economy** - A roadmap on Blue Economy and Ocean Governance was adopted by France and India in 2022.
- **Green hydrogen** - Indo-French roadmap for decarbonised hydrogen was adopted in 2022.

PM Narendra Modi described the bilateral relations between India and France as 'strong, trusted and consistent'.

What are the highlights of the 'Horizon 2047'?

- **The year 2047** will mark 100 years of India's Independence, 100 years of diplomatic relations between the two countries, and 50 years of the Indo-French strategic partnership.
- **3 pillar** - The roadmap for bilateral relations has three pillars focusing on 'security, planet and people' guiding the bilateral ties for the next 25 years.
- It establishes a strong mechanism to strengthen cooperation in the areas of defence, space, civil nuclear, digital technology, counter-terrorism and the blue economy.

What are the security partnerships between the two countries?

- **Civil nuclear energy** - The two countries established a partnership on Small Modular Reactors (SMR) and Advanced Modular Reactors (AMR)
- **Defence** - Both countries are also working towards adopting a Roadmap on Defence Industrial Cooperation.
- For this India is setting up a Technical Office of the DRDO at its Embassy in Paris.
- **Space** - Scientific and commercial partnership is being enhanced between France's CNES and India's ISRO.
- NSIL (India) and Arianespace (France) also plan to collaborate in commercial launch services.
- India and France will strengthen their synergies in terms of sovereign access to space, finalize the joint Earth observation satellite, *TRISHNA and the Space Climate Observatory (SCO)*.
- **Counter-terrorism** - Strengthening of cooperation between France's GIGN and India's National Security Guard.
- **Civil aviation** - Signing of technical and safety agreements in the field of civil aviation, for the expansion of routes between France and India
- **Critical technology** - Strengthening of cooperation on cutting-edge digital technologies such as AI, supercomputing and quantum computing.
- **Indo-Pacific** - Adoption of a roadmap for joint actions in the Indo-Pacific, covering all aspects of our comprehensive strategy for the region.

What are the partnerships for the planet?

- **Plastic pollution** - Commitment to eliminate single-use plastic pollution through a new international instrument to end the problem.
- **Blue economy** - A partnership between French Research Institute for Exploitation of the Sea (IFREMER) and India's National Institute of Ocean Technology (NIOT) on ocean research.
- **Health** - Both the countries agreed to intensify their cooperation in the field of health and medicine and signed a Letter of Intent for Cooperation for the same.

Indo-Pacific Parks Partnership, International Solar Alliance and the Indo-Pacific Oceans Initiative (IPOI), etc. protect marine and terrestrial biodiversity

What are the Partnerships for the people?

- **Consular network** - A new Indian Consulate to be opened in Marseille and a Bureau de France in Hyderabad.
- **Education** - Signing of 2 MoUs between the Institut Polytechnique de Paris (IPP), and IIT Delhi and IIT Madras.
- Issuance of a 5-year short-stay Schengen visa for Indian students with a Master's degree from a French university.
- **Culture** - Announcement of France's selection as India's partner for the establishment of a major new National Museum in New Delhi.
- **Research** - France and India will increase funding of the Indo-French Centre for the Promotion of Advanced Research (IFCPAR/CEFIPRA) for new projects.

French Development Agency is financing the 2nd phase of "CITIIS 2.0" programme.

8.4 A New Chapter in India-Africa Ties

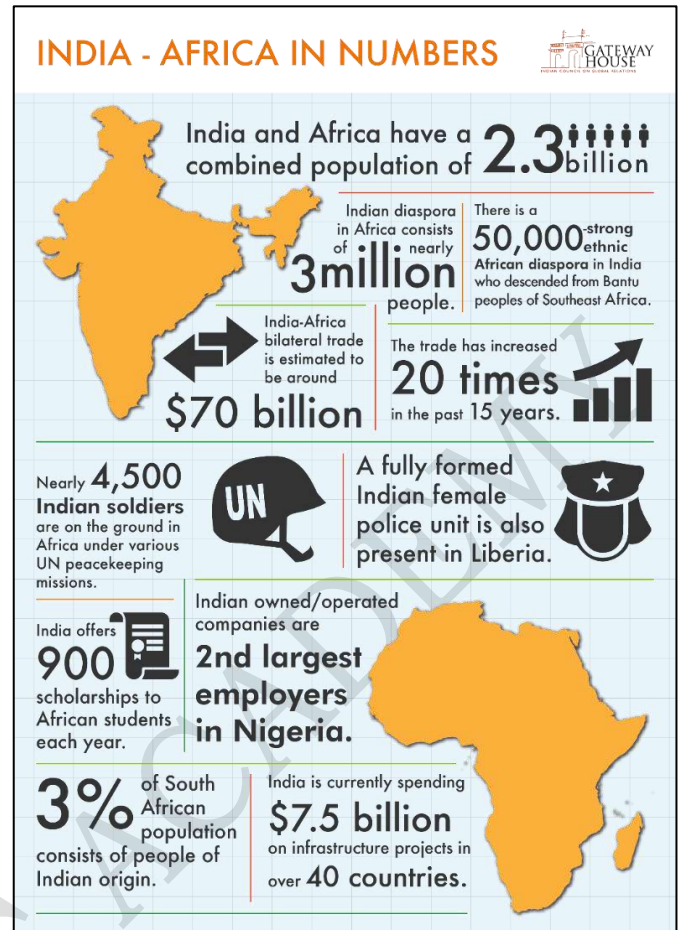
Why in news?

Africa Expert Group has released a report titled 'India-Africa Partnership: Achievements, Challenges and Roadmap 2023' which enlisted recommendations to deepen and diversify India-Africa ties.

What is the history of India-Africa relationship?

- **Political Relations** – This was started when M.K.Gandhi started his political career during colonization in South Africa.
- Diplomatic relations between India and Africa were established during *the period of colonialism*.
- During the wake of cold war many African Countries joined *Non-Alignment Movement* pioneered by India, Indonesia, Egypt, Ghana and Yugoslavia.

- **India-Africa Forum Summit** is the official platform for the African Indian relations which is held once in every 3 years since 2008.
- **Economic Relations** – India-Africa trade touched \$98 billion in FY22–23 which is a positive economic development.
- **Defence** - *India-Africa Defence Dialogue* was held in the sidelines of DefExpo 2022 in Gandhinagar, Gujarat.
- **Gandhinagar Declaration** was adopted to enhance cooperation in the fields of training & military exercises
- **Cultural relations-Project 'Mausam'** is an initiative of Ministry of Culture which aims to explore the multi-faceted Indian Ocean 'world' and promote research on themes related to the study of maritime routes.
- About 39 Indian Ocean countries selected for this project which contains African countries like Egypt, Kenya, Sudan, Somalia etc.,
- **Education and Health** -Africa is one of the beneficiaries of India's flagship capacity building programme – *Indian Technical and Economic Cooperation (ITEC)*.
- As per National Education Policy 2020 guidelines, *First IIT Campus to be set outside India is at Zanzibar, Tanzania.*



- India supplied 'Made in India' COVID vaccines to 42 African countries under “*One Earth One Health Mission*”.
- **Technology- Pan-African e-network** is a joint effort of India and African Union with an aim to provide satellite connectivity, tele-education, and tele-medicine services to the African countries.

What are the key findings of the report?

- **Dynamic Africa**- Africa is undergoing significant changes in its demographics, economy, politics, and society.
- It is gradually moving towards regional integration and is committed to promoting democracy, peace, and progress.
- Incidents like insurgency, ethnic violence, and terrorism is still a challenging issue in Ethiopia, Sudan, and the Central African Republic.
- **Participation of external partners**- China, Russia, the United States, the European Union, Japan, Turkey, and the UAE are actively competing to strengthen their relations with Africa.
- They aim to secure market access, energy and mineral resources, and enhance their political and economic influence in the region.
- **China's role**- It is *Africa's largest economic partner* since 2000. The report identified China as an infrastructure developer, resource provider, and financier in Africa.
- **India's role** - The report notes that India has a substantive partnership with Africa and a rich fund of goodwill, but it is essential for New Delhi to review its Africa policy periodically.

India is a member of The African Development Bank, which brings together 54 African countries and 28 non-African partners. India has a voting share of 0.265%, 6.7 times lower than the 1.8% held by China.

What are the recommendations?

- **Political and diplomatic cooperation**- Strengthen the cooperation by restoring periodic leaders' summits through India-Africa Forum Summit.

***Roadmap 2030** is a set of nearly 60 policy recommendations to deepen and diversify the India-Africa partnership covering 4 areas.*

- Enhance the cooperation between India and African Union by launching a new annual strategic dialogue in 2023.
- India should forge AU's entry in G20 as a full member.
- **Defence and security cooperation** - Enhance cooperation in counter-terrorism, cyber security and emerging technologies.
- Expand dialogue on defence issues and widen the footprint of maritime collaboration.
- Expand the lines of credit to facilitate defence expenses.
- **Economic and development-** Promote access to finance through the creation of an *Africa Growth Fund (AGF)*.
- A special package of measures to improve exports and build cooperation in the shipping domain.
- A special focus on promoting trilateral cooperation and deepening science and technology cooperation could pay rich dividends.
- **Socio- Cultural Cooperation-** Greater interaction between universities, think tanks, civil society and media organisations in India and selected African countries.
- *Set up a National Centre for African Studies* to promote engagement in education.
- Liberalise visa measures for African students who come to India for higher education.

India- Africa Forum Summit (IAFS)

- Aim - To strengthen India's cooperation with Africa in the Global South.
- So far, 3 summits have taken place- 2008, 2011, 2015.
- The IAFS has a three-tier platform of the African Union, the eight regional economic communities of Africa and important bilateral participants.
- First and third summit was held in India while the second summit was held in Addis Ababa, Egypt.
- The first two summits were held under the *Banjul formula* with the participation of 15 African countries and the AU Commission.
- At 3rd Summit, a massive event for all 54 African countries was held.

African Union

- It is a continental body consisting of the **55 member states** that make up the countries of the African Continent.
- It was officially launched in 2002 as a successor to the *Organisation of African Unity*.
- *Agenda 2063* calls for greater collaboration for African led initiatives for the achievement of the aspirations of African people.

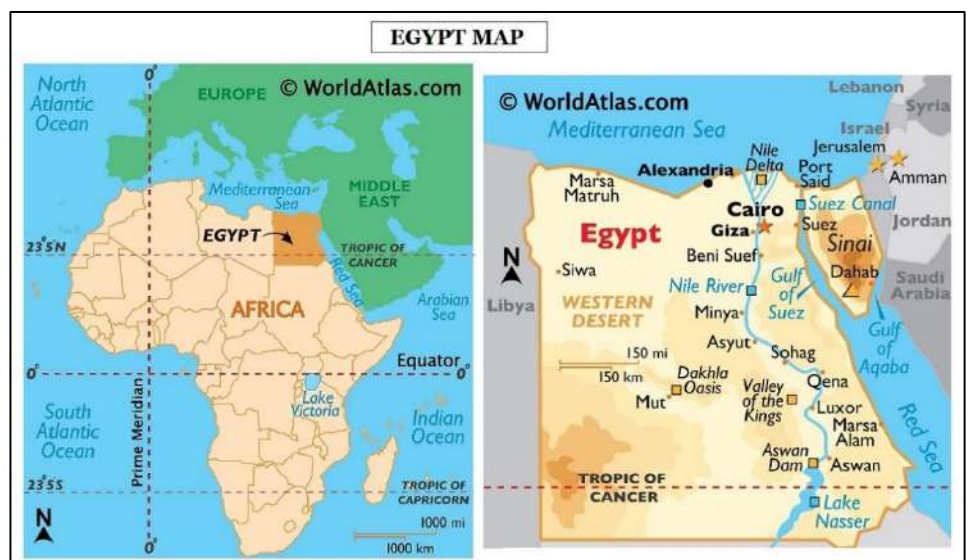
8.5 India-Egypt relations: PM's Egypt Visit

Why in news?

Prime Minister Narendra Modi's historic two day state visit to Egypt renewed India ties with Egypt.

What is the history of India-Egypt relations?

- **Historical** - The history of contacts between *India and Egypt*, two of the world's oldest civilisations, can be traced back to at least the time of Emperor Asoka.
- **Geostrategic** - Egypt, the most populous country in West Asia, occupies a crucial geo-strategic location – **12%** of global trade passes through the **Suez Canal**.
- It is a major market for India and can act as a gateway to both Europe and Africa.
- **Political** - The joint announcement of the establishment of diplomatic relations at the Ambassadorial level was made in 1947.
- India's Prime Minister Jawaharlal Nehru and Egypt's President Gamal Abdel Nasser signed the **friendship treaty in 1955** and they were key to form the **NAM in 1961**.



- New Delhi views Egypt as a moderate Islamic voice, which has made an attempt to play a positive role in the 57-member **Organisation of Islamic Cooperation (OIC)**.
- **Economic** - The India-Egypt bilateral trade agreement has been in operation since 1978 and is based on the **most-favoured nation** clause.
- The bilateral trade has increased more than five times in the past 10 years.
- Agriculture will be a key area of cooperation as Egypt is facing food grains shortage due to Ukraine Russia war.

How significant is the Egypt visit?

- Prime Minister's visit to Egypt marks a significant moment in bilateral relations.
- It is the first visit to Egypt by an Indian Prime Minister since 1997.
- The state visit elevated the Egypt-India relationship to a strategic partnership.
- Egypt's rising stature in Africa and the strategic importance of the Suez Canal further enhance its role in global geopolitics and trade.
- Thus it is a significant move for India's ties with the West Asia-North Africa (WANA) region.

What happened during the visit?

- Prime Minister was conferred with the 'Order of the Nile', Egypt's highest honour, by President Abdel Fattah El-Sisi at Cairo.
- Four agreements were signed between India and Egypt during the visit.
- The strategic partnership between India and Egypt for clean energy.
- Three Memoranda of Understanding (MoU) were also signed in the fields of agriculture, archaeology and antiquities, and competition law.
- Lately, 'India Unit' was newly formed in the Egyptian Cabinet to act as a tool in steering bilateral collaborations.
- He visited the Al-Hakim Mosque and met with Egypt's Grand Mufti.

President of Egypt, H.E. Mr. Abdel Fattah El-Sisi visited India as Chief Guest for Republic Day 2023

How has the relationship transformed over the years?

- Both India and Egypt are calling for a diplomatic resolution.
- India supplied wheat to Egypt that was hit by the blockade on exports from Russia and Ukraine last year, before the Black Sea Grain Initiative stepped in.
- The Egypt-India partnership holds tremendous regional and global significance.
 - **Regional** - It strengthens India's foothold in Africa.
 - **Global** - India can build on Egypt's expanding presence in Africa and elevate its own position on the global stage.
- **Defence** - Egypt's pursuit of a self-reliant defence industry aligns with India's defence capabilities.
- Egypt's interest in acquiring the Tejas LCA Mk-1A aircraft from India opens avenues for collaboration in the aviation sector.
- Egypt could serve as a pivotal gateway for India to expand its defence capabilities and access significant markets with its network of defence alliances with African nations.
- **Economic** - Egypt is positioned as the 2nd largest economy in Africa after Nigeria. The Suez Canal holds paramount significance for India's trade, connectivity, and maritime security prospects.
- Strategic ties with Egypt will open India's access to Africa markets under the umbrella of the African Continental Free Trade Area.
- **Connectivity** - Establishing Indian industrial zones in the strategic Suez Canal region would facilitate seamless connectivity.
- The Industrial Zone will enable India to bring its manufacturing capabilities to Africa's expanding markets.
- **Clean Energy** - The green and renewable collaboration will be an important part of India's future partnership with Egypt.

Pillars of Ties

- Politics, defence and security
- Economic engagement
- Academic and scientific exchanges
- Cultural and people-to-people contacts

Egypt is a "guest country" at the upcoming G-20 summit to be held in September 2023.

8.6 India-Philippines Relationship

Why in news?

Recently, 5th India-Philippines Joint Commission on Bilateral Cooperation (JCBC) was held in New Delhi.

What is the history of India-Philippines relation?

- **Political Relations** – Diplomatic relations between India and Philippines were established in 1949.
- **Economic Relations** – Bilateral trade has increased from 1.89 billion USD in 2015-16 to 2.84 billion USD in 2021-22.
- **Defence** - RIMPAC is a multilateral military exercise between India, Philippines and other countries.
- India and Philippines also participate in ASEAN-India Maritime Exercise.
- Defence ties were significantly enhanced with the signing in 2022 of a contract to supply the BrahMos missile system.
- **Cultural Exchange** - The Cultural Exchange Programme (CEP) between the two countries was renewed for the period 2019-2023.
- **Education and Health** -Philippines is one of the beneficiaries of India's flagship capacity building programme – Indian Technical and Economic Cooperation (ITEC).
- International Rice Research Institute (IRRI) is located in Manila, Philippines.
- India continues to be the largest supplier of pharma products to Philippines.
- Philippines was the first ASEAN Member State to grant Emergency Use Authorization (EUA) for Bharat Biotech's Covaxin.
- **Diaspora** - The Indian community (bulk of Punjabis and Sindhis) in the Philippines is estimated to be around 1,50,000.



What are the recent developments?

- **High level visits** - 4th Joint defence cooperation meeting and 5th joint commission on bilateral cooperation was held in New Delhi.
- **Fintech sector** - An MoU has been signed for partnership in innovative technologies, fintech industry, digital governance, payment linkages and other related areas.
- **Space** - As Philippines works to become a spacefaring country by 2030, more vigorous capacity-building between the Philippine Space Agency and the ISRO are on the horizon.
- **Energy Sector** - The sheer volume of investments and pledges coming into wind power in the first half of 2023 tell of its ascending presence in the energy sector.

What are the concerns?

- **Regional security architecture** - Fluctuation of power between China and USA.
- **China assertive role** - China's aggressive influence over South China Sea.

What lies ahead?

- There is a need to harness the power of the Indo-Pacific as a catalyst for growth, more intensified regional cooperation is essential.
- Stronger economic integration, improved connectivity, and increased innovation are key to support the region as a global economic powerhouse.
- As champions of the rule of law and inclusive multilateralism, the Philippines and India play important roles which would lead to partnership for 21st century.

9. INTERNATIONAL ISSUES

9.1 India in Mineral Security Partnership

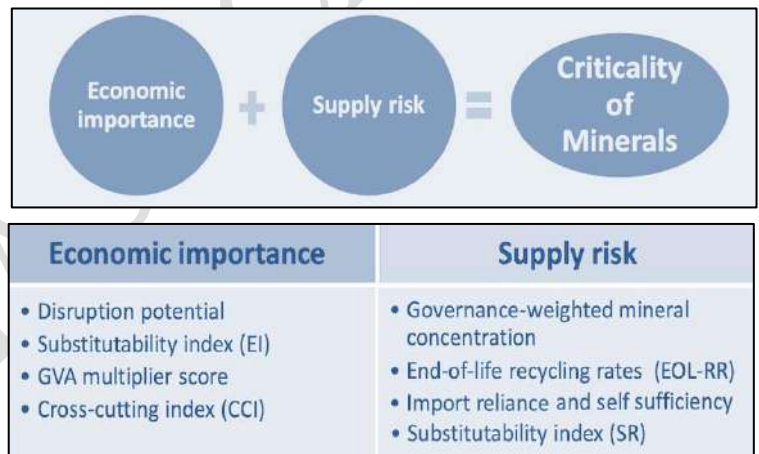
Why in news?

India joined the elite critical minerals club, Mineral Security Partnership to secure critical mineral supply chains.

Critical minerals	}	<ul style="list-style-type: none"> • A metallic or non-metallic element that is essential for the functioning of our modern technologies, economies or national security and there is a risk that its supply chains could be disrupted
Rare earth minerals	}	<ul style="list-style-type: none"> • Rare earth minerals comprises 17 elements which are classified as light RE elements (LREE) and heavy RE elements (HREE).

What is Minerals Security Partnership (MSP)?

- [Minerals Security Partnership](#) (MSP) is a US-led alliance of 14 developed countries launched in June 2022.
- The elite critical minerals club is also known as the 'Critical Minerals Alliance'.
- It was set up to ensure that critical minerals are produced, processed and recycled in a way that it secures critical mineral supply chains.
- It also aims to weaken China's grip on supplies of critical minerals worldwide.
- **Members** - The US, Australia, Canada, Finland, France, Germany, Japan, the Republic of Korea, Sweden, UK, the European Commission, Italy and India.
- India is the only developing country to become a part of the MSP.



What does MSP mean to India?

- India is the first major developing country to join the group, giving it a greater **international balance**.
- **Knowledge sharing** - MSP membership will help India engage with countries using advanced exploration and extraction technologies and learning from their experience.
- It will encourage India to make better use of its great geological potential.
- **Strengthening India** - MSP and the critical mineral list could ensure India in ensuring **self-reliance** and addressing **vulnerability** in the supply chain of minerals.
- Getting into alliances like MSP, along with policy initiatives like critical minerals list is so crucial for India's **energy security**.
- Help in India's ambitious shift towards **e-vehicles** and its associated **battery** requirements.
- India's late attempts to enter the **lithium value chain** as India found large **reserves of Lithium**.
- **China's dominance** - China produces 60% of the world's rare earth elements.
- It has also become a dominant player in refining and processing critical minerals that it does not produce.
- It should enhance efforts for supply chain security, at the time of China's dominance over mining, processing, and refining of many key critical minerals.

Australia - Produces almost half of the world's lithium, 2nd largest producer of cobalt & 4th largest producer of rare earths elements.

What should India do further?

- **Critical Mineral List** - Individual countries identified critical minerals according to their national priorities and future requirements.
- India came up with such a list of 30 critical minerals that it considers essential for its economic development and national security.
- The list is based on the ‘Report of the Committee on Identification of Critical Minerals’ constituted by the Ministry of Mines.
- **Specialised agency** - The committee also called for a need for establishing a National Institute or Centre of Excellence on critical minerals.
- **Partnerships** - India needs to go beyond MSP and build critical mineral partnerships with key countries such as Japan, the US and Australia.
- India already entered into a partnership with Australia, jointly investing in 5 critical minerals exploration projects in Australia.
- **Utilise geological potential** - India needs to double down on prospecting and exploration efforts to find critical minerals in India.
- *Only about 10-20% of India’s critical minerals has been explored.*
- **Private players** - India should encourage private sector participation in exploration of minerals.

Status of Critical Minerals in India

- India is endowed with and produces over 85 minerals.
- Some of the required critical mineral assets are not yet ready to be mined.
- India is dependent on China and others to meet its requirement of critical minerals including Rare Earth Elements (REE).
- Click [here](#) to know about Status of Critical Minerals in India

1. Antimony	15. Nickel	iv. Neodymium	20. Rhenium
2. Beryllium	16. PGE	v. Promethium	21. Selenium
3. Bismuth	i. Platinum	vi. Samarium	22. Silicon
4. Cadmium	ii. Palladium	vii. Europium	23. Strontium
5. Cobalt	iii. Rhodium	viii. Gadolinium	24. Tantalum
6. Copper	iv. Ruthenium	ix. Terbium	25. Tellurium
7. Gallium	v. Iridium	x. Dysprosium	26. Tin
8. Germanium	vi. Osmium	xi. Holmium	27. Titanium
9. Graphite	17. Phosphorous	xii. Erbium	28. Tungsten
10. Hafnium	18. Potash	xiii. Thulium	29. Vanadium
11. Indium	19. REE	xiv. Ytterbium	30. Zirconium
12. Lithium	i. Lanthanum	xv. Lutetium	
13. Molybdenum	ii. Cerium	xvi. Scandium	
14. Niobium	iii. Praseodymium	xvii. Yttrium	

9.2 Key Takeaways from SCO Summit

Why in news?

India hosts 23rd SCO summit in New Delhi for the year 2023.

What is Shanghai Cooperation Organization (SCO)?

Shanghai Cooperation Organisation (SCO)

Basic documents

- **2001**
Shanghai Convention on the Struggle against Terrorism, Separatism and Extremism
- **2002**
SCO Charter
- **2002**
Regional Anti-Terrorist Structure (RATS) Founding Agreement

Goals and Objectives

- Strengthening of mutual trust and good-neighborly policies between member states
- Promotion of effective cooperation in politics, trade, economics, science, technology, and culture, as well as education, energy, transport, tourism and environmental protection
- Jointly ensuring peace, security and stability in the region
- Advancement to a new democratic, fair and rational global political and economic order

SCO Structure

- Council of Heads of State
 - Council of Heads of Government
 - Council of Foreign Ministers
 - Meetings of Heads of Ministries and Departments
 - Council of National Coordinators
 - Regional Anti-Terrorist Structure
- Russian Foreign Ministry
Ambassador-at-Large Vitaly Vorobyov is the Presidential Envoy for SCO Affairs

- It is a Eurasian political, economic, international security and defence organization established in 2001.
- It is basically an extension of the **Shanghai Five Group (China, Kazakhstan, Kyrgyzstan, Russia and Tajikistan)** that was created in 1996.

- At a historic summit in Astana, Kazakhstan (2017) India and Pakistan become full-fledged members of SCO.
- India's decision to become a full member of the SCO is in line with its current policy of multi-alignment and maintaining its strategic autonomy.
- **Headquarters- Beijing(China)**
- Since its inception, the SCO has mainly focused on
 - Regional security issues
 - Regional terrorism
 - Ethnic separatism
 - Religious extremism
 - Regional development



- **Member Countries-** 9 members- Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, Uzbekistan, India, Pakistan, and Iran (latest member).
- **Significance-** The SCO is the world's largest regional organisation consisting of 40% of the world's population and 30% of global gross domestic product (GDP).
- The SCO has been an observer in the UN General Assembly since 2005.

What is the 23rd SCO Summit about?

- The 23rd SCO meeting of the council of heads of the member states was held virtually.
- This is the first time India holds the presidency of the SCO summit.
- **Theme - SECURE-** Security, Economic development, Connectivity, Unity, Respect for sovereignty and territorial integrity, and Environmental protection.
- India has created 5 new pillars and focus areas of cooperation in SCO –
 1. Startups and Innovation
 2. Traditional Medicine
 3. Digital Inclusion
 4. Youth Empowerment
 5. Shared Buddhist Heritage
- 24th SCO chair is Kazakhstan and the summit is to take place in Astana.

What are the key takeaways from the 23rd SCO Summit?

- **New Entrant- Iran now become the full member of SCO** which would help in achieving collective security and sustainable development.
- **New Delhi Declaration-** It deals extensively with challenge of terrorism, extremism and separatism and calls for country cooperation.
- It reaffirms its commitment to disrupt the terror financing channels, to suppress recruitment activities and cross-border movement of terrorists.
- **India's new Initiatives-** To foster the engagement with member countries India launched new initiatives like
 - SCO Millet Food Festival,
 - Film Festival,
 - SCO Surajkund Craft Mela,
 - International Conference on Shared Buddhist Heritage etc.,

- **De-Dollarization**- Countries spoke about the reducing the dominance of dollar in global markets.
- **China’s Belt and Road Initiative (BRI)** - India refused to accept BRI as it is essential to “respect the sovereignty and territorial integrity” of member countries of the SCO.
- **Issue of Afghanistan**- India urged SCO members to come together to extend humanitarian assistance to Afghan citizens.
- **Inclusion of English** - India wants the inclusion of English as an official language besides Russian and Chinese to help disseminate SCO’s views to a wider audience.
- **Joint statements**- Joint statements were released on
 - Cooperation in countering the radicalisation leading to separatism, extremism and terrorism
 - Cooperation in the field of digital transformation

What is the significance of India’s Chairmanship in the SCO?

- **Vasudhaiva Kutumbakam** - India reiterated its motto *“The Whole World is a Family”*, its ultimate goal is global peace and security.
- **New Delhi declaration**- It pays special attention to religious intolerance, aggressive nationalism, ethnic and racial discrimination etc., This would keep check on terrorism activities by Pakistan.
- **Soft power**- Varanasi is designated as the first tourism and cultural capital of the SCO.
- **Strategic autonomy**- India refused to accept china’s BRI and SCO Economic Development Strategy.
- **Geopolitical advantage**- With Iran as a full member SCO India can deepen its relation and Russia would moderate the stance with China, this would promote regional peace and security.

9.3 Need for India’s Entry to NATO-Plus

Why in news?

During Prime Minister Narendra Modi’s visit to US in June 2023, there have been talks to include India in the fold of NATO.

What is NATO and NATO plus?



North Atlantic Treaty Organization (NATO)	NATO Plus
<ul style="list-style-type: none"> • NATO is a <i>transatlantic military alliance</i> of 31 countries with the majority of members from Europe. • It was set up in 1949 as a collective security against Soviet Union, <i>headquartered in Brussels, Belgium.</i> 	<ul style="list-style-type: none"> • NATO plus refers to a security arrangement of NATO and the five treaty allies of the U.S. — Australia, New Zealand, Japan, Israel, and South Korea as members. • It has a goal to enhance “global defence cooperation” and win the “strategic competition against China.”

<ul style="list-style-type: none"> In April 2023, Finland become its 31st member. To know more about India's relation with NATO click here. 	<ul style="list-style-type: none"> The term NATO Plus is <i>not an officially recognised or established</i> concept within NATO. It has been used in discussions and debates regarding the potential expansion of the alliance.
---	---

What is India's position in inclusion to NATO and NATO Plus?

- In March 2023, US Permanent Representative to NATO quoted that the NATO alliance was open to more engagement and should India seek that.
- In May 2023, US recommended strengthening the 'NATO-Plus' framework by including India in the grouping.
- India's External Affairs Minister S. Jaishankar rejected this idea by saying that "NATO template does not apply to India".
- India believes that it is capable of countering any Chinese aggression on its own.

What are the pros and cons for India if it joins NATO Plus?

Pros of Joining	Cons of Joining
<ul style="list-style-type: none"> Containing China-The target of NATO is to contain Russia, now the focus of NATO Plus is clearly defined to contain China. Recent incidents like Doklam issue, Ladakh standoff is the expression of border disputes between India and China. Regional security- The enhanced defence capabilities will address the potential threats of India. Robust security architecture- India can access many advanced military technologies, inter-operability, intelligence-sharing platforms. 	<ul style="list-style-type: none"> Relationship with Russia - It will crumble India's strategic partnership with Russia. Chinese threats - Hopping into the Taiwan strategy of the U.S. under NATO Plus has the possibility of Chinese justification for further military build-up along the India-China border. India's autonomy- India's independent policy against China will be changed to align with the objectives and strategies of alliance. It would limit India's flexibility in engaging with neighbours and regional organisations. Other challenges-NATO's larger geopolitical agenda starting from Eurasia to the Indo-Pacific may divert resources and attention away from these pressing issues and will not be of much help to India.

What should be India's priorities?

- India's role** - India as a responsible development partner, a First Responder, and a voice of the Global South reflects a quest towards becoming a leading power.
- Its status as the fastest-growing fifth largest economy with high demographic dividend, and the world's second-largest military, it has vital role to play as a regional and global soft power
- Focusing on regional dynamics**- India has its own unique security challenges such as border disputes, terrorism and regional conflicts.
- One of the best possible options for India is to manage external turbulences, leverage rival power centres and derive benefits for itself and create more policy space to facilitate its own rise.
- India's membership in Quad**- Quad, which is named as "Asian NATO" by China, looks more promising than NATO Plus.

QUAD is Quadrilateral security dialogue with India, Japan, Australia and US as its members.

Takeaways from the NATO Summit - Vilnius

<ul style="list-style-type: none"> New members - Finland and Sweden applied for NATO membership soon after the Russian invasion of Ukraine. Finland became the 31st member of NATO in April 2023. NATO signed the accession protocol for Sweden to join the alliance in 2022 but their bid is being held up by Turkey and Hungary. Significance of new entrants - The new entry shows 2 things.
--

- The Alliance continues to practise *Article 10* of the *Washington Treaty* signed in April 1949 which states that member countries can invite other European countries to become members of NATO.
- Ukraine's potential membership conceptually continues to deter Russia from taking steps against members of NATO.
- **Sweden-Turkey** - Turkey's scaling back of its long-standing opposition to Sweden's inclusion in NATO.
- This shows Turkey's desire to mend relations with the US and improve the bipartisan relations.
- **U.S.'s stance** - U.S. President Joe Biden's speech at the summit extended unwavering support to the alliance as well as Ukraine.
- It is evident that Mr. Biden's approach to NATO is different from that of Trump's who considered withdrawing from NATO.
- This resurrects trans-Atlantic solidarity.
- **China** - The Vilnius summit did not talk directly on the challenges and threats emerging from China's stated ambitions and coercive policies.
- However, it stated that NATO faces threats from China's malicious hybrid cyber operations that pose a threat to the security of the Alliance.
- **Indo-Pacific** - The NATO summit emphasised that the developments in the Indo-Pacific have become increasingly consequential for Euro-Atlantic security.
- The expanding space for Quad countries in Indo-Pacific, along with other regional countries like New Zealand and South Korea also influences Euro-Atlantic security.

G.S PAPER III

10. ECONOMY

10.1 India- The Fastest Growing Economy

Why in news?

PM Modi while inaugurating International Exhibition-cum-Convention Centre in New Delhi has assured that during 3rd tenure of his government, India will be among the top three economies of the world.

Status of Indian Economy

- **Size** - India is the **5th largest economy** in the world with the GDP of around 3737 billion US Dollars.
- India was the 10th largest economy in 2014 it doubled its growth in 7 years.
- The International Monetary Fund (IMF) data shows that India is indeed forecast to become the **3rd largest economy by 2027**.
- It is expected to overtake Germany and Japan in future which is currently the 4th and 3rd largest economies respectively.
- **Per Capita GDP**- India's per capita GDP is only 2600 dollars per annum.
- **India's GDP growth**- All top 10 countries have seen their GDP stagnate or even contract, except China, India and the US.
- Even a more modest growth rate of 6% per annum will be enough for India to overtake Germany and Japan by 2027.
- The key reason for stagnation of global economies is due to Global Financial Crisis (GFC), it hit India too but the impact was so high in European countries.

Country	Per Capita GDP (per annum)
India	2600 dollars
UK	47000 dollars
Brazil	10000 dollars

Country	GDP Growth (2014-23)
India	83%
China	84%
USA	54%

What is the forecast for India's GDP in 2027?

- It will be around 38% more than what it is in 2023, while that of Japan and Germany will be only 15% more than their 2023 levels.
- This relatively faster growth will help India overtake these countries, & become the 3rd largest economy by 2027.
- In 2027, *India's GDP will be one-fifth of China's* (short by 20 trillion dollar) and one-sixth of the US (short by 26 trillion dollar).

What are the challenges?

- **Weak per capita GDP**- This is due to the growing population. India is the *largest populous country* in the world.
- **Poor skills**- Indian workforce is dominated by informal sector (*around 90% of the total workforce*) due to lack of proper skillset.
- **Unemployment**- There is a lack of job creation for growing population, which leads to vicious circle of poverty.
- **Human Development Index**- India's rank in HDI is *132 out of 192 countries* in 2022.
- India needs to focus on health, education and standard of living aspects.
- **Universal health coverage**- A crucial element of becoming richer as a country is the quality of life available to citizens.
 - As per National Health Estimates the share of *out of the pocket expenditure is 47%*.

Steps Taken to Fasten the Economic Growth

- **Niti Aayog**- It released "*15-year Road Map*", "*7-Year Vision, Strategy and Action Plan*" to foster economic policy decisions through cooperative federalism.
- **Startup India**- It was launched in 2016 with aim to catalyse startup culture and build a strong and inclusive ecosystem for innovation and entrepreneurship in India.
- **Goods and Service Tax**- It is an indirect tax announced in 2017 with a motto of "One Nation One Tax" to improve growth momentum by reducing barriers to trade, business and related economic activities.
- **Ujjwal DISCOM Assurance Yojana (UDAY)**- It was launched in 2015 that aims for financial turnaround and revival packages for electricity companies in India.
- **National Infrastructure Pipeline**- It is a roadmap for 5 years (2020-25) to invest around Rs 100 lakh crores in social and economic infrastructure.
- **National Monetization Pipeline**- It was launched in 2021 with the principal aim of asset creation through monetisation.
- **Atmanirbhar Bharat Abhiyan**- It is a self-reliant India mission launched in 2020 as an economic stimulus package for revival of COVID situation.
- **PM Gati Shakti**- It is a National Master Plan for Multimodal Connectivity launched in 2021.
- Simplified and liberalized the procedures for Foreign Direct Policy.

What are the opportunities that lies ahead of India?

- **Demographic dividend**- India's should leverage the potential of population in stimulating economic growth.
- **Poverty**- As per *National Multidimensional Poverty Index 2023* released by Niti Aayog there has been steep decline in poverty levels.
- **G20 Presidency**- India holds the presidency of G20 in 2023 with the theme of "*One Earth One Family One Future*".
- This will have a geopolitical significance for India with neighbour countries and will have a reach globally.

10.2 Debt Dilemma

Why in news?

The elevated levels of India's fiscal deficit and public debt have been a matter of concern for a long time in India.

Debt to GDP ratio	The debt-to-GDP ratio is the ratio of a country's public debt to its gross domestic product.
Fiscal deficit	It is the indication of the total borrowings made by the government as expenditure is more than revenue.

What are the issues associated with India’s debt?

- **Financial repression**- When the interest rate on government debt is lower than the growth of GDP, the debt may decline but the financial market gets distorted.
- **Electoral budget cycle**- With elections to a number of States scheduled in 2023 and the general election for 2024, this could push the debt ratio further.
- **Large interest payments**- It constitutes over *5% of GDP and 25% of the revenue receipts* which is more than the government expenditure on education and health care put together.
- This reduces the expenditure capability in physical infrastructure, human development and emerging priorities to make the green transition.
- **High levels of debt**-This make it difficult to calibrate counter-cyclical fiscal policy and reduces the ability of the government to respond to shocks.
- **Captive debt market**- This is due to the participation of commercial banks and insurance companies in reserve and priority lending requirements.
- The resources available for lending to the manufacturing sector gets squeezed, driving up the cost of borrowing of the sector.
- **Low sovereign ratings**- Rating agencies keep low sovereign ratings if deficit and debts are high, this will drive the cost of borrowings of the manufacturing sector.
- **Tax burden**- As today’s borrowing is taxing tomorrow’ and the burden of large deficits and debt will have to be borne by the next generation, this will increase the tax burden of the people.
 - Every individual in the country already bears a debt burden of *Rs 1,64,000*.

Picture of India’s Debt
<ul style="list-style-type: none"> • Debt ratio - As per International Monetary Fund, India's debt ratio projected to be <i>84% of its GDP in 2022</i>. • Fiscal Deficit - The fiscal deficit stands at <i>6.4% of GDP</i>, India aims to keep the same fiscal deficit in 2023. • The fiscal deficit in 2020-21 increased to 13.3% and the aggregate public debt to 89.6%. • As the economy recovered after the pandemic, the deficit and debt ratios have receded to 8.9% and 85.7%, respectively. • External debt - India’s External debt stands at 18% of GDP as per RBI for the FY 2023. • Loans remained the largest component of external debt, with a share of 32.5%, followed by currency and deposits (22.6%), trade credit and advances (19.9%) and debt securities (16.7%) <p>To know about fiscal health of the states click here</p>

What lies ahead?

- Fiscal consolidation is critical to reduce the fiscal deficit.
- After 6 years, Goods and Services Tax (GST) has stabilised and has shown high growth potential.
- Technology stability is expected to maintain high buoyancy in the medium term.
- India can privatise telecom to the private sector, so that India can invest positively in reducing fiscal deficit of the country.
- Redistribution of resources is best with direct cash transfers rather than providing subsidies.
- The states can be allowed to borrow through the enforcement of Fiscal Responsibility and Budget Management (FRBM) rules.

Commercial bank requirements	Percentage
Cash Reserve Ratio	4.5%
Statutory Liquidity Ratio	18%
Priority sector	40%

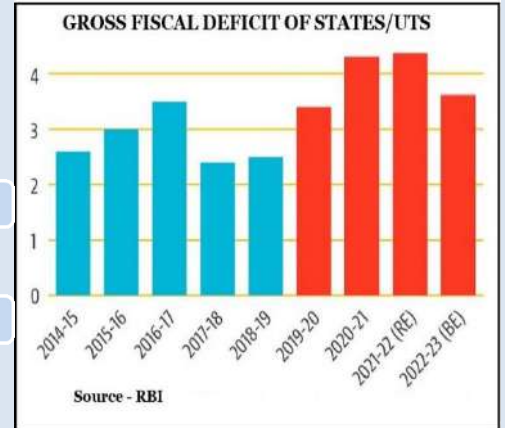
10.3 Fiscal Health of the States

Why in news?

A comprehensive revenue deficit reduction framework is essential to improve the fiscal health of the states.

Status of the fiscal health of States

- State mobilises *more than one-third of total revenue*, spend 60% of combined government expenditure.
- Around *40% in Government borrowing* is shared by the states of India.
- At the Union level, the fiscal deficit declined from 9.1% of GDP in 2020-21 to **5.9%** in 2023-24.
- All State fiscal deficit declined to **3.24% of GDP** in 2022-23 from 4.1% of GDP in 2020-21.
- For the major States, fiscal deficit is expected to be at 2.9% of GDP in 2023-24.



Fiscal deficit

- Its the condition where the the expenditure of the government exceeds its revenue in a financial year.

Revenue deficit

- It occurs when the government's total revenue expenditure exceeds its total revenue receipts.

Why is this fiscal consolidation significant?

- **Fiscal prudence of the States**- The states in aggregate managed to be fiscally prudent despite a significant contraction in revenues even during peak of COVID-19 peak.
- **Union-State fiscal Coordination**- It is needed for emergency provision during the pandemic to spend for health and livelihood.
- States were able to *reprioritise expenditure* and quickly contain the Fiscal Deficit.
- **Reduction in Fiscal Deficit** - It is due to combination of expenditure-side adjustments, improved Goods and Service Tax (GST) collection and higher tax revenues.
- **Non-GST revenues** – It is also showing signs of recovery post pandemic in many states.

What are the fiscal challenges?

- **Increase in Revenue Deficit (RD)** - The reduction in fiscal deficit has not resulted in corresponding reduction in revenue deficit.
- The all state share of Revenue Deficit in Fiscal Deficit for 2023-24 is expected to be at 27%.
- **Debt to GSDP** - Most States also have large debt to GSDP ratios.
- This creates a *fiscal imbalance* which has long-run fiscal implications.

All-State Revenue Deficit - 0.78% of GSDP
All-State Fiscal Deficit - 2.9% of GSDP

What steps can be taken for revenue deficit consolidation?

- **Tackling the revenue deficit** - Re-emergence of revenue deficit in recent years can be tackled with incentive compatible framework.
- **Interest-free loans** - It can be given to the States by the Union Government to eliminate the possibility of a substitution of States' own capital spending.
- It also prevents the diversion of borrowed resources to finance revenue expenditure.
- **Fiscal adjustment plan** – A defined time path with a credible fiscal adjustment plan would help restore fiscal balance and improve quality of expenditure.

Fiscal Responsibility and Budget Management (FRBM) Act

- The Fiscal Responsibility and Budget Management (FRBM) Act was enacted in 2003.
- It led to the framing of *FRBM Rules in 2004* that sets targets for the Central government to ensure fiscal discipline.
- **Amendment** - In 2018, the Centre is mandated to take appropriate steps to limit its *fiscal deficit to 3% of GDP* by March 31, 2021 although this is an operational target.
- The mandated target pertains to the *Centre's debt-GDP ratio* which is to be brought down to **40%**.

- A forward-looking performance incentive grants can be launched based on the different approaches provided by earlier Finance Commissions.
- It is necessary to achieve the targets as prescribed in Fiscal Responsibility and Budget Management Act 2003, *FRBM Act*.

To know more about Union Budget 2023-24 on Fiscal Consolidation click [here](#).

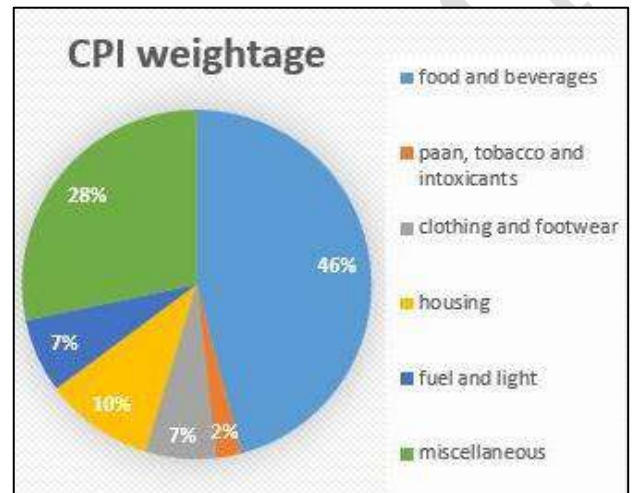
10.4 Need for reform in CPI basket

Why in news?

The items in the CPI basket and the weights assigned to them should not remain unchanged as it conceals the actual inflation picture.

What is Consumer Price Index (CPI)?

- CPI is a comprehensive measure used for estimation of price changes in a basket of goods and services representative of consumption expenditure in an economy.
- Inflation is measured using CPI.
- The percentage change in this index over a period of time gives the amount of inflation over that specific period.
- The National Statistical Office (NSO) under Ministry of Statistics and Programme Implementation (MoSPI) releases Consumer Price Index (CPI) in India with the base year 2012.



What is Household Consumption Expenditure Survey (CES) data?

- The Household Consumption Expenditure Survey (CES) is a recurring survey taken every five years by the government's National Sample Survey Office (NSSO).
- The data from the Household CES is used to shift the weights for CPI.
- Currently, the Ministry of Statistics and Programme Implementation (MoSPI) is in the midst of the CES.
- The first round of CES is slated to conclude in July 2023 and the second round a year later, in July 2024.
- **Effects of CES data absence** - Inability to determine the population under the poverty line accurately.
- Inability to track inflation effectively.

What are the issues with the present CPI?

- CPI is used in accurately measuring the cost of living and economic well-being.
- The real consumption basket of a common Indian is fluid and continually evolving, mirroring the shifts in societal needs, preferences, and economic conditions.
- **Archaic parameters** - Tracking items that no longer hold the same relevance in our consumption patterns.
- According to Engel's Law, as the economy grows, the proportion of income spent on food decreases.
- **Higher food weightage** - In the current CPI (base year 2012), weightage of food and beverages is still 45.86 (46.2 in 2001).
- Over-reliance on food inflation today distinguishes Indian inflation from many other developed countries.
- **Modified consumption pattern** - The high weight of cereals (9.67) in the current CPI highlights two critical issues.
- With economic development of a country, there should be a paradigm shift in dietary habits of its people.



- The Pradhan Mantri Garib Kalyan Yojana has substantially reduced cereal expenditure for a large segment of the populace.
- This modifying consumption patterns further led to reducing the relative expenditure on cereals.
- **Dependence on TOP** - Tomatoes, onions and potatoes have a considerably higher impact on inflation. It should be lower.
- **Technical lag** - In a rapidly evolving digital economy, our data collection and inflation estimation methods must adapt and evolve in tandem.

What are the challenges?

- CPI and inflation should accurately reflect the realities of modern-day consumption and living.
- An up-to-date consumption expenditure data is required to effectively reflect the evolution of consumption patterns in our inflation metrics.
- Efficient data processing should be given non-negotiable priority.
- Early collection and processing of data and integrated usage of technological advancements.

10.5 Tackling 'Twin Balance Sheet Syndrome'

Why in news?

The Financial Stability Report (FSR) of the RBI indicated that the challenges of 'twin balance sheet syndrome' (TBS) is fast receding.

What is 'Twin Balance Sheet Syndrome' (TBS)?

- The twin balance sheet problem refers to the deteriorating balance sheets of corporates and banks at the same time.
- The issue occurs when poor corporates' balance sheets force them to default on their loans, resulting in high non-performing assets (NPAs) for banks.
- 'Twin Balance Sheet Syndrome' (TBS) is a scenario where banks are under severe stress due to:
 1. High levels of non-performing assets (NPAs)
 2. High provision requirements
 3. Low profits and
 4. Low capital adequacy ratios (CAR)
- Under TBS the corporates are overleveraged to the extent that they cannot repay their loans.
- In the mid-2000s, infra companies faced TBS problem.

Status of TBS in Indian Banking Sector

- TBS is fast shaping into a '**Twin Balance Sheet Advantage**' (TBA).
- This is due to the improvement in the performance of banks and the corporate sector through various measures and efforts.
- The analysis based on 6 BSI indicators in FSR show that the banks are well-capitalised and capable of absorbing macroeconomic shocks over a one-year horizon even in the absence of any further capital infusion.
- The gross non-performing assets (GNPAs) of banks sharply fell from 11.5 % in FY18 to 3.9% in FY23. The return on assets (ROA) of banks trailing in the negative zone (-0.2%) in FY18 improved significantly to 1.1% by FY23.

How TBS was tackled?

- The corporate sector, banks and the RBI played a critical role in tackling the perils of TBS.
- **Banks** - Significantly improved their performance to come out of the toxic loan crisis.
- Banks also came out of irrational lending.
- **Corporate sector** - It realised the risks of excessive borrowing.
- Corporates started deleveraging balance sheets.

- **RBI Measures** - The merger of PSBs during 2017-21 brought them down from 27 to 12 and turned PSBs into stronger entities with potential higher risk appetite.
- **Data collection and sharing** - Introduced the Central Repository of Information on Large Credits (CRILC) to enable banks to share information on large loan accounts of ₹5 core and above in 2014.
- RBI insisted collection of information on loans overdue up to 90 days known as Special Mention Accounts (SMA).
- The RBI having detected divergence in the asset quality data introduced an Asset Quality Review (AQR) in September 2015.
- **IBC** - The enactment of the Insolvency and Bankruptcy Code (IBC) in 2016 and the formation of the Insolvency and Bankruptcy Board of India (IBBI) helped hasten problem loan resolution.
- **EASE** -To perpetuate TBS, PSBs needed large capital infusion.
- To fulfil that condition, the government introduced another set of bank reforms called 'Enhanced Access to Service Excellence' (EASE) in 2018.
- The format of EASE reforms got modified and now EASE 5.0 is in use.
- **Bad bank** - National Asset Reconstruction Company Ltd (NARCL), also had to be formed to tackle toxic assets.

What lessons can be learnt from the TBS experience?

- **Banks** - Now the banks have strong stability, and adequate working regulatory controls, banks will now have to focus on improving the quality of credit origination, monitoring, and control of credit.
- The risk governance and all 3 lines of defence in risk management (SMAs) should be well equipped to ring-fence the banks against credit risk.
- The internal credit rating system needs to be more robust and credit risk managers should receive priority.
- **Corporates** - Proportionality in lending to the corporate sector must be maintained with the right kind of credit assessment.
- The corporate sector should adopt responsible borrowing and ensure timely repayment of loans to bring down the cost of borrowing.
- Taking advantage of the scenario, banks and corporates can play a more strategic role in taking the economy to a higher trajectory of growth to put it into the orbit of developed economies in coming years.

Banking Stability Indicator (BSI)

- BSI is an overall assessment of changes in underlying conditions and risk factors that have a bearing on the banking sector's stability during a period.
- The six composite indices represent risks in six dimensions are soundness, asset quality, profitability, liquidity, efficiency, and sensitivity to market risk.

10.6 NPAs, Write-Offs and Recoveries

Why in news?

Recently, Gross Non-Performing Assets (NPAs) have fallen, but emergence of fresh NPAs and unsatisfactory recoveries needs banks intervention.

What are NPAs?

- **NPA** - An asset becomes non-performing when it ceases to generate income for the bank.
- It is a loan or advance for which the principal or interest payment remained overdue for a period of 90 days.
- **Types** - Banks are required to classify NPAs into Substandard, Doubtful and Loss assets.
 1. **Substandard assets** - Assets which has remained NPA for a period *less than or equal to 12 months*.
 2. **Doubtful assets** - An asset would be classified as doubtful if it has remained in the substandard category for a *period of 12 months*.
 3. **Loss assets** - Loss asset is considered *uncollectible* and of such little value that its continuance as a bankable asset is not warranted, although there may be some salvage or recovery value.

What is loan write-off?

- A loan write-off is a tool used by banks to *clean up their balance-sheets*. It is applied in the cases of bad loans or non-performing assets (NPA).

- If a loan turns bad on the account of the repayment defaults for **at least three consecutive quarters**, the loan can be written off.
- By writing-off a loan, the banks set free the money parked for the provisioning and utilise the amount for business (it will no longer be counted as an asset).
- Lost inventory, unpaid debt obligation, bad debts, and unpaid receivables are also written off.
- In the cases of NPA, 100 % provisioning is required in accordance with the Basel-III norms.
- Some recent data show that *private banks have been more active in writing off NPAs* than public sector banks (PSBs).

To know more loan write-off click [here](#).

What is the significance of loan write-off?

- **Tax benefits-** Lenders become eligible for a tax rebate on the total loan value by writing them off.
- **Loan provisioning-** By writing-off loans, lenders don't need to release the remaining limit to defaulting borrowers.
- Doing this helps them release funds previously blocked for a borrower.
- They can use these to provide loans to others in need or for their business.
- **Right to recover-** Lenders don't lose the right to recover outstanding loans even after writing them off.
- They can use the means necessary to recover the full or partial loan amount.
- **Governance-** Writing-off loans help lenders maintain a clean and updated balance sheet, it results in significant decline in NPAs.

How to prevent NPA accumulation?

- **Revisit business models-** Banks need to revisit business models as fault-lines would lead to higher NPAs and credit losses.
- Ideally, from lending perspective, banks need as many business models as credit segments and customer segments.
- **Governance** - The layers of governance such as business, risk and operational governance must be regulated along with corporate governance.
- **Fine tune risk appetite-** It is the amount of risk the lender is willing to undertake.
- It needs to be aligned with risk culture, underwriting skills in a particular domain and risk tolerance.
- **Check fund diversion-** The diversion of funds in corporate lending is more widespread and intense.
- Bank collaboration is needed to detect the practice and find a remedial solution for the same.
- **Increase NPA recoveries-** NPA recoveries is low around 25 % of the claim amount.
- Even under the Insolvency Bankruptcy Code 2016, regime the recovery rate has fallen from 45 % to 23.8 %.
- The government, regulators and lenders need to rework these recovery/resolution frameworks.
- **Need of skilled expertise-** Underwriting skills and turnaround skills require high expertise because the changes in industry and real economy are quite fast and global.

Trend in NPAs						
<ul style="list-style-type: none"> • There is a <i>decline in gross non-performing assets (GNPA)</i> ratio of Indian banks. • In 2017-18, this ratio was as high as 11.2 % raising concerns on the stability of the banking system. • During last three years (2019-22) alone fresh NPAs add up to ₹10.61 lakh crore 						
NPA movement						
Year	Gross NPA (in ₹ lakh crore)	GNPA % to credit	New NPA	Recovery & upgrades	Write-off	Net NPA %
			(in ₹ lakh crore)			
2022-23		3.90				1
2021-22	7.43	4.30	2.83	1.95	1.79	1.70
2020-21	8.35	7.30	4	1.18	2.08	2.40
2019-20	8.99	8.20	3.78	1.57	2.37	2.80
2018-19	9.36	9.10	3.14	1.79	2.36	3.70
2017-18	10.3	11.20	6.04	1.28	1.62	6.00
2016-17	7.9	9.30	4.15	1.2	1.08	5.30

10.7 Manufacturing Productivity in India

Why in news?

The growth rate of manufacturing productivity in India is in negative trend which got accelerated during COVID-19.

What is the significance of manufacturing sector?

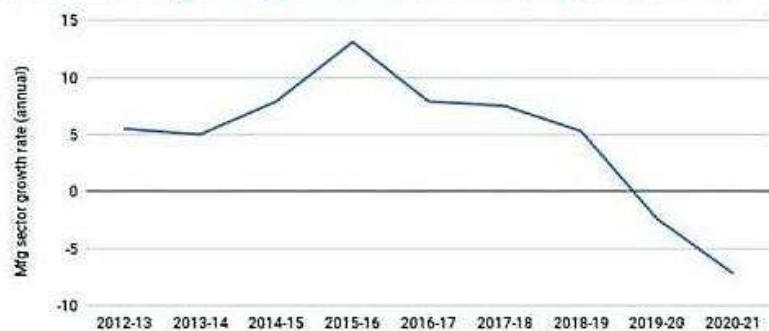
- Agriculture contributes only about 20% of India's Gross Value Added but still employs close to 55% of India's workforce.
- The fact that agriculture is not as remunerative is made worse by the fact in India there are just too many people dependent on agriculture (disguised unemployment).
- The better solution is to pull people out of farms and get them employed in other sectors such as manufacturing which requires fewer soft skills.
- Having more people in manufacturing will make India the preferred factory of the world and will pull millions out of poverty.
- The Indian government hopes to have 25% of the economy's output come from manufacturing by 2025.

India is the 3rd most sought-after manufacturing destination in the world & has the potential to export goods worth US\$ 1 trillion by 2030.

Status of Manufacturing Sector

- **Contribution to GDP** - Manufacturing sector contributes to 17% of GDP and employs 20% of the workforce in the country.
- Most of India's GDP now comes from the services sector while millions continue to languish in the agriculture sector.
- The share of manufacturing both in India's GDP or overall employment has largely stayed stagnant.
- **Employment** - The data from CMIE shows that employment in India's manufacturing sector has fallen from over 51 million in 2016 to less 36 million in 2023, a fall of over 30%.
- **Productivity growth** - The growth rate of productivity fluctuated between 10 to 15 % in the 1990s and 2000s and began to stagnate after 2015.
- This negative trend accelerated into the several years preceding the pandemic.
- **Regional disparity**- Western and Central Indian states tend to have the highest average productivity in manufacturing, while the Southern and Eastern states have the lowest.
- This is in contrast to the GDP per capita ranking of states, in which Southern states tend to have higher incomes than their Western and Central counterparts.
- **Investment in workers** - Data shows that investing in workers (either as higher salary or better benefits) pays rich dividends for firms.

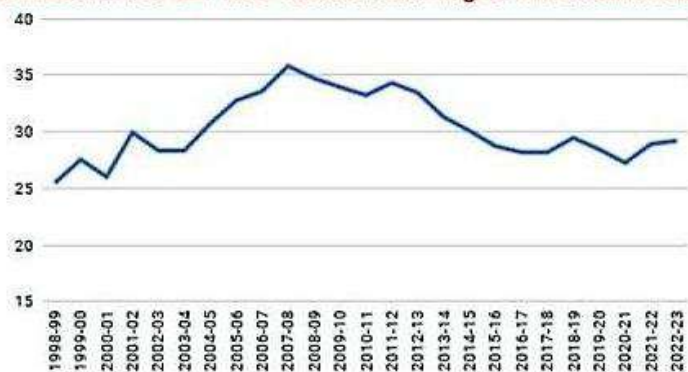
The manufacturing sector growth rate too was declining since 2015-16



Source: National Accounts Statistics, 2022.

Manufacturing sector growth rate in %

The investment to GDP ratio has been declining for more than a decade



Investment to GDP ratio in %

What are the reasons for low manufacturing growth productivity?

- **Premature deindustrialisation** - At a macro-manufacturing level, India experienced premature deindustrialisation.
- It observed a sudden fall in its manufacturing-GDP ratio before achieving an optimal rate of development resulting in a sub-optimal manufacturing scenario and a fragmented labour market.

- **Jobless growth-** It is an economic which refers to a situation where *economic growth does not lead to job creation*, but is due to quantum jump in service sector with minimal growth in manufacturing sector.
- **Unskilled labour-** The majority of the workers in India lack the proper skills to work in the manufacturing industry. *Only 10% of the Indian workforce falls into formal economy.*
- **Lack of investment-** Manufacturing sector is capital intensive industry, lack of entrepreneurial spirit and low investment leads to low growth rate.
- **Low production capacity-** In India, MSMEs contribute around **29% of GDP**, but having large number of small enterprises lead to increase in the cost of production.
- **Trade deficit-** It is due to cheap imports and high import duty on raw materials which hikes the production cost. Further, exports is less than imports.
- **Connectivity issues-** India's average logistic cost is *14% of the GDP whereas, the global average is 8%.*

Steps Taken to Promote the Manufacturing Sector

- **Make in India** - It was launched in 2014 to facilitate investment, foster innovation, build best in class infrastructure and make India a hub for manufacturing, design and innovation.
- **Industrial Corridor Development Programme-** It is to develop Greenfield Industrial regions with sustainable infrastructure.
- As part of National Industrial Corridor Program, 11 Industrial Corridors are being developed in 4 phases.
- **Ease of Doing Business-** The key focus areas of the initiative are simplification of procedures, rationalization of legal provisions, digitization of government processes etc.,
- **National Single Window System-** Announced in Budget 2020-21, it is envisioned as a one-stop shop for investor related approvals and services in the country.
- **PM Gati Shakti-** It is a transformative approach to facilitate data-based decisions related to integrated planning of multimodal infrastructure, thereby reducing logistics cost.
- **National Logistics Policy-** It was launched in 2022 that aims to reduce the logistics cost, which stands at *14% of GDP to 9-10%.*
- **Production Linked Incentive (PLI) scheme-** It has identified 14 key sectors with an outlay of Rs. 1.97 lakh crore to enhance India's manufacturing capabilities and exports.
- **National Manufacturing Policy-** It is launched in 2011 which works on the principle of economic and industrial growth in partnership with states

What lies ahead?

- **Improve capacity utilization-** Government can incentivise industry focus on increasing capacity utilisation and lower the production cost.
- **Focus on power sector-** Power sector is the lifeline of manufacturing industry, power fluctuation and shortage must be checked for consistent increase in the production.
- **Incentivise production-** The coupled efforts of tax profit and production incentives will increase in the manufacturing capability of India which would also increase the job opportunities.
- **Localize defence production-** Defence production in India will leverage its Atmanirbhar Bharat vision and reduce the high military spending on imports.
- **Skill development-** Proper skill enhancement will have an impact on demographic dividend of the country.
- **Increase investments-** It needs a holistic approach of improvement in land, labour, entrepreneur and capital.
- **Improve infrastructure-** Reducing the infrastructure bottlenecks and improving the connectivity will play a major role in manufacturing sector.

10.8 Changes to Liberalised Remittance Scheme (LRS)

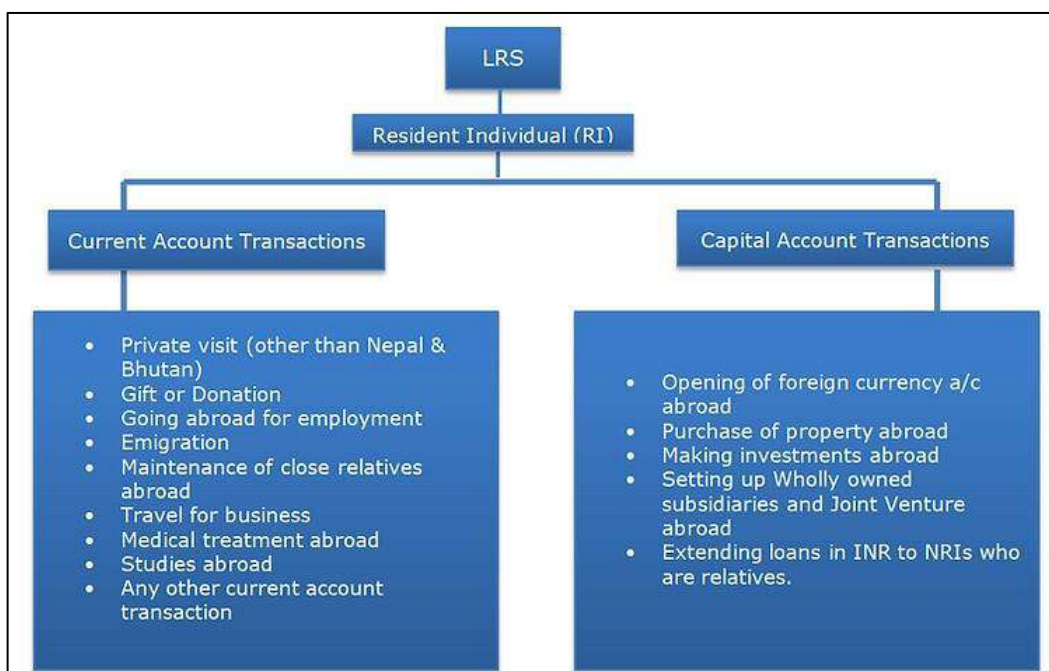
Why in news?

The Central Government has announced that it has postponed the imposition of increased 20% TCS (Tax Collected at Source) by 3 months to October 1, 2023.

What is Liberalised Remittance Scheme (LRS)?

- It is a *foreign exchange policy* initiative introduced by the Reserve Bank of India (RBI) in 2004.

- Aim** - To simplify and streamline the process of remitting funds outside India.



- Under LRS, resident individuals can freely remit funds up to a certain limit for various permissible transactions involving a current or capital account.

- Prior to LRS, the remittance is controlled by FEMA 1999.

- This scheme helped Indians overcome international fund transfer restrictions as set by the **FEMA (Foreign Exchange Management Act), 1999**.

What are the key features of the LRS Scheme?

- Eligibility**- It is available to all resident individuals, including minors and students.
- The scheme is *not available for* Corporates, Partnership firms, Hindu Undivided Family etc.,
- The eligible citizens must have an Indian bank account, a valid Permanent Account Number (PAN), and a passport.
- Foreign currency** - The remittances can be made in any freely convertible foreign currency.
- Usage**- They can use the remitted amount for educational, business, personal, or other purposes.
- Current limit**- The current limit for LRS is **\$250,000** for a given financial year for permissible transactions.
- A resident individual can remit a higher amount after taking prior permission from the RBI.
- Exception**- Remittances cannot be used for buying lottery tickets, margin trading, real estate etc.
- Taxation** - Liberalised Remittance Scheme is taxable through Tax collected at Source (TCS).
- The tax does not apply to Indian individuals if they furnish a declaration that the purchased goods would be utilised for manufacturing, processing or producing articles or things and not for further sale.

What is TCS and its threshold?

- TCS** - TCS refers to tax collected by the seller of a commodity at the time of sale.
- It is over and above the price of the commodity and is required to be remitted to the government's account.
- TCS threshold**- 5% TCS is applicable for remittances exceeding the **limit of Rs 7, 00,000**, other than the purchase of tour program packages.
- Union Budget 2023 Proposal**- TCS has been increased from 5% to 20% for overseas tour package exceeding the limit of Rs 7, 00,000.
- The same was to apply for payments other than education and medical treatment.
- Purpose**- To widen the tax base and to reduce the possibilities of tax avoidance.

What are the new changes?

- TCS threshold** - The implementation of Union Budget proposal has been delayed for 3 months till October 1, 2023.

- **Credit card** - The government also announced that transactions facilitated using international credit cards while being overseas would not fall under the LRS umbrella.
- Thus, transactions via credit cards when travelling abroad will not attract TCS.

Why is LRS so significant?

- **Diversification of Investment**- It promotes investing in foreign assets such as stocks, bonds, mutual funds, and real estate.
- **Overseas education**- It enables individuals to remit money for education. It provides the window of opportunity to pursue education in abroad.
- **Medical treatment**-It allows individuals to remit money for medical treatment outside India.
- **Travel**- It enables individuals to remit money for travel-related expenses such as tickets, hotel bookings, and other expenses.
- **Start-ups and business investments**- It enable individuals to invest in foreign businesses, start-ups, and joint ventures thus aiding in the expansion of their businesses globally.
- **Gift and donations**-It enable individuals to gift or donate money to their family members or charitable organisations outside India.

10.9 GST on Online Gambling

Why in news?

The GST Council has said that the government will impose a goods and service tax of 28% on the turnover of online gaming companies, horse racing and casinos.

Market Overview of Online Gaming in India

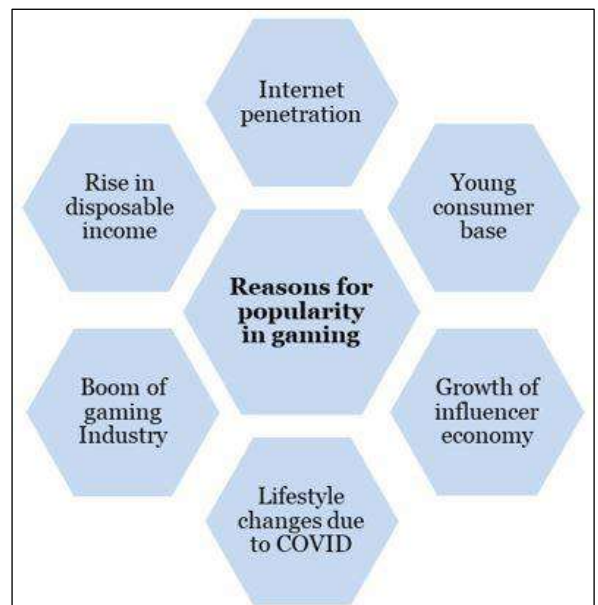
- **Online gaming market** - The revenue of the Indian mobile gaming industry is expected to exceed *1.5 billion dollar in 2022*, and is estimated to reach 5 billion dollar in 2025.
- While India's gaming market is currently *smaller than the US and China*, it is worth about US 1.5 dollar billion and is expected to triple in size to reach US 5 billion dollar by 2025.
- India's percentage of *new paying users (NPUs)* in gaming has been the *fastest growing* in the world.

Types of Online game

- **A game of skill** – It is the one in which a player's superior knowledge, training, attention, experience, personal traits, and abilities are crucial to success.
 - Example - Fantasy sports (Dream 11 and MPL fantasy cricket), casual games, and card games (Rummy or Poker)
- **A game of chance** – It is the one in which chance rather than skill determines the outcome.
 - Example - Playing cards, roulette, rolling a dice, or even picking a numbered ball are reflected upon as chance-based games.

What is the decision of GST meeting?

- The latest provision means that tax will be levied on the *entry bet at 28%* rather than the earlier tax which is levied on the *Gross Gaming Revenue (GGR) at 18%*.
- It is considered to do away with the distinction between game of skill and game of chance, thus, treating all games as demerit goods, thereby attracting a 28% GST rate.
- The government will bring amendments to the GST-related laws to include online gaming and horse racing in *Schedule III as taxable actionable claims*.
- As per GST, an actionable claim is defined as goods under the Central Goods and Services Tax Act, 2017.



- It is a claim to an unsecured debt or a claim to any beneficial interest in movable property that is not in the possession of the claimant.
- So far, lottery, betting, and gambling were classified as actionable claims. Now, horse racing and online gaming will be added.

What are the advantages of the move?

- **Transparency** - The move will simplify the mechanism, eradicate complexity and imbibe transparency.
- **Check on addiction**- The Government quoted that the increase in taxation would reduce children addiction to online gaming.
- **Tax payments** - The move would result in a 55% increase in GST payments.

All India Gaming Federation (AIGF), founded in 2016, is a self-regulatory apex industry body for online skill gaming in India.

What are the issues in this aspect?

- **Entire gaming industry as gambling**- The Government considers the entire gaming industry as gambling, which is not only against the established jurisprudence but may also fall foul of the CGST Act 2017 itself.
- Even within the games of skill, all the games *cannot be equated*.
- **Impact on online gambling companies**- It will increase the *tax burden* where the tax exceeds the revenue and boost the growth of illegal gambling platforms.
- **Game of chance vs Game of skill**- Under the CGST Act, actionable claims are sought to be excluded from the ambit of GST, except for lotteries, betting and gambling.
- 'Betting and gambling' must be interpreted as *betting on a game of chance and not staking or betting on a game of skill*.
- **Games of skill vs. Casino games**- It is extremely difficult to *distinguish between incidence of taxation on casino games* with some games of skill like rummy and poker, which are played both online and on the casino floors.
- **Offends Article 14**- It offends the fundamental principle that *'equals are to be treated equally and unequals are to be treated unequally'* and falls foul of Article 14 of the Constitution of India.
- **Against judgements**- Various [Court judgements](#) have reaffirmed the states of online skill-based games as legitimate business activity protected as fundamental right under the Constitution.
- **Increase in black market activities** - The tax could hinder the Digital India Initiative, leading to an increase in black market activities and criminal offences, due to a 400-500% increase in the GST burden.
- **Benefit offshore gambling sites** - The change may benefit offshore gambling sites, leading to a significant tax loss for the government and exposing Indian gamers to unregulated websites.
- **Deter foreign investment** - The industry also fears that the change could deter foreign investment.

10.10 A New Palette for Creative Economy

Why in news?

There is a need to implement a collaborative model to meet the challenges faced by creative economy.

What is creative economy?

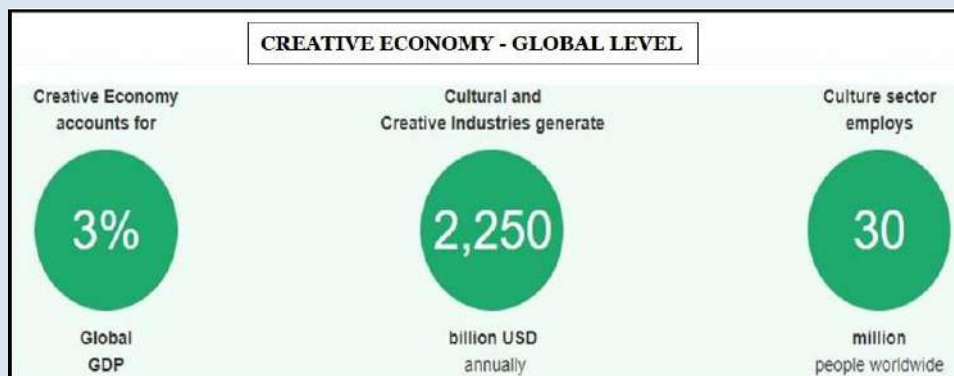
- Creative economy is an evolving concept which builds on the interplay between human creativity and ideas and intellectual property, knowledge and technology.
- Also called as Orange economy, it is a knowledge based economic activity.
- Creative industries include film, television, publishing, museums, music, arts, computer programming, crafts, architecture and design.
- They are considered as an important source of commercial and cultural value.

What is the significance of creative economy?

- **Preservation of art** - Artists and artisans play a vital role in preserving traditional art forms and contribute immensely to the cultural economy.

Status of Creative Economy

- The creative economy is one of the world's most rapidly growing sectors, contributing 3% of the global GDP.
- According to EXIM Bank study, Creative economy in India accounts for 121 billion of exports in 2019.
- India ranks 6th globally outside USA with respect to top international box office market by revenue.



- **Creative supply chains** - It will make a country or region more attractive destination for investment in film, TV series and further increase growth in supply sectors like music.
- **Shared IP** -It will create major revenues across multiple creative industries from Pokemon to Harry Potter.
- **Creative technology** -There is increasing overlap between digital and creative industries, which is further enhanced with Artificial intelligence, VFX.
- **Regional development** - It will likely play more important role in a greater range of regions over time.
- **Policy for Skill Enhancement**- There will technical skill policy development to improve the education system to support the creative economy which is increasing in demand.
- **Global competitiveness** - This is further promoted by increase in incentives and rewards to the countries which performs well in this industry.
- **Overall development** - It helps in the creation of jobs, economic growth, tourism, exports, and overall societal development.

What are the challenges faced by the artisans in India?

- **Appointments** – As there is no systematic or rotational mechanism in place for selection of artists, it creates inequality in representation.
- The selection process is often random or based on subjective criteria, which makes the artists unable to gain from sponsored platforms.
- **Poor support**-There are no serious efforts by private or public institutions to promote contemporary artists as brands.
- **Crime in art world**- It includes art theft, copyright infringement, forgery, fraud, and illicit trafficking.
- **Lack of audit**- There is no institutional infrastructure, expertise and technology to verify the original artwork. This gap leads to injustice towards genuine artists.
- **Other Challenges**- Unaccounted money preserved through artworks, dissemination of disinformation about cultural history, etc.

Efforts were taken in this regard

UNESCO	UNCTAD -United Nations Conference on Trade and Development	United Nations General Assembly
<ul style="list-style-type: none"> • MONDIACULT 2022- It is a World Conference on Cultural Policies and Sustainable Development. • Creative Cities Network- It is created in 2004 which covers 7 creative fields 	<ul style="list-style-type: none"> • Creative Economy Program- It is initiative of UNCTAD which generates economic information through a trade lens, to understand past trends and project into the future. • Creative Economy Outlook 2022 - It is published by UNCTAD which provides latest 	<ul style="list-style-type: none"> • UNGA recognises <u>2021 as International Year of Creative Economy for Sustainable Development.</u>

<ul style="list-style-type: none"> In India 6 cities has been selected Srinagar – Crafts and Folk art category was the last addition (2021). 	<p>data and trends on fast growing creative economy sector.</p> <ul style="list-style-type: none"> Bridgetown Covenant- It is the outcome of the Creative Industries and Trade Digitalization Forum and calls UNCTAD to place greater emphasis on societal and developmental benefits. 	
--	--	--

How to address the challenges faced by the creative economy?

- Robust security architecture-** It is possible by deploying *advanced technology for authentication* and tracking which would foster healthy creative economy.
- Regular audits-** There must be regular audits of acquired artworks to enhance trust and *preserve the collection's integrity*.
- An institutional record of incoming and outgoing artworks with a verified identification mark is required.
- Enhancing India's soft power -** It can be done through a *capacity-building centre* which would create an ecosystem of innovative technology-based start-ups in the arts and crafts sector.
- Fulfilling the artists' needs** – Artists' needs must be bridged by training, professional development, market access, and participation in larger communities and networks.
- Use of ICT -** Data analytics should be used to foster creative ecosystems that contribute to a sustainable world.
- Public-Private Partnership-** PPP is required to empower artists, bridge industry gaps, and contribute to the overall development of the creative economy.

What lies ahead for India?

- To develop the creative economy to realize its full potential, Indian policy makers would like to
 - Increase the recognition of Indian culture globally
 - Facilitate human capital development among its youth
 - Address the bottlenecks in the intellectual property framework
 - Improve access to finance
 - Streamline the process of policy making by establishing one intermediary organization
- India must also leverage its G20 Presidency to put creative economy concretely on the global agenda.

10.11 Unprecedented WTO Dispute Settlement method

Why in news?

The U.S and India decided to end their six long-standing trade disputes at the World Trade Organization (WTO) through deals, a move which is unprecedented.

What is the issue with WTO's dispute settlement system?

- WTO's dispute settlement system (DSS) is called its **'crown jewel'**.
- The dispute settlement system (DSS) is a two-tiered system where the appellate body is the second tier.
- The appellate body hears appeals from WTO panels.
- The appellate body, from 1995-2019, has upheld the international rule of law by holding powerful countries accountable for international law breaches.
- Issue -** The WTO Appellate Body has been redundant since 2019.

World Trade Organisation (WTO)
<ul style="list-style-type: none"> The World Trade Organization (WTO) is the only international organization that deals with the rules of trade between countries. Establishment - It was created in 1995 superseding the 1947 General Agreement on Tariffs and Trade (GATT). Members - The WTO is run by its 164 members representing 98% of world trade. Decision making - All decisions are taken through consensus and any member can exercise a veto.

- There is a continued impasse in the appointment of 'judges' to the appellate body.
- Disputes filed into the 'void' will not be considered for adoption leaving the appealed cases unresolved.
- In June 2022, at the Geneva ministerial conference, the members signed a deal on resurrecting the WTO's dispute settlement system (DSS) by 2024.

What are the cases settled between India and US?

- The WTO member-countries can adopt a statement that the appellate body rulings do not create precedents.
- India and U.S. have reached a deal on six separate disputes.
 1. Three cases settled as part of the deal are before the defunct Appellate Body.
 2. The other three could have potentially been 'appealed into the void'.
- Settling disputes in all six cases shows a pragmatic approach on the part of two strong trading partners.
- Amending domestic laws to effect compliance with international treaty obligations is a matter of great political sensitivity, especially in the U.S.
- Both U.S and India have accepted each other's domestic challenges in dispute compliance and realised the importance of burying differences.
- **2019 complaint** - India challenged against the controversial tariffs imposed under the Section 232 of the U.S. Trade Expansion Act, 1962.
- The U.S. had imposed an additional duty of 25% on steel and 10% on aluminium, triggering a series of WTO challenges and unilateral trade responses.
- India considered these as safeguard measures and imposed retaliatory measures on 28 U.S products which the U.S. considered excessive.
- The U.S. will receive and consider requests for exclusions from Section 232 measures with approval rates of 70% for steel products and 80% for aluminium products from India.
- In return, India would remove the retaliatory additional duties on certain U.S. agricultural imports.
- India is only removing the retaliatory duties on the 8 products for which 'most favoured nation' (MFN) rate is applied.

What are the other cases solved?

- **India's National Solar Mission** - A challenge of the domestic content requirements under India's National Solar Mission was also resolved.
- Disagreements persisted regarding India's compliance with the WTO treaty obligations, with the U.S. seeking authorisation from the WTO's Dispute Settlement Body for trade retaliation.
- **Special Economic Zone (SEZ)** - Certain corporate tax deductions provided under the SEZ scheme faced an uncertain future.
- India resisted to appeal to the Appellate body and had voluntarily removed some controversial schemes.
- India also initiated a comprehensive process to reform its SEZ law.
- **India's contest** - India challenged certain sub-federal programmes implemented in the U.S. in the renewable energy sector and won the case.

According to Article 3.6 of the Understanding on Rules and Procedures Governing the Settlement of Disputes of WTO, parties can reach a mutually agreed solution to the matter raised in the dispute.

What lies ahead?

- **Indo-U.S.** - The decision to end these disputes seeks to script a new chapter in India-U.S. trade relations.
- India-U.S. trade relations are 'scaling new heights' and the disputes deal could 'deepen greater economic engagements'.
- **Sets precedence** - The dispute deal also sets a template for other WTO members to emulate.
- **Fills the void** - The void created by the appellate body can be filled through such mutual agreements between the contenders.
- **De-judicialisation** - This may also add to the larger plan of the U.S to de-judicialisation multilateral organisations.

10.12 Ethanol Blending in India

Why in news?

India in 'G20 Energy Ministers' 2023, has rolled out 20% ethanol-blended petrol in 2023 and aims to cover the entire country by 2025.

What is ethanol blended petrol?

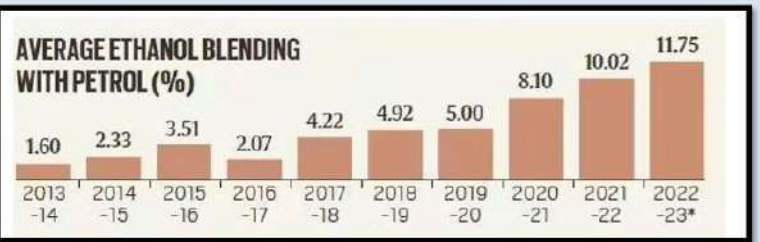
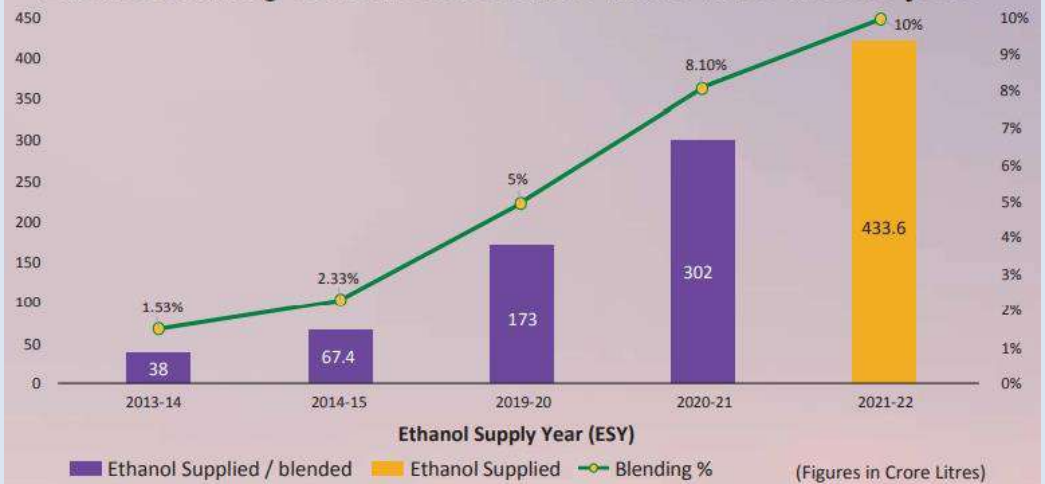
- Ethyl alcohol or Ethanol (C_2H_5OH) is a biofuel that is naturally made by fermenting sugar.
- It is basically 99.9% pure alcohol that can be blended with petrol.
- While it is mostly derived by extracting sugar from sugarcane, other organic matter like foodgrains can also be used for their production.

Status of Ethanol Production in India

- India is the world's 3rd largest energy consuming nation and a significant part of India's energy requirement is met through oil imports.
- Ethanol production capacity increased more than 2.5 times and no. of distilleries increased by 66% in 8 years.
- Most of the ethanol production in India comes from B Heavy Molasses.
- Ethanol Industry is expected to grow by 500%.
- India has doubled ethanol blending with petrol to 10% in the last two years.
- Ethanol blending will reach 12% in 2023 and meet the target of 25% by 2025.

ETHANOL BLENDING IN INDIA

Ethanol blending % has increased more than 6 times in last 8 years



What are the advantages?

- Energy security**- It will reduce the import bill and save Rs 30,000 crore of foreign exchange per year and lower the carbon emissions.
- Farmers' income**- As the ethanol feedstock is diversified (rice, maize, jowar etc.,) it will increase farmers' income.
- Employment generation**- With new technology and ethanol production there will more employment opportunities created.
- Sustainability**- Ethanol can be procured even from the damaged foodgrain and vegetable waste, so that it does not compromise on food security.
- Fuel India**- Uttar Pradesh and Bihar would "fuel India" in future as Punjab, Haryana, Maharashtra feeds India.
- By-products**- The new molasses-based distilleries gives around 28% of potash that can be used as fertilizer and the by-product can be sold as animal feed.

Ashok Dalwai committee recommends for doubling farmers income by farm diversification.

Uttar Pradesh is a major sugarcane producer, Bihar is the major producer of maize.

What are the issues with ethanol blending?

- **Availability of sufficient feedstock-** The ethanol production via food grains which is the staple crop of India may pose a challenge to the food security.
- **Regional disparity-** There are some states which produce ethanol more than the requirement for blending within the State.
- **Climate Change-** Weather related events like flood, drought pose significant challenge on food grains.
- **Low energy content-** The energy content of ethanol is low (almost 35%) than that of petrol. Thus, vehicles running on ethanol have poor mileage.
- **Engine stalling-** This is due to phase separation as ethanol has high affinity for water, it gets separated from petrol when it comes in contact with water.

Steps Taken to Promote Ethanol Blending in India

- **Nodal agency- Department of Food and Public distribution** is the nodal agency for promotion of fuel grade ethanol producing distilleries in the country.
- **Ethanol procurement-** Government has allowed ethanol procurement from sugar cane based raw materials, surplus rice and maize from Food Corporation of India.
- **Ethanol Blended Petrol Program-** It was launched in 2003 with the aim to promote the use of renewable fuels. Started with 5% blending, it has set a target of 10% ethanol blending by 2022 and 20% blending (E20) by 2030 which was now shifted to 2025-26.
- **National Policy on Bio fuels** – It was launched in 2018 which prescribes as indicative target of 5% blending of biodiesel in diesel by 2030.
- **Differential pricing-** The Government fixed higher prices for ethanol produced from B-heavy molasses and whole sugarcane syrup to compensate mills for revenues foregone from reduced/nil production of sugar.
- **GST-** Goods & Service Tax (GST) on ethanol meant for EBP Programme has been reduced from 18% to 5%.
- **Interest Subvention Scheme-** It is for enhancement and augmentation of the ethanol production capacity which would help in year round production.
- **Roadmap for ethanol blending in India 2020-25-** It is released by Niti Aayog which recommends measures for ethanol blending in India.

What lies ahead?

- **Feedstock diversification-** Ethanol yields from grains are actually higher than from molasses.
 - For example, 1 tonne of rice yields around 450-480 litres of ethanol.
- **Ethanol production capacity-** There should be uniform availability of ethanol blends in the country.
- **Infrastructure-** Oil Marketing Companies will need to prepare for the projected requirement of ethanol storage, handling, blending and dispensing infrastructure.
- **Single window clearances-** Faster regulatory clearances are the need of the hour.
- **Ethanol compatible vehicles** - Higher ethanol compatible vehicles need to be produced through incentives.

10.13 Reforming Multilateral Banks

Why in news?

There is a need to strengthen and to implement structural changes on multilateral development banks to cope up with the complexities of 21st century.

What are Multilateral Development Banks (MDB)?

- **MDB** - A multilateral development bank (MDB) is an international **financial institution chartered by two or more countries** for the purpose of encouraging economic development in poorer nations.
- It consist of member nations from both developed and developing countries.

- MDBs originated in the aftermath of World War II to rebuild war-ravaged nations and stabilize the global financial system.
- **Aim** - To promote inclusive growth and reduce inequalities.
 - To eliminate poverty
 - To foster shared prosperity
- **Source of funds** - MDBs raise funds through capital contributions from member countries, borrowing funds from capital markets, and using funds received via loan repayments.
- Since MDBs are not organizations associated with specific countries, they are subject to international law.

While the International Monetary Fund (IMF) and MDBs share similar objectives of promoting global economic stability and development, it is not considered as a MDB as it primarily focuses on macroeconomic stability and provides financial assistance to member countries facing balance of payments problems.

Types of Multilateral Development Banks

International Development Banks	Regional Development Banks
<ul style="list-style-type: none"> • World Bank • International Bank for Reconstruction and Development (IBRD) • International Finance Corporation (IFC) • International Development Association (IDA) 	<ul style="list-style-type: none"> • European Investment Bank (EIB) • Asian Development Bank (ADB) • New Development Bank (NDB) • Eurasian Development Bank (EDB) • Islamic Development Bank (IsDB) • Asian Infrastructure Investment Bank (AIIB)

Why are MDBs so significant?

- **Concessional financing** - While commercial banks seek to make profits, the goal of MDBs is to issue grants and low-cost loans to middle and low income countries.
- **Development goals** - These banks prioritize development goals such as poverty reduction, infrastructure development, education, healthcare, and environmental sustainability.
- **Technical assistance** - MDBs also offer technical assistance and risk management advisory to member countries, in addition to financial support.
- **Maximization of impact** - They also collaborate with other organizations and mobilize private sector investment to maximize their impact.
- **Stabilization of global economy** - They are seen as an international pillar to stabilize the global economy.
- **Policy advice and reforms** - MDBs offer policy advice to member countries, helping them formulate and implement sound development policies and reforms.

What are the challenges associated with MDBs?

- The new challenge is to broaden the mandate and vision to address the challenges of transboundary issues.
- It also includes the financial crunch due to pandemic and other issues.
- In recent times, Climate change has occupied the forefront place.
- Shared prosperity at intra and inter-country levels has also worsened in recent times.

The World Bank Group estimates that the average annual spending needed to address global challenges of climate change, conflict, and pandemics is \$2.4 trillion per year for developing countries between 2023 and 2030.

What reforms are needed for MDBs?

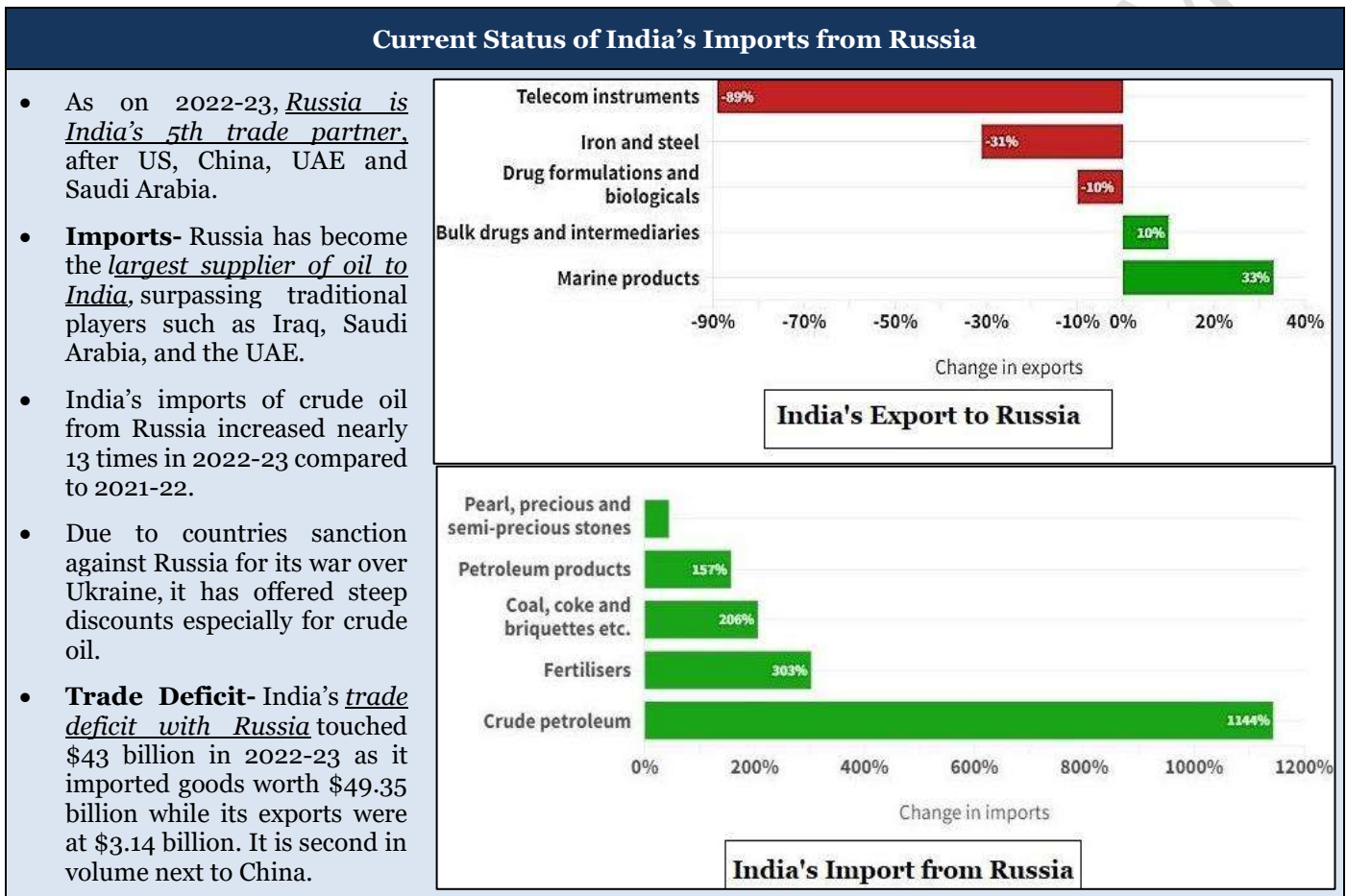
- **Financing** – There is a need to optimize the current balance sheet and create higher leverage from existing fund. There is a need to mobilise private capital.
- It is imperative to broaden the mandate of MDBs. Transparency in capital mobilization must be ensured.

- They need to fix annual targets and judge performances by the outcomes secured in this altered framework of accountability.
- **Structural changes** – There is a need to create incentive structure.
- **Opportunity for India** – For India, reforming MDBs would mean advocating the voice of the *Global South*.
- India under G20 presidency created an expert group to take a holistic approach on a wide range of issues and outline a pragmatic implementable programme on strengthening MDBs.

10.14 India-Russia Payment Crisis

Why in news?

As India continues to import oil from Russia, it is getting tougher for the country to pay for it.



What are the issues with the existing payment methods?

- **SWIFT sanction**- Society for Worldwide Interbank Financial Telecommunication (SWIFT) system is a global secure interbank system.
- U.S., the European Union, and the U.K. have blocked multiple Russian banks from accessing the SWIFT system due to Russia's special military operation in Ukraine.
- **Dollar Payments**- Oil transactions have traditionally been dollar-dependent.
- **Cap on oil price**- Many countries decided to cap the price to a maximum of \$60 per barrel of Russian oil transported through waterways, this makes difficult to pay in dollar.
- **Geopolitical ramifications**- India has strained relationship with china since the border stand-off this will have a geopolitical ramifications for India to pay in Chinese Yuan.

What about Rupee-Rouble trade arrangement?

- It is an alternative payment mechanism to settle dues in rupees instead of dollars or euros.
- The idea was first conceived in 1953 under the Indo-Soviet trade agreement.

The Russian rouble or Rouble is the official currency of Russian Federation

- **Payments covered-** Commercial transactions and insurance, freight, port charges, storage and forwarding expenses and bunkering, distribution of films, technical assistance, tours of commercial or cultural nature etc.,
- **Significance-** It will be helpful to overcome challenges in trade with Russia, including managing payments for exporters and importers.
- A rupee payment mechanism could play a pivotal role in deciding whether Indian exporters will get their payments and if trading can be continued with Russia.
- **Issue with Rupee-Rouble trade arrangement-** Rouble's value is not market determined and Rupee is considered volatile by Russia.
- Hence there is challenges with Rupee-Rouble Convertibility.

Daily average share for rupee in the global foreign exchange market is 1.6%, while India's share of global goods trade is 2%.

What lies ahead?

- **Countering the trade deficit-** There is a need to bridge the trade deficit with Russia by increasing Russian investment in the energy and government bonds.
- **Rupee internationalisation** - Since the dollar is largely considered the global reserve currency, many countries have seen the U.S. sanctions as a way for America to weaponise the dollar.
- This has given rise to countries looking at **de-dollarisation** which means the replacement of the U.S. dollar with other currencies as the global reserve currency.
- India too, has recently released a roadmap for the [internationalisation of the Indian rupee](#) to create broader acceptance.

11. AGRICULTURE

11.1 GM Mustard

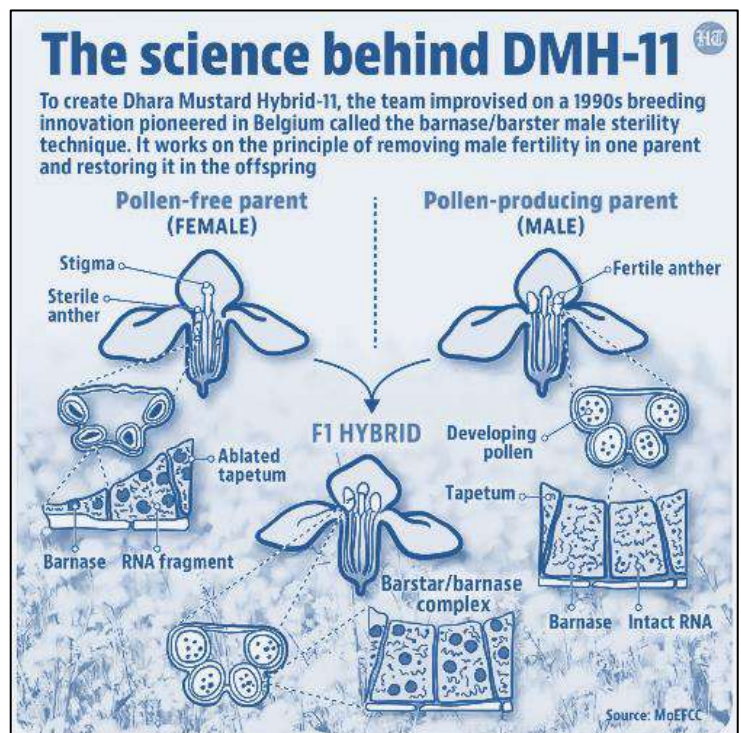
Why in news?

A determined battle by environmentalists in the Supreme Court of India against genetically modified (GM) herbicide-tolerant (HT) mustard is all that stands between GM food and Indian farmers and consumers.

What are GM crops?

- A crop which has a gene artificially inserted into it from another species to give some desired properties (pest resistant, herbicide tolerant, etc.) is known as GM crop.
- Soya bean, maize, cotton, and canola are the most widely grown GM crops around the world.
- **Bt cotton** - It is the only GM crop that is allowed in India.
- It has two alien genes from the soil bacterium *Bacillus thuringiensis* (Bt) that allows the crop to develop a protein toxic to the pest pink bollworm.
- **GM Mustard** - It is the first GM food crop that India has permitted for commercial release.
- It is a product of crossing two plants containing alien 'barnase' and 'barstar' genes derived from a soil bacterium.

For More Details about GEAC's Approval for GM-Mustard - [Click here](#).



What are the regulatory and approval authority for GM crops in India?

- Environment Protection Act, 1986 (EPA)
- Biological Diversity Act, 2002
- Plant Quarantine Order, 2003
- GM policy under Foreign Trade Policy
- Food Safety and Standards Act, 2006
- Drugs and Cosmetics Rule (8th Amendment), 1988

Mandate of Ministries/Departments	
Ministry of Environment, Forest and Climate Change	<ul style="list-style-type: none"> • Primarily responsible for conservation and protection of environment, ensuring environmental and human health safety before release of GMOs / LMOs. • Nodal agency for implementing Rules, 1989 and the Cartagena Protocol on Biosafety
Department of Biotechnology (Ministry of Science & Technology)	<ul style="list-style-type: none"> • Nodal department for promoting biotechnology programs • Provides scientific support in implementation of biosafety regulations • Provide services in areas of research, infrastructure, generation of human resource
Ministry of Agriculture	<ul style="list-style-type: none"> • Policies aimed at agriculture growth. • Indian Council of Agricultural Research (ICAR) responsible for monitoring agronomic benefits of GM technology. • Monitoring post-release performance of GM crops.
Ministry of Health and Family Welfare	<ul style="list-style-type: none"> • Policies aimed at protecting and monitoring human health. • Food Safety and Standards Authority of India responsible for regulating genetically engineered foods.
Ministry of Commerce and Industries	<ul style="list-style-type: none"> • Enhance trade with other countries through export/import policies. • Nodal agency for implementing DGFT notification on GMOs
Central Board of Excise and Customs, Department of Revenue, Ministry of Finance	<ul style="list-style-type: none"> • Enforcement of regulation pertaining to transboundary movement of GMOs/LMOs at point of entry

What is the issue around GM Mustard?

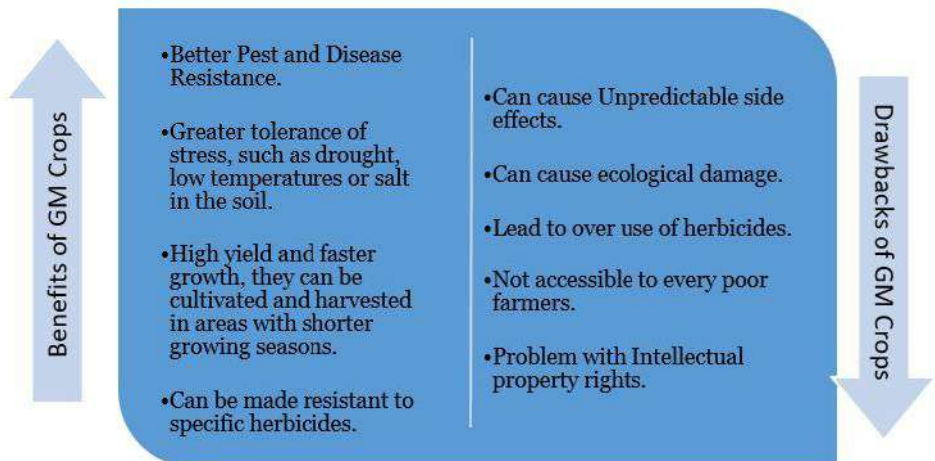
- GM Mustard is the first genetically modified food crop permitted for commercial release thus it requires attention towards environmental, agricultural and public health.
- The government is pushing ahead with GM mustard disregarding both science and the law.
- The full biosafety database of GM mustard is not placed in the public domain.
- It has not adequately responded to criticisms that already available non-GM mustard hybrids have better yields than GM mustard.
- There is growing evidence of long-term ecological and health risks of HT crops.
- The government has argued that GM mustard should not be considered HT at all in the Supreme Court hearing.

Genetic Engineering Appraisal Committee (GEAC)
<ul style="list-style-type: none"> • GEAC is responsible for appraisal of proposals relating to the release of GM organisms and products into the environment. • Functions under <i>Ministry of Environment, Forest & Climate Change</i> • Operates as per the Rules, 1989, under Environment Protection Act, 1986. • It applies to large scale use of hazardous microorganisms and recombinants in research and industrial production from the environmental angle.

HT crop - A crop that can withstand herbicides. (HT - Herbicide)

What are the reports on GM crops?

- Two Standing Committees of the Parliament independently and comprehensively examined GM crops and food.
- The 2 reports concerning GM foods are by
 1. The Standing Committee on Agriculture in 2012
 2. The Standing Committee on Science and Technology, Environment and Forests in 2017.
- **Report takeaways** - The two committees unanimously highlighted major weaknesses in the regulatory system, and called for utmost caution before releasing GM food.



- **REC Report** - The Supreme Court also appointed a Technical Expert Committee (TEC) in the public interest litigations.
- The TEC warned of serious harm to the environment, rural livelihoods and sustainable agriculture if they were released.

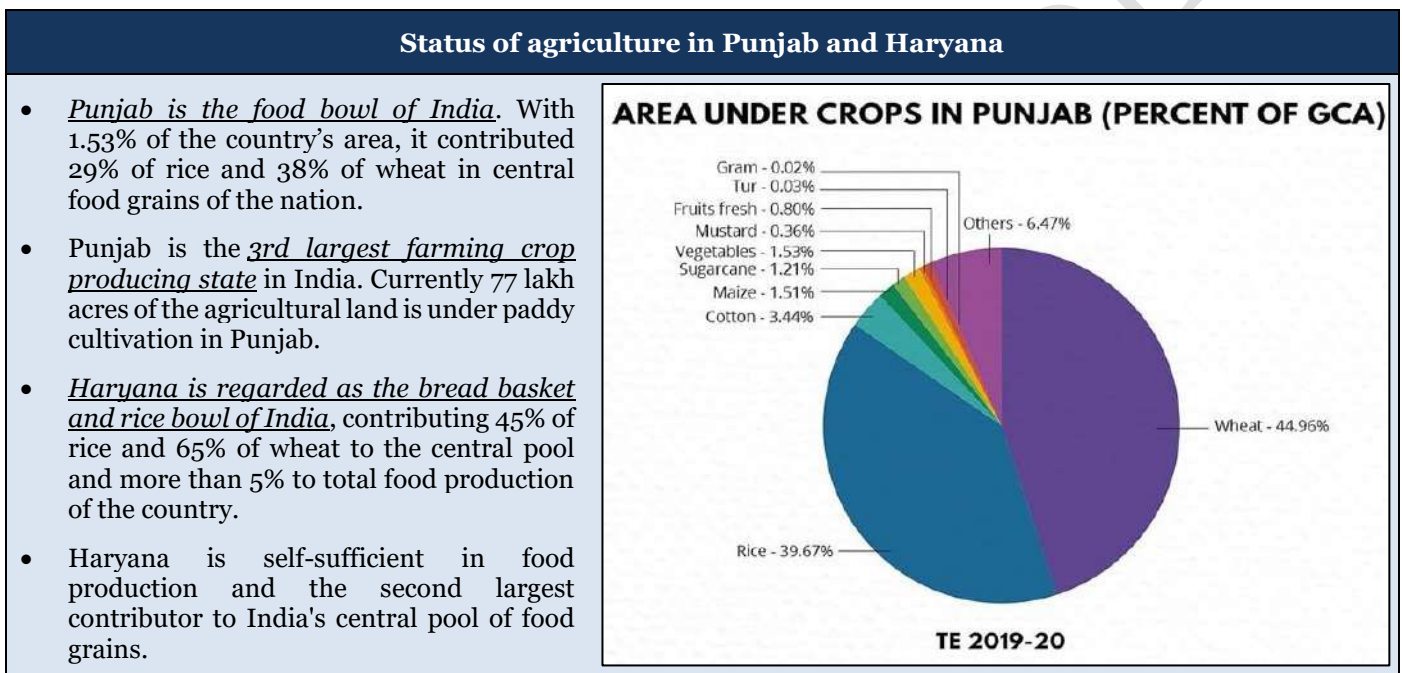
What is the way forward?

- If the Supreme Court allows GM mustard to go through, it will likely pave the way for the release of other HT crops such as cotton, rice, and maize.
- The government should address the science-based concerns of GM crops.
- It should also comprehensively strengthen regulation before allowing GM food.

11.2 Crop Diversification in Trans-Gangetic Plain

Why in news?

States like Punjab and Haryana are unable to get out from the paddy-wheat cycle.



Why paddy-wheat cycle is prevalent in Punjab and Haryana?

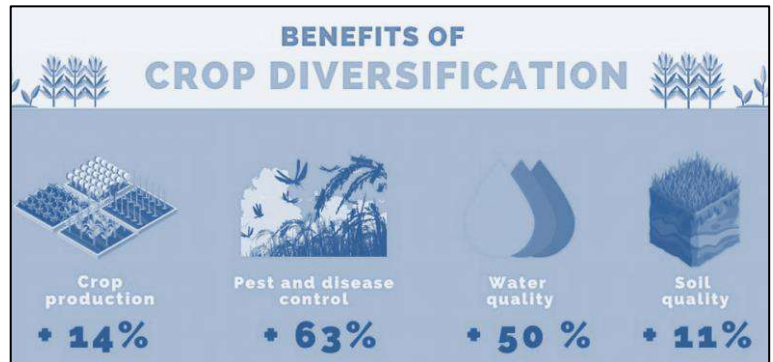
- **Green revolution**- It was initiated in 1967 by M.S.Swaminathan to ensure food security in India. Both the states were successful.
- **Level of profits earned** – It is noted that no other crops were profitable like paddy and wheat which are profit maximisers for farmer.
- **Stable income**- Unlike other states and other crops, Punjab's rice and wheat earn stable and reasonably rising incomes each year attributable to the government's **Minimum Support Price (MSP)**.
- **Lack of awareness**- The small and marginal farmers have inadequate knowledge about cultivating other crops which makes them difficult to find buyers for selling it in better prices.
- **Availability of services** - Availability of cheap power, water and easy access to information and services encourages farmers to undergo monoculture practice.

In 2018-19, paddy was purchased for Rs.75, 887 per hectare whereas gram was purchased for Rs.9, 175 per hectare.

Why is crop diversification so significant?

- **Groundwater conservation** - Encouraging farmers to grow maize, bajra over water-guzzling crops like paddy will lead to groundwater conservation.
 - As per a recent UN report, in Punjab, the amount of groundwater withdrawn in certain regions exceeds natural recharge rates.

- **Increased productivity** - Crop diversification is a strategy applied to grow more diverse crops from shrinking land resources with an increase in productivity in the same arable land.
- **Soil enrichment**- Crop diversification increases the soil health in the nutrient deficient rice and wheat regions.
- **Increase resource use efficiency**- Breaking the mono-cropping pattern by the introduction of diverse crops and cropping patterns helps in the resource-use efficiency.
- **Revival of traditional agriculture**- This method ensures crop diversity which is more stable and pro-nature.
- **Reduction of pest & diseases**- It helps effectively in pest and diseases management, reduces the quantity of weeds.
- **Reduction in crop failure** - It allows farmers to employ biological cycles to conserve the resource base and reduce the risk of crop failures.
- **Increased income** - It boosts the land use efficiency and enhance the net returns by reducing the input cost.
- **Food and nutrition security**- It has sound capacity for achieving the goal of nutritional security by widening the food basket like cultivating millets, cereals etc.,



What are the challenges in crop diversification?

- **Lack of awareness** - Many farmers are unaware of the concept of crop diversification due to large scale illiteracy among them.
- **Lack of training** - Only few scientists are working for alternative crop research and there is a lack of trained human resources in crop diversification.
- **Poor government support**- Government encourages cultivation of rice and wheat as they would ensure food security.
- **Infrastructural deficit**- Lack of proper storage facilities, Post-harvest management and few food processing industries decrease the value chain.
- **Low investment**- Low investment in research and development activities to enhance crop diversification is another issue.
- **Monetary** - The level of compensation associated with other crops is less compared with Paddy and wheat

In the Garhwal Himalayan region of India, Barahnaja is a crop diversification system for cultivating 12 crops in a year.

Steps taken to Promote Crop Diversification

- **Johl Committee** - It recommended for shifting at least 20% of the net cropped area from dominant crops like paddy and wheat in Punjab to other crops.
- **Ashok Dalwai Committee (Committee on doubling the farmers' income)** - It recommended shifting some areas from staple cereals to high-value produce so that it can lead to a sizable increase in the returns for farmers.
- **Crop Diversification Programme (2013-2014)** - It was launched by the Central Government as a sub-component under *Rashtriya Krishi Vikas Yojana (RKVY)* to diversify 5% of the paddy cultivation area in Uttar Pradesh, Haryana, and Punjab.
- **Punjab's scheme** - In the 2023 budget, the Punjab government allocated ₹1,000 crore for implementing a special scheme on crop diversification.
- **National Food Security Mission (NFSM)** - It is launched in 2013 to supplement the state government to enhance the diversified production of crops such as pulses, coarse cereals, and nutri cereals.
- **Mission for Integrated Development of Horticulture (MIDH)** - It is a scheme for holistic growth and development of Horticulture sector.
- It covers vegetables, fruits, roots and tuber crops, aromatic plants, flowers, spices, bamboo, coconut, cashew and cocoa.

What lies ahead?

- There is a need
 - To enhance the focus on R&D to work in alternative crop development like maize and soya bean.
 - To expand the investment in human resources.
 - To create federations like 'Punjab Maize Federation' or 'Punjab Soya bean Federation' to institutionalise the development and progress of different alternative crops.
 - To fill the gaps in the value chain by improving food processing industry, create favourable business environment like offer tax holidays etc.,

11.3 FL 2027 patent case: Delhi HC Vs PepsiCo

Why in news?

The Delhi High Court upheld an order by the Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA), revoking the registration of patent for a potato variety (FL-2027) to PepsiCo India Holdings Pvt. Ltd.

What is potato plant variety FL-2027?

- FL 2027 (commercial name FC-5) is a potato variety with high dry matter and low sugar content better suited for making chips.
- It was developed in 1996 by a US breeder employed in PepsiCo Inc.
- This processing-grade variety is used in potato chips sold under its Lay's brand.

PepsiCo established its first potato chip plant in India in 1989.

What is the rights of PepsiCo over FL 2027 in India?

- PepsiCo India Holdings (PIH), the subsidiary of PepsiCo Inc., was granted a certificate of registration for FL 2027 in 2016.
- The validity period was 6 years from the date of registration and extendable up to 15 years.
- During the validity period nobody else could commercially produce, sell, market, distribute, import or export it without the breeder's authorisation.
- Farmers in India cultivate these potato varieties under a contract and has a buyback agreement with PIH. The company supplies the FC5 seed variety to a group of farmers who grow the potatoes exclusively for PepsiCo and sell them back at a fixed price.
- **Controversy** - In 2019, [PepsiCo sued some Indian farmers](#) for cultivating the FC5 potato variety, accusing growers of infringing its patent. Within months, [PepsiCo withdrew lawsuits](#) against farmers.

What is the case about?

- Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA) had granted registration for patent for potato variety FL 2027.
- **Revoke** - PPVFRA revoked the same in 2021 based the Protection of Plant Varieties and Farmers Rights Act, 2001 (PPV&FR).
- It also rejected PepsiCo India's application for renewal of its registration.
- **Delhi HC** - PepsiCo challenged both the order and the letter before the Delhi High Court.

Protection of Plant Varieties and Farmers Rights Act, 2001

- The Act provides an effective framework for the protection of plant varieties, the rights of farmers and plant breeders.
- It encourages the development of various plant varieties in India.
- It recognises the rights of breeders, researchers & farmers.
- It also facilitates the mushrooming of the Indian seed industry to ensure the availability of high-quality seeds and planting materials to farmers.
- Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA) was established in 2005.
- It functions under the Ministry of Agriculture & Farmers Welfare.

- The court upheld the PPVFRA's decision of revoking the IP protection rights of PepsiCo over FL 2027.

Why did PPVFRA revoke the registration?

- In relation to **Section 34(a)** of PPV&FR (incorrect info furnished), PPVFRA revoked the protection granted to a breeder.

- **Incorrect Category** - PepsiCo had sought the registration of FL 2027 as a “new variety” in its application. A *new variety* had to conform to the criterion of novelty.
- FL 2027 could satisfy only the criteria of distinctiveness, uniformity and stability (*DUS*) and eligible to be only granted registration as an “*extant variety*”.
- **Incorrect Info** - In that the company had given the date of its commercialisation in India as December 17, **2009**. (more than one year before registration)
- The variety had already been commercialised in 2002 in Chile leading to furnishing of incorrect information by the applicant.

Novelty criteria - The propagated or harvested material from the variety should not to have been sold in India earlier than one year before the date of filing the application for registration.

11.4 Threats of Plasticulture

Why in news?

The agriculture food system is increasingly becoming dependent on plastics resulting in more plastic pollution.

What is plasticulture?

- Plasticulture is a term used to represent the application of plastics in the agricultural sector.
- The proliferation of plasticulture endangers soil, biodiversity and human health.
- In the farming sector, plastics are used to pack seeds and fertilisers in single-use plastic sachets, sacks and plastic containers.
- **Other plastic products** used in agriculture are - seedling trays, mulching film, greenhouse film, protective nets, drip irrigation tapes and irrigation pipes.
- Polyethylene, polypropylene, expanded polystyrene, polyvinyl chloride (PVC) and polyethylene terephthalate are few main polymers found in them.

Agricultural value chains used 12.5 million tonnes of plastic products globally in 2019, reported the Food and Agricultural Organization (FAO).

What are the threats posed by plasticulture?

- The application of plastics in the agriculture sector is hailed to contribute towards the ‘*Second Green Revolution*’ in the country.
- **Microplastics** - The plasticulture has led to microplastics entering every living organism on the planet.
- According to the FAO report, soils are known to contain larger quantities of microplastics than oceans.
- **Soil porosity** - With time the additives and chemicals embedded in mulch films can gradually diminish soil porosity and hinder air circulation.
- **Microbial activity** - It also has the capacity to alter microbial communities, thereby reducing farmland fertility.
- **Poison plastic** - PVC releases toxic chlorine-based chemicals and is a known carcinogen.
- PVCs or low-density polyethylene are primarily used in the plastic mulch films and also in irrigation pipes and drip tapes.
- **Leaching** - Carcinogenic chemicals (phthalate acid esters) from plastic films have high potential of leaching into farm soil.

Just 1 kg of thin mulching sheets is enough to cover and contaminate as much as 700 square feet of agricultural land.

What are the challenges in reducing plasticulture?

- **Plastics industry** - Constantly promotes its own studies on how plastics boost yields, save water, reduce fertilisers, and cut labour.
- The industry maintains a deafening silence on its negative impacts on soil and environment.
- Furthermore, it has a strong lobby to influence the government.
- **Rules** - The Centre banned single-use carry bags with less than 120 microns, but it provided a 50% subsidy for using single-use mulching sheets as thin as 15 microns.

- **Government initiatives** - Plastics are being promoted by the industries through several government bodies like
 1. In 2001, to promote the use of plastics, Ministry of Agriculture constituted National Committee on Plasticulture Applications in Horticulture (NCPAH).
 2. This was renamed as National Committee on Precision Agriculture & Horticulture.
 3. Currently, 22 Precision Farming Development Centres have been established to promote the use of plastics in horticulture.
- **Petrochemical industry** - Growth in the petrochemical industry will also boost plasticulture practices in the country.
- The demand for chemicals and petrochemicals in India is expected to reach US\$ 1 trillion by 2040.
- **Plastic Waste Management** - Management of agricultural plastic waste is close to non-existent and have become immortal and omnipresent.
- Most 'agro plastics' have a limited lifetime (less than a year) hence, farmers manage their agroplastics in two ways: Burning or burying.
- When plastics are **burned**, they emit hazardous substances such as dioxins and furans, which cause cancer.
- **Burying** of plastics releases microplastics which impact human health when agricultural produce is consumed.

Around 99% of plastic is produced from fossil fuels by refining oil, natural gas, or coal.

About 67% of the people in villages preferred to burn household plastic waste, according to the findings of a survey released in 2022.

What is the way forward?

- An outright **ban** on non-essential agri plastics.
- Countries like India have pioneered sustainable agricultural practices using locally available and **eco-friendly materials**, we should make use of it.
- A new '**Extended Legislature Responsibility**' clause could be invoked.

12. ENVIRONMENT

12.1 Issues with Green Hydrogen

Why in news?

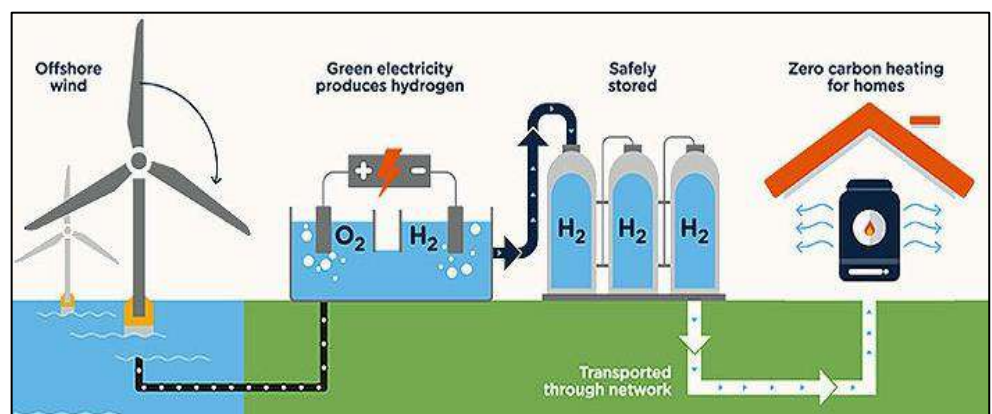
Recently, Government has announced an Rs 17,490 crore Green Hydrogen Package.

What is Green Hydrogen?

- Hydrogen is an abundant, cheap and clean-burning which is described as the **fuel of the future**.
- It is produced using **electrolysis of water** with electricity generated by **renewable energy**.
- The carbon intensity ultimately depends on the carbon neutrality of the source of electricity (i.e., the more renewable energy there is in the electricity fuel mix, the "greener" the hydrogen produced).

What is the need for Green hydrogen?

- **Energy dense** - It stores the energy in dense chemical form which is suitable for energy intensive applications like aircraft or automobile fuel.
- **Energy carrier** - It acts as an energy carrier which is crucial to achieve deep decarbonisation of hard to abate sectors.



- **Decarbonising Transport-** It power fuel cells in vehicles, trucks, and ships.
- **Dealing with Climate Change** - It can replace coke in steel-making, facilitating the production of green steel. These applications doesn't emit carbon dioxide.
- Green hydrogen will aid contribute to India's Panchamrit to deal with the challenge of climate change

What are the challenges associated with green hydrogen production?

- **Cost-** High overall costs of the system including capital, operational, maintenance, and running costs.
- Electrolysers are expensive as they are yet to be standardised and mass-produced.
- Green steel cost exceeds 40-60% of regular steel.
- **Efficiency-** One-third of energy is lost in production.
- **Drinking water supply-** Primary raw material is clean water which puts pressure on the municipal water supply.
- Low user acceptance and social awareness.
- **Volatility** - Loss of 70 % of hydrogen during production to end use.
- Hydrogen is very light and hence leaks at each stage, from production to end-use.
- **Supply chain efficiency-** The low density of hydrogen necessitates compression, which increases costs.
- Transportation requires specialised infrastructure due to hydrogen's flammability and corrosiveness.
- Energy losses can occur at various stages.
- **Safety concern-** Storage tanks must be designed to handle high pressure and low temperatures.
- Hydrogen is highly flammable and corrosive and needs special containers to withstand high pressure and wear & tear.

What are the options that lies ahead for India?

- **Investment-** Capital must be invested in R&D like stabilising grid power rather than incentives.
- **Reduce import bill-** Hefty bills due to over reliance on export of oil must be reduced.
- **Cost optimisation-** Cost can be optimised by combining use of grid power, grey and blue hydrogen.
- **PPP-** Government can explore different financing options to make it viable like public-private partnership.
- **Policy push-** Policy push on both demand and supply side can address high cost and infrastructure bottlenecks
- **Regulations** - Proper standards and regulations are required for quicker adoption of green hydrogen economy.

12.2 Green Credit Programme (GCP)

Why in news?

The Union Ministry of Environment, Forests and Climate Change has notified draft rules for 'Green Credit Programme'.

What is Green Credit?

- 'Green credit' is a singular unit of an incentive provided for a specified activity, delivering a positive impact on the environment.
- It can be earned by individuals, farmer-producer organisations (FPO), industries, rural and urban local bodies, among other stakeholders for their environment positive actions.
- **Programme** - The Green Credit Programme (GCP) launched, was first announced in the **2023-24 budget** under Mission LiFE.
- The Ministry of Environment issued the draft 'Green Credit Programme Implementation Rules 2023' under the Environment Protection Act of 1986.

Panchamrit

By **2030**, India will

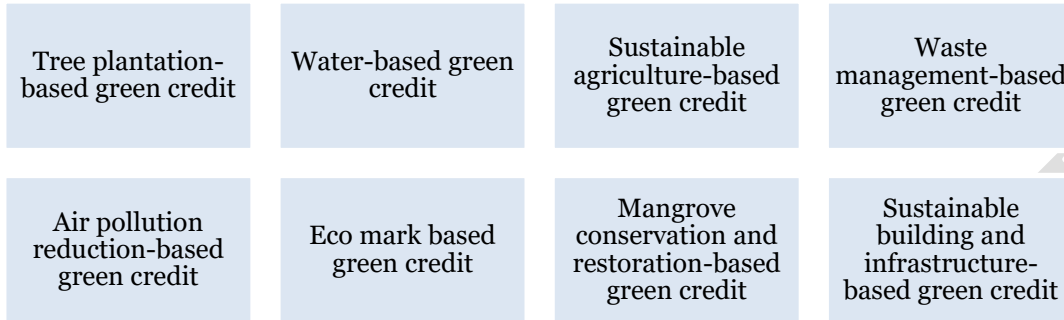
- Reach its non-fossil energy capacity to 500 GW
- Meet 50% of its energy requirements from renewable energy
- Reduce the total projected carbon emissions by 1 billion tonnes
- Reduce the carbon intensity of its economy by less than 45%.

By the year **2070**, India will achieve the target of Net Zero.

National Green Hydrogen Mission was launched in 2023 to make India a hub for production and export of Green Hydrogen.

How will the program be implemented?

- The Green Credit Programme (GCP) aims to leverage a competitive market-based approach and incentivise voluntary environmental actions of various stakeholders.
- The environment ministry has identified 8 select activities for which green credit can be earned.



- Thresholds and benchmarks will be developed for each green credit activity under the programme.
- **Trade Market** - The green credits will be tradable and be made available for trading on a domestic market platform.
- The Trading Service Provider accredited by the GCP administrator will establish the trading platform for the exchange of Green Credit Certificates.
- **Implementation** - A steering committee headed by the environment secretary.
- It also approve its rules and regulations and make recommendations to the central government for issuance of Green Credit Certificate.
- The steering committee will not only approve procedures for institutionalising the GCP.
- **Administrator** - The Indian Council of Forestry Research and Education (ICFRE)
- The institute will develop guidelines, processes and procedures for implementation of the programme.

What are the advantages of GCP?

- It accounts for and *incentivise individual* and *community actions*, besides corporate and businesses.
- The environmental activity generating Green Credits under Green Credit Programme (GCP) may have *climate co-benefits* such as reduction or removal of carbon emissions.
- Such activity may accrue both *green credits* as well as *carbon credits* which may be sold under Green Credit market or carbon market respectively.
- Helps to realise the vision of ‘*Mission LiFE*’ through pro-planet people and entities.
- The GCP will encourage private sector industries and companies as well as other entities to meet their *existing obligations*, stemming from other legal frameworks.

What are the concerns around GCP?

- There is a strong risk of greenwashing through such market based mechanisms.
- It also raises serious questions about how rigour of monitoring will be maintained.

12.3 Conservation of Small Rivers

Why in news?

Government of India has taken steps for conservation of water and rejuvenation of small rivers.

What initiatives were taken to conserve small rivers?

- **Jal Shakti Abhiyan (JSA)** – It was launched in 2019 to promote water conservation and water resource management.

JSA Series	Theme	Focus
2023	Source Sustainability for Drinking Water	Special focus on 150 Water Stressed Districts (WSDs) of the country

- **Five-fold intervention-**
 - Rainwater harvesting & water conservation
 - Enumerating, geo-tagging & making inventory of all water bodies;
 - Preparation of scientific plans for water conservation
 - Setting up Jal Shakti Kendras in all districts
 - Intensive afforestation
 - Awareness generation.
- **Amrit Sarovar Mission-** It was launched in 2022, aimed at developing and rejuvenating 75 water bodies in each district of the country as a part of celebration of Azadi ka Amrit Mahotsav.
- **Namami Gange programme-**It was launched in 2014 for integrated rejuvenation of National River Ganga.
- Its tributaries and large numbers of smaller tributaries have been mapped along with their catchment area/watershed and wetlands.
- A GIS based inventory of small rivers has also been created with additional district wise information.
- **National River Conservation Plan (NRCP)** – It is the Centrally Sponsored Scheme implemented for abatement of pollution in identified stretches of rivers in the country, excluding those in Ganga basin.
- It provides financial and technical assistance to the States/Union Territories (UTs) on cost sharing basis.
- **Small River Rejuvenation & Conservation plan-** In this, 19 rivers have been identified & successfully taken up by Uttar Pradesh government.
 - Example- River Manorama, River Varuna, River Tedi etc.,

- **Mission Water Conservation-** It is launched to develop actionable framework for gainful utilization of funds.
- It strives to ensure synergies in [Mahatma Gandhi National Rural Employment Guarantee Scheme](#) (MGNREGS), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) etc.,
- **Mass awareness programs-** To promote water conservation initiatives including rain water harvesting and artificial recharge to ground water various.
- **National Water Awards-** It is constituted under Ministry of Jal Shakti to recognize the efforts of people and organizations working in water conservation.
- **Weekly Water Heroes Contest-** The objective of the contest is to promote value of water, in general, and for supporting country-wide efforts on water conservation and sustainable development of water resources.

Best Practices
<ul style="list-style-type: none">• Vidharbha Farmers Livelihood Project- Sustaining farmers livelihoods through integrated watershed management and conservation of natural resources.• Drought proofing in Maharashtra- The Government of Maharashtra rolled out the “<i>Gaalmukt Dharan and Gaalyukt Shivar</i>” (<i>GDGS</i>) scheme to de-silt the waterbodies using excavating machines. The resultant silt was given to farmers free of cost.• Low cost irrigation in Andhra Pradesh- The objective is to produce more crop per drop using judicious water irrigation practices.

12.4 Deep Sea Mining

Why in news?

The International Seabed Authority (ISA) is preparing to resume negotiations that could open the international seabed for mining, including for materials critical for the green energy transition.

What is Deep Sea Mining?

- [Deep sea mining](#) involves removing mineral deposits and metals from the ocean’s seabed.
- **Types** - There are 3 types of such mining:
 1. Taking deposit-rich [polymetallic nodules](#) off the ocean floor
 2. Mining massive seafloor sulphide deposits
 3. Stripping cobalt crusts from rock

- These nodules, deposits and crusts contain materials, such as nickel, rare earths, cobalt and more.
- **Significance** - These minerals are needed for batteries and also for everyday technology like mobiles and computers.
- These are strategically important resources as onshore reserves are depleted and demand continues to rise.
- **Mining technology** - Vacuum materials from seafloor using massive pumps, AI-based technology to teach deep sea robots to pluck nodules off the floor, advanced machinery to mine underwater, etc. are being considered.

How is deep sea mining regulated now?

- The [high seas](#) and the international ocean floor are governed by the United Nations Convention on the Law of the Seas (UNCLOS).
- It is considered to apply to states disregard of signing and ratification.
- Under the treaty, the seabed and its mineral resources are considered the '**common heritage of mankind**'.
- They must be managed in a way that protects the interests of humanity through the sharing of economic benefits, support for marine scientific research, and protecting marine environments.
- **License** - More than 30 exploration licenses have been issued so far by ISA.
- The Clarion-Clipperton Fracture Zone between Hawaii and Mexico is the most focused area of exploration.

Why is there pressure on the ISA to establish regulations now?

- In 2021 the Pacific island nation of Nauru applied to the ISA to exploit minerals in a specified deep sea area that triggered a clause of the U.N. treaty.
- **Two-year rule** - The clause requires the ISA to complete regulations governing deep sea exploitation by July 2023 (2 years from date of application).
- If ISA fails to approve a set of rules and regulations by July 9, Nauru can submit an application to conduct the mining without any governing regulations.
- Other countries and private companies can start applying for provisional licenses.

What are the environmental concerns?

- The full extent of implications for deep sea ecosystems is unclear. But scientists have warned that biodiversity loss due to mining is inevitable and potentially irreversible.
- **Damage from mining** - Can include noise, vibration and light pollution.
- There is a possibility for leaks and spills of fuels and other chemicals used in the mining process.
- **Sediment plumes** from the some mining processes are a major concern as it can harm filter feeding species like corals and sponges.
- **Need for regulation** - Without any environmental protocols, the damages and their implications might be huge.

International Seabed Authority

- An autonomous UN body established in 1994 under the 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- International Seabed Authority (ISA) regulates the world's ocean floor and control all mineral-resources-related activities in the area
- **Headquarters** - Kingston, Jamaica
- **Members** - 168 Members which includes 167 Member States and the European Union

United Nations Convention on the Law of the Sea

- UNCLOS is an international agreement adopted in 1982.
- It lays down a comprehensive law and order in the world's oceans and seas establishing rules governing all uses of the oceans and their resources.
- India ratified UNCLOS in 1995.

The Clarion-Clipperton Zone (CCZ)

- It spans between Hawaii and Mexico, an abyssal plain as wide as the continental United States and punctuated by seamounts.
- Lying atop the muddy bottom or embedded just beneath it are trillions of potato-size polymetallic nodules.
- These rocklike deposits contain nickel, manganese, copper, zinc, cobalt, etc.



- Countries including France, Germany and several Pacific Island nations have officially called for a ban, pause or moratorium on deep sea mining at least until environmental safeguards are in place.
 - **Against** - Some companies such as Google, Samsung, BMW and others have backed the WWF's call to pledge to avoid using deep sea mined minerals.
 - **For** - Many countries view deep sea minerals as a strategic source to energy transition.
 - Countries such as Norway, are also proposing to open their waters to mining.

What next?

- The earliest mining under ISA regulations could begin is 2026.
- Applications for mining must be considered and environmental impact assessments need to be carried out.
- The ISA's *Legal and Technical Commission* is about to discuss the yet-to-be mining code draft.

Related Topic - [Deep Ocean Mission](#)

13. SCIENCE & TECHNOLOGY

13.1 All about Chandrayaan-3

Why in news?

The Indian Space Research Organization (ISRO) is preparing to launch Chandrayaan-3 on July 14, 2023.

What is Chandrayaan-3 Mission?

- Chandrayaan-3 is India's 3rd lunar mission and a follow-on to the [unsuccessful Chandrayaan-2](#).
- It will demonstrate India's end-to-end capability in safe landing and roving on the lunar surface.
- **Objective**
 1. To demonstrate safe and soft landing on the lunar surface
 2. To demonstrate rover roving on the moon and
 3. To conduct in-situ (on-site) scientific experiments.
- It also aims to develop and demonstrate new technologies required for interplanetary missions.

The success of the emission will make Chandrayaan-3, the world's 1st mission to soft-land near the lunar South Pole and India 4th country to soft-land on the moon

How will the mission work?

- Chandrayaan-3 will be launched by [LVM3](#) from Satish Dhawan Space Centre, Sriharikota.
- **Modules** - Chandrayaan-3 spacecraft is a composite of three modules.

1. A Propulsion module (PM):
Life - 3-6 months
2. An indigenous Lander module (LM) - [Vikram](#)
3. A Rover - [Pragyan](#)

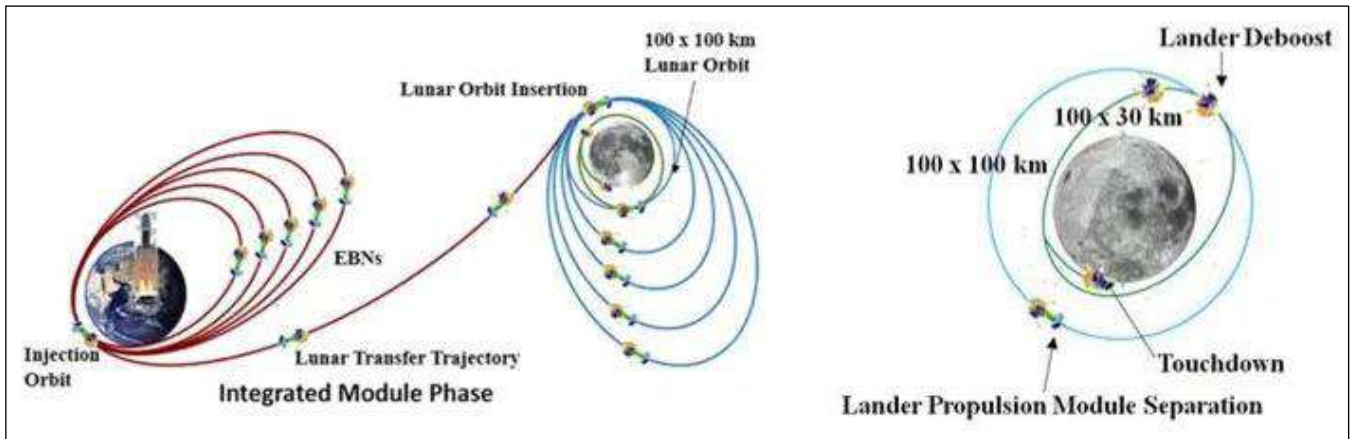
- **Timeframe** - 1 month to reach the moon
- **Slingshot Manoeuvre** - The Chandrayaan-3, like Chandrayaan-2, will circle the Earth 5-6 times, then sling off to the Moon.

Launch Vehicle Mark-III (LVM3)

- It is a *three-stage* medium-lift launch vehicle developed by ISRO.
- Earlier known as 'GSLV Mk-III', it is the most powerful rocket in the ISRO's stable.
- It includes 2 solid boosters, the core liquid fuel-based stage, and the cryogenic upper stage which uses cryogenic engine ([CE20](#)).
- It can carry a payload of up to 8,000 kgs to a low-Earth orbit (LEO) and about 4,000 kgs to geostationary transfer orbit (GTO).
- LVM-3 was used also in launching Chandrayaan-2.

- This manoeuvre uses Earth's gravity to impart velocity to the spacecraft thereby reducing the fuel used.
- **Lunar Orbit** - The module enters lunar orbit and the reverse will happen.
- Loop-by-loop the spacecraft will get closer to the moon until it reaches a circular path 100 km above the moon's surface before the lander separates.

- **On the Moon** - The lander will soft land at a specified lunar site (lunar South Pole) and deploy the rover.
- The rover will explore the lunar terrain for 14 Earth days (1 lunar day) and will carry out in-situ chemical analysis of the lunar surface.



What are the payloads carried by Chandrayaan-3?

- **Propulsion Module payload:** It has one scientific payload - Spectro-polarimetry of Habitable Planet Earth (SHAPE), which will be operated post separation of the lander module.
- SHAPE is to study the spectral and Polarimetric measurements of Earth from the lunar orbit and also will look for smaller planets that might be habitable in the reflected light.
- **Lander Module payloads:**
 1. *ChaSTE* (Chandra's Surface Thermophysical Experiment) - To measure the thermal conductivity and temperature;
 2. *ILSA* (Instrument for Lunar Seismic Activity) - For measuring the seismicity around the landing site;
 3. *LP* (*Langmuir Probe*) - To estimate the plasma density and its variations.
- **Rover payloads:** Has 2 payloads for deriving the elemental composition in the vicinity of landing site.
 1. Alpha Particle X-ray Spectrometer (APXS)
 2. Laser Induced Breakdown Spectroscope (LIBS)

How different is Chandrayaan-3 from Chandrayaan-2?

- ISRO has designed Chandrayaan-3 with a **failure-based approach**.
- Based on lessons learned from Chandrayaan-2, Chandrayaan-3 was upgraded such as -
 1. The lander incorporates enhanced features to ensure a successful landing by overcoming obstacles.
 2. The rover is equipped with hazard detection and avoidance systems, ensuring a safe traversal of the moon's surface.
- **Orbiter** - Chandrayaan-3 will not carry an orbiter but it will use data from the Chandrayaan-2 orbiter.
- **Landing site** - The site is at around 70 degree S near the Southern pole of the moon.
- It has been fed with high resolution pictures captured by the Chandrayaan-2 orbiter and does not depend only on pictures clicked during descent to determine landing.
- The landing area has also been expanded from a patch of 500mx500m to a broad 4kmx2.4km area.
- **Weight** - Due to the modifications made for a safe landing, the weight of the payload is slightly more than the previous mission.
- **More fuel** - Travel longer distances to the landing site or an alternate landing site, if needed.

How significant is the Chandrayaan-3 mission?

- It represents ISRO's commitment to expanding our understanding of the moon and beyond.
- ISRO aims to mitigate risks and ensure a successful mission, by taking a failure-based approach in its design.
- The mission's success will solidify India's position as a prominent player in the realm of space exploration.

- It has enormous promise for the future of space travel and interplanetary missions.
- The data from this is likely to benefit NASA's Artemis program, as India has signed NASA's [Artemis Accord](#).

SHOOTING FOR THE MOON: 2019, 2023

CHANDRAYAAN-2

COMPONENTS
Orbiter, Lander, Rover

EXPERIMENTS ON BOARD
■ 8 on Orbiter, 4 on Lander, 2 on Rover

WEIGHT

Orbiter	2,379 kg
Lander	1,471 kg
Rover	27 kg (travels 500 m)
Payload total	3,850 kg

MISSION LIFE
ORBITER: Planned 1 year, estimated 7 years
LANDER, ROVER: 1 lunar day

LANDING SITE
70.9 degree S 22.7 degree E; high plain between two craters, Manzinus C and Simpelius N

DAYS TO MOON

Around Earth	23 days
Towards Moon	7 days
Around Moon	13 days

Lander separation, de-bouncing, powered descent: 5 days
TOTAL: 48 DAYS

LANDER
5 thrusters; was to land in a 500 m X 500 m space; was using pictures taken then and there to assess landing site

CHANDRAYAAN-3

COMPONENTS
Propulsion module, Lander, Rover

EXPERIMENTS ON BOARD
■ Same experiments on Lander and Rover as Chandrayaan-2
■ New experimental payload added to propulsion module

WEIGHT

Propulsion module	2,145 kg
Lander	1,749.86 kg (including rover)
Rover	26 kg
Payload total	3,900 kg

MISSION LIFE
PROPULSION MODULE: 3 to 6 months
LANDER, ROVER: 1 lunar day

LANDING SITE
69.36 degree S, 32.34 degree E; slightly off the site for Chandrayaan-2

DAYS TO MOON
42 DAYS; SOONER THAN CHANDRAYAAN-2

LANDER
4 thrusters; stronger legs; built with redundancies for more scenarios, using data already generated by the C2 orbiter. Additional solar panels.

ISRO INDIA

Isro's LVM3 carrying Chandrayaan-3 being moved to the launch pad ahead of its launch, at the Satish Dhawan Space Station, in Sriharikota. PTI

13.2 Newborn Genome Sequencing

Why in news?

Newborn genome sequencing unlocks the blueprint of health.

What is genome sequencing?

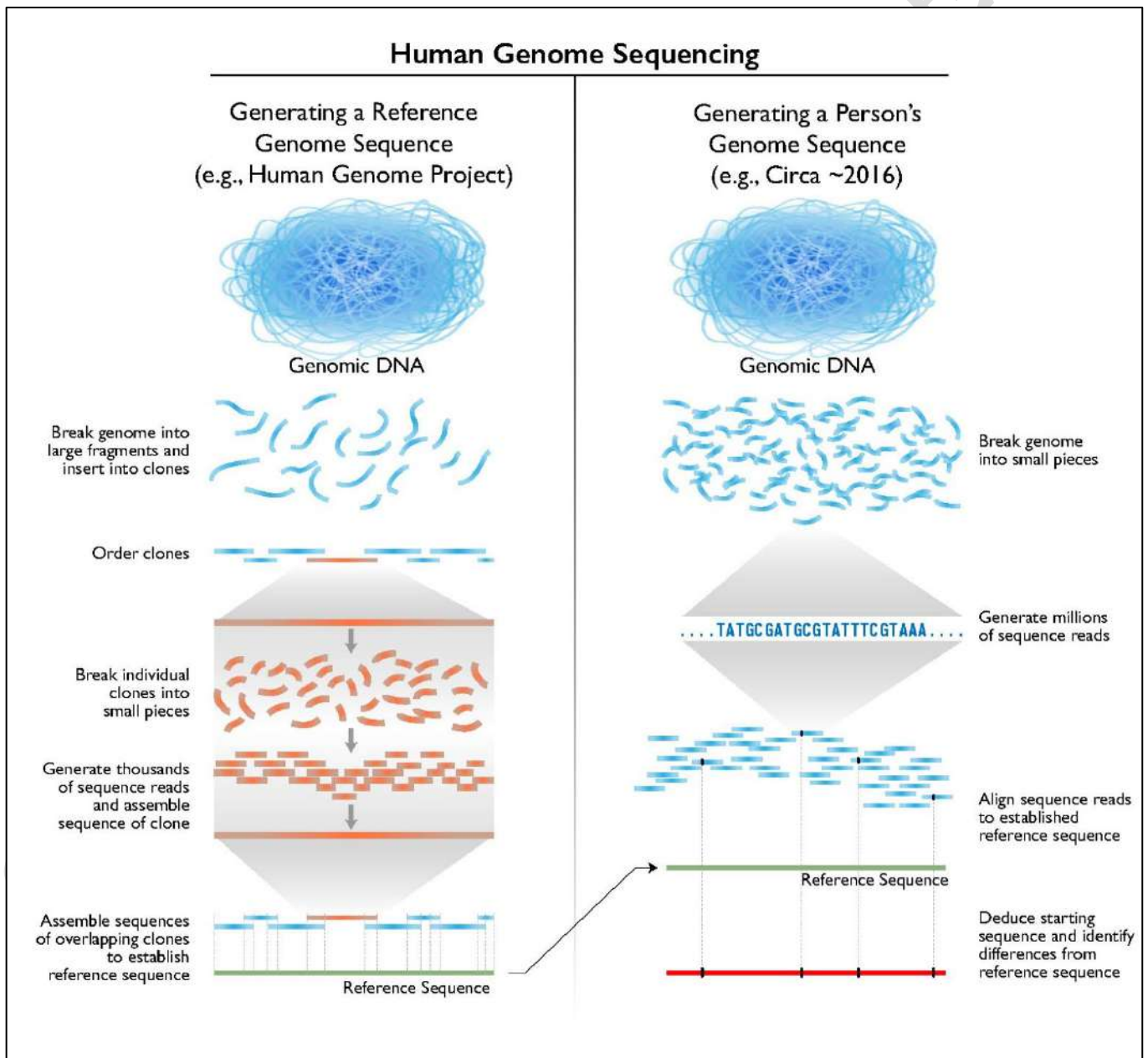
- A genome is defined as an *organism's complete set of Deoxyribose Nucleic Acid (DNA)*, including all of its genes.
- It consists of all of the approximately 3 billion base pairs of DNA that make up the entire set of chromosomes of the humans.

- Genome Sequencing is the state-of-art, robust and high throughput technique to sequence the entire genome of an organism.

To know about the Complete Human Genome, click [here](#)

What methods are deployed for Genome sequencing?

- **Clone-by-Clone method-** It is a traditional method that requires high density genome map and works well for larger genomes like eukaryotic genomes.
- **Whole genome shotgun sequencing-** It is the improved version of Clone-by-Clone method that doesn't require a genome map,
- It is the faster method of sequencing but not suitable for larger genomes as they have a number of repetitive DNA sequences.
- **Next-Generation Sequencing-** It is the most advanced, robust, accurate, faster, cheaper and high throughput genome sequencing technique.
- It relies on the chemistry of bridge amplification and can sequence more than 5 separate human genomes simultaneously. It is the most trusted Genome Sequencing method so far.



Why is it important to sequence new born genome?

- New born genome sequencing helps in early diagnosis of the disease that would lead to effective treatment and prevent from death/disability of child.

- The rapid diagnosis would consequently translate into a significant reduction in the cost of treatments.
- Population-scale genome-sequencing efforts have provided insights into the prevalence of many of the diseases in an unbiased manner.
 - The U.K. National Health Services has recently launched a nationwide programme to sequence 100,000 sick newborns.
- It helps in predictive diagnosis and precision medicine.
- It identifies potential causative variants for further follow-up studies for gene expression and regulating mechanism.

There are 6000 genetic disorder diseases of which 3500 are documented and only few of them have been properly mapped.

What are the ethical challenges?

- **Privacy** - The issue of disclosing and managing incidental and secondary findings.
- **Psychological impact** - Stereotyping and stigmatization of the participants inducted in the research.
- **Justice** - Equitable distribution of benefits and burdens associated with accessing and utilizing this technology.

What lies ahead?

- Since, it is the solution to the rare genetic disorder, it provides for better healthier future.
- Strict adherence to the ethical measures would help to maintain data security and privacy.

- **Human Genome project**- It is an international research collaboration between 1990 and 2003 with the primary goal to
 - Decipher the entire human genetic material.
 - Sequence the whole genome at 3 billion base pair per second.
 - Improve the tool for data analysis and create a physical map of human genome.
- **Genome India project**- It is a whole genome sequencing of 10,000 individuals representing country's diverse populations.
- The vision is "Cataloguing the genetic variations in Indians" for 3 years (2020-2023).
- **IndiGen project**- The Council of Scientific & Industrial Research (CSIR) has conducted Whole Genome Sequencing of 1,008 Indians from different populations across the country.

13.3 Role of Moon in the Development of Life on Earth

Why in news?

Moon, the only natural satellite of Earth played vital role in the geology of Earth and evolution of life.

What is the Earth's Moon and how did it form?

- **Moon** - It is the Earth's most constant companion, which orbits at a mean distance of about 384,400 km.
- The Earth and Moon are tidally locked. Their rotations are so in sync we only see one side of the Moon.
- Humans didn't see the lunar far side until a Soviet spacecraft flew past in 1959.
- The Moon has a solid, rocky surface cratered and pitted from impacts by asteroids, meteorites and comets.
- It is approximately 1/4th the size of Earth in terms of diameter.
- In surface area, the Moon covers about 1/16th of Earth's total surface area & roughly has 1.2% of Earth's mass.
- The moon's gravitational force is only about 16.6 % of Earth's gravity which means a person would weigh 6 times less on the moon than they do on Earth.
- Moon takes 27 days to revolve around Earth, its lunar cycle (from one new moon to other new moon) is 29.5 days.
- **Formation** - Moon was formed when a Mars-sized object (**Theia**) smashed into the Earth about 4.5 billion years ago. This enormous collision spun out a cloud of debris that evolved into the moon.
- As per research, Theia came from outer solar system that collided with the Earth.

What is the role of Moon in the development of life on Earth?

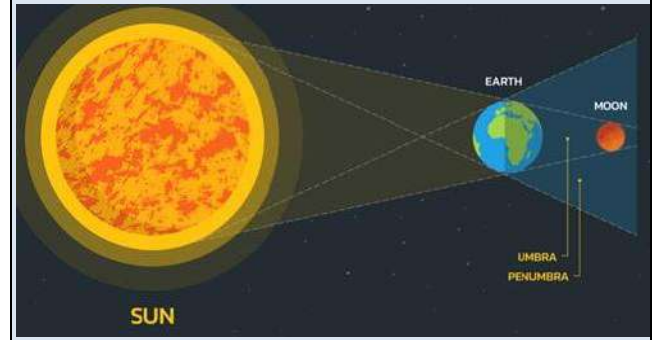
- **Effect of tides on evolution** - Tides resulting from the gravitational force of the moon affect animal life in the intertidal zone (where the ocean meets the land between high and low tides).
- Big tidal ranges have been responsible for forcing bony fish into shallow pools on land, prompting the evolution of weight-bearing limbs and air-breathing organs.
- The tides eroded the coastal areas, adding minerals to the oceans an essential element for life to evolve quickly.
- **Effect of lunar cycle on reproduction**- The reproductive cycles of many marine creatures are closely synchronised with lunar phases.
 - **Example** - The mass spawning of corals on the Great Barrier Reef is triggered by the Moon.
- Nocturnal animals behave differently depending on where the moon is in the sky during lunar phase.
- There is also a link of lunar rhythms with human behaviour, activity and even fertility.
- Some scholars arguing that human reproductive behaviour was originally synchronous with the moon, but got modified recently by modern lifestyles.
- **Impact on climate change**- Moon's gravitational pull helps transport heat away from equator to the poles, shaping earth's climate.
- The absence of moon would lead to extreme climate change as there would be huge differences between temperatures and daylight throughout the year.
- Moon also stabilises the Earth's rotation on its axis by slowing Earth's rotation on its axis.
- **Impact of Moon's light**- The ability to see and to be seen enhances in the moonlight.
- Studies have documented changes in the success rates of predators and foraging patterns of prey animals due to this added night time illumination.
 - Studies have shown that lions are less likely to hunt during the full moon and lion attacks on humans happen 10 days after the full moon.
- **Water distribution**- It is with the formation of the Moon, water came to Earth for the first time in 4.4 billion years ago.
- Theia's collision with Earth led to the formation of moon provided sufficient carbonaceous material to account for the entire amount of water on Earth.
- **Tectonic plates**- The moon's pull of gravity might have set the Earth's tectonic plates.
- It raises the level of the world's oceans towards the equator.

Lunar Eclipse

The lunar eclipse of the Moon is caused by Earth which completely blocks the direct Sun rays which reach the Moon, with the only light reflected from the lunar surface being refracted by Earth's atmosphere.

Types

- **Total lunar eclipse**- It occurs when the Moon and Sun are on opposite sides of Earth.
- **Partial lunar eclipse**- It happens when only part of Earth's shadow covers the Moon.



Only 3 countries have achieved the soft-landing on the moon's surface - United States, Russia and China

LUNAR MISSIONS

China  <ul style="list-style-type: none">• Chang'e 1 (2007)• Chang'e 2 (2010)• Chang'e 5 (2020)	India  <ul style="list-style-type: none">• Chandrayaan 1 (2008)• Chandrayaan 2 (2019)• Chandrayaan 3 (2023)	USA  <ul style="list-style-type: none">• Apollo 11 (1969)• Artemis 1 (2022)• Artemis 2 (2024)
Russia  <ul style="list-style-type: none">• Luna 2 (1959)• Ranger 9 (1965)• Luna 25 (2023)	South Korea  <p>Danuri (2022)</p>	Japan  <ul style="list-style-type: none">• Hakuto-R (2022)• Selene (2007)

Recent Lunar Missions

What is the need for exploring the Moon?

- **Scientific Knowledge-** To pursue scientific activities that address fundamental questions about the history of Earth, the solar system and the universe.
- **Human Settlement-** To extend human presence to the moon to enable eventual settlement.
- **Test Bed** - To test the technologies, systems, flight operations and exploration techniques to reduce the risks and increase the productivity of future missions to Mars and beyond.
- **Economic Expansion-** To expand Earth's economic sphere, and conduct lunar activities with benefits to life on the home planet.
- **Water Exploration** – To utilise the remnants of water in the shaded spots would remain a permanently frozen mixture of dust and ice.
- **Mineral Exploration** - To tap the billions of dollars of untapped mineral resource that the moon holds.
- **Public Engagement-** To use a vibrant space exploration program to engage the public and help develop high-tech workforce to address the challenges of tomorrow.
- **Global Partnerships-** To provide a challenging, shared and peaceful activity that unites nations in pursuit of common objectives.

13.4 Atmanirbhar Bharat in Defence Production

Why in news?

The US-India military deal is not enough to cut the partnership that India has with Russia.

Status of India's Defence Production

- **Arms import** - India is the **world's biggest arms importer** but the major weapons purchases include provisions for joint manufacture or technology transfer.
- Of India's total volume of procurement in 2016–20, **84%** was of foreign origin.
- As per Stockholm International Peace Research Institute (SIPRI), India bought weapons worth over \$60 billion in the last 20 years, of which **65% were from Russia**.
- **Military spending** - India is the **third largest military spender** after the United States and China.
- **Indigenisation** - According to SIPRI, **64% of capital outlays** in the military budget of 2021 were earmarked for acquisitions of **domestically produced arms**.

The US remained the top arms exporter during 2018-22.



What is the history of India-Russia defence relations?

- USSR was **India's strategic partner** during the Cold War and also its primary military equipment supplier.
- Moscow started supplying naval equipment to India from 1964 and by 1987, constituting 70% of Indian Navy's inventory.
- Moscow loaned **the 1st nuclear submarine to India in 1988**, which was commissioned as **INS Chakra**.
- **Joint exercises- "INDRA"** is held between the three-Armed Forces. Indian contingent participated in International Army Games, Ex Vostok in Russia.
- **Agreement for 2021-2031-** To develop and strengthen the military and technical cooperation in research and development, production and after sales support of armament systems and various military equipment.

What is the history of India-US defence relations?

- Defence relationship has emerged as a major pillar of India-U.S. strategic partnership with the signing of '**New Framework for India-U.S. Defense Relations**' in 2005.

- India-US 2+2 Ministerial dialogue further enhanced the defence ties.

- **Bilateral Exercises-** Tiger Triumph, Vajra Prahar, Malabar exercises etc.,

- In 2016, US recognised India as “Major Defence Partner” which commits the U.S. to facilitate technology sharing with India.

- Both have signed 4 agreements that cover areas of military information, logistics exchange, compatibility, and security.

Agreement	About	Signed in
GSOMIA	General Security of Military Information Agreement	2002
LEMOA	Logistics Exchange Agreement	2016
COMCASA	Communications Security Agreement	2018
BECA	Basics Exchange Cooperation Agreement	2020

- **QUAD (Quadrilateral Security Dialogue)** - It is a strategic security dialogue between Australia, India, Japan and the United States.

- **Other agreements-** 'Security of Supply' (SoS) arrangement and a 'Reciprocal Defence Procurement' (RDP) agreement aims to promote long-term supply chain stability and enhance security and defense cooperation.

- India's first indigenous fighter jet LCA Tejas is powered by GE's F404 engines exported from US, talks to buy MQ-9 UAV (also known as Sea Guardian) is also under the table.

What are the issues with India's defence import?

Issues in Import from Russia	Issues in Import from USA
Russia-Ukraine War- It disrupted military supplies to India and will also delay remaining two of the five Russian S-400 air defence systems bought by India in 2018.	US relation with Pakistan- Due to the strategic threat to India from Pakistan, this may weaken India's defence ties with USA.
Payments - Due to sanctions against Russia over war, payment to the defence procurement by India is still a challenging issue.	Technology transfer- US is not open to India with the technology transfer related to defence which is a major hurdle.
Russia -China ties- Russia's inclusion in the China's One Belt One Road initiative and its closer proximity to China affects the strategic autonomy of India.	India-Russia Defence ties- India's purchase of S-400 from Russia weakens the defence partnership with USA.

Why India should move towards indigenization?

- **Self-reliance**– Make in India movement in the defence sector will be a key towards Aatmanirbhar in Defence.
- **Private sector-** Private sector participation in defence will encourage foreign producers to form strategic partnerships with various Indian businesses.
- **Military expenditure-** India will be able to reduce its reliance on imports by increasing domestic production.
- **Exports-** India will be able to achieve its 2025 export target of Rs. 36,500 crore (US\$ 4.8 billion).

What measures were announced by India to attain Atmanirbhar in defence sector?

- The government would approve at least 5 projects under Make-in India during 2022-23 for boosting industry-backed R&D efforts.
- **IDEX-Prime** - It aims to encourage projects that may necessitate support beyond Rs. 1.5 crore and up to Rs. 10 crore, to help developing start-ups in the defence sector.
- Around 68% of the capital procurement budget would be earmarked for the domestic industry.
- The industrial licensing process would be streamlined with longer authentication period.
- An indigenisation portal called SRIJAN would be launched to support indigenisation by Indian entities, including MSMEs. Two industrial defence corridors would be launched in Uttar Pradesh and Tamil Nadu.

13.5 New Scorpene class submarines

Why in news?

The DAC has cleared proposals to buy 3 additional Scorpene submarines and 26 Rafale Marine fighter jets for the Navy.

What is the naval strength of India?

- Indian Navy has 16 conventional submarines
 - 7 of the Sindhughosh class (Russian Kilo class)
 - 4 of the Shishumar class (modified German Type 209)
 - 5 of the Kalvari class (French Scorpene class)
- It also has 2 nuclear submarines, [INS Arihant](#) and INS Arighat.
- Project 75** – Earlier in 2005, India signed Project 75 to construct 6 Scorpene class submarines over 30 years with technology transfer from France.
- So far, 5 submarines have been commissioned and the last one, INS Vagsheer is under trials.

Defence Acquisition Council is the apex decision-making body for the acquisition of military equipment for India's armed forces.

Scorpene Submarine

Length: Around 220 feet

Height: Approximately 40 feet


Top speeds:

Surfaced - 11 knots (20 km/h)

Submerged - 20 knots (37 km/h)

Endurance - Approx. 50 days

System - Diesel electric propulsion systems



Projects-75 (Kalvari class)		
Name	Meaning	Commissioned Year
INS Kalvari	Tiger Shark	2017
INS Khanderi	Island Fort built by Chhatrapati Shivaji	2019
INS Karanj	Island located South of Mumbai	2021
INS Vela		2021
INS Vagir	Sand Fish	2023
INS Vagsheer	Sand Fish	Launched in 2022 (under trail)

- Project 75I** – It is a follow-up to Project 75 and improves upon the design and technology of its predecessor.
- It aims to procure diesel-electric attack submarines with fuel cells and Air-Independent Propulsion System (AIP) for the Indian Navy.

What is the need for the three additional submarines?

- Bolster our fleet** - Procurement of the three additional submarines will help in maintaining required force level and operational readiness of the Navy
- Delay** - The delayed deliveries of submarines under Project 75 made DAC to decide on buying them.
- Lack of maintenance** - The ageing fleet of India's Russian-made platforms, Moscow's inability to perform maintenance work.
- Indigenisation** - It will help the MDL in enhancing its capability and expertise in submarine construction.
- Procurement of submarines with higher indigenous content will create employment opportunities domestically.

Nuclear Subs	
Pros of nuclear subs	Cons of nuclear subs
<p>A nuclear reactor on a submarine has an operational life of up to 30 years. Hence, theoretically nuclear submarines have unlimited endurance.</p> <p>They can move faster than conventional ones.</p>	<p>Nuclear submarines are expensive and require a significant amount of specialised experience to operate.</p>
Conventional subs	
Pros of conventional subs	Cons of conventional subs
<p>The range of conventional submarines as well as their stealth is significantly higher.</p> <p>They have improved stealth features such as advanced acoustic absorption techniques, low radiated noise levels, long-range guided torpedoes, tube-launched anti-ship missiles, sonars & sensor suites.</p>	<p>Conventional diesel-electric submarines have lower endurance, need to surface every 48 hours to be recharged.</p>

What are the capabilities of the Scorpene submarines?

- The Scorpene submarines are conventional attack submarines capable of launching torpedoes and missiles.
- They are also equipped with a range of surveillance and intelligence-gathering mechanisms.
- The diesel electric propulsion system enables them to alternate between using diesel and electric.
 1. Diesel - for functioning on the surface
 2. Electric - for functioning underwater
- The 3 submarines will be fitted with [air-independent propulsion](#) (AIP) systems to allow them to remain submerged for longer.

PRELIM BITS

14. HISTORY, ART & CULTURE

Bonalu Festival

The annually celebrated bonalu festival held recently in the Golconda fort in Hyderabad.

- It is celebrated in the twin Cities Hyderabad and Secunderabad and other parts of Telangana.
- It is dedicated to the worship of the Goddess Mahakali.
- The word “Bonalu” is derived from the Telugu word “Bhojanalu,” which means “feast” or “meal.”
- Bonalu involves worship of Kali in her various forms such Mysamma, Pochamma, Yellamma, Dokkalamma, Pedamma, Poleramma, Ankamma, Maremma, Nookamma etc.
- Other temples such as Akkanna Madanna temple in Haribowli, Muthyalamma temple in Shah Ali Banda are the popular venues where Bonalu is celebrated.

Zo Peoples

Zoram People's Movement (ZPM), called for a reunification of the Zo people in view of the continuing ethnic violence between the dominant Meiteis and the Kuki-Zomi tribes in the neighbouring state.

- **Family** - The Zou / Zo is a Tibeto-Mongoloid group of people sub-family of the **Chin-Kuki-Mizo race**.
- **Habitat** - They inhabit in areas of India, Myanmar and the Chittagong hill tracts of Bangladesh.
- In northeastern India, they are present in Nagaland, Mizoram, Manipur and Assam.
- **Status** - Zou are officially recognized as one of the **33 indigenous peoples** within the state of Manipur, and are one of the Scheduled tribes.
- The sub-tribes and clans such as the Chin, Kuki, Mizo, Lushei, Zomi, Paitei, Hmar, Ralte, Pawi, Lai, Mara, Gangte, Thadou, etc. also included in the zo umbrella.
- **Language** - The tribes are believed to have migrated from China through Tibet to settle in Myanmar, and speak a group of Tibeto-Burman languages.
- **Religion** - Zo peoples follow Predominantly Christianity, minority Animism and Buddhism.

Animism applies personhood and agency to non-human beings. Animism is a worldview which states that all beings, humans, animals, plants, lands, and waters, live within an interconnected web of spirituality.

The Zo Reunification Organisation (ZORO) is a Mizoram-based association fighting for the re-unification of Chin-Kuki-Mizo tribes of India, Myanmar and Bangladesh.

Lambani Art

Lambani artisans set Guinness World record for making highest number of embroidery patches at the G20 Culture Working Group meeting held at Bhubaneswar.

- Lambani embroidery is a vibrant and intricate form of textile embellishment characterized by colourful threads, mirror work, and a rich array of stitch patterns.

- It is a traditional art form of Hampi, Karnataka predominantly upheld by the skilled women of the Lambani community.
- The stitches followed in the lambani art composes geometric patterns such as squares, circles, triangles, rectangles, diagonal and parallel lines.
- **Lambani Tribes** - Lambanis, also called Lambadis or Banjaras, were nomadic tribes.
- The tribes spread across Sanduru, the Banjaras of Bellary and Bijapur in Karnataka, Hyderabad in Andhra Pradesh.
- The Sandur Lambani embroidery got its **Geographic Indication (GI) tag** in 2010.



Namda Art

The Namda craft of Kashmir is being successfully revived under a Skill India's Pilot Project.

- Namda is a rug (carpet) made of sheep wool in **Jammu and Kashmir**.
- It will be produced through felting technique instead of normal weaving process.

Felting is the process of producing a textile or fabric by combining and compressing the loose fibers, wool or hair.



- Namda is usually a sandwich of many layers of wool flattened over each other.
- After a layer is spread, it is sprinkled homogeneously with water and pressed with a tool known as 'pinjra' (woven willow wicker).
- Despite the exquisite beauty of Namda, it is threatened due to various factors including:
 - Fewer skilled craftsmen
 - Modernization of carpets
 - Emergence of cheap imitations
 - Less interested younger generations

Namda Project

- **Aim** – To train nearly 2,200 candidates from across 6 districts of the state.
- **Ministry** - Ministry of Skill Development and Entrepreneurship
- The scheme is envisaged under Pradhan Mantri Kaushal Vikas Yojana (PMKVY).

Rudragiri Hillock

Rudragiri hillock site unveils a fascinating combination of prehistoric rock paintings from the Mesolithic period and exquisite artwork from the Kakatiya dynasty.

- Rudragiri hillock is located at the Eastern Ghats, in Guntur district of Andhra Pradesh.
- It is named after King Rudra Deva of the **Kakatiya dynasty**.
- It features 5 naturally formed rock shelters at its foothills which includes 2 natural caves.
- There is evidence that Ramayana scenes depicted at Rudragiri might have drawn inspiration from the artworks at Muppavaram.
- Ganapati Deva Maharaja (1199-1262 AD), the founder of Muppavaram temple and a prominent figure of the Kakatiya dynasty, likely patronised the rich ancient mural heritage found at Rudragiri.

Kakatiya Dynasty (1083-1323 CE)

- **Founder** - Rudradeva I.
- **Capitals** - Anmakonda (Hanumakonda), Orugallu / Ekasilanagara (Warangal).
- **Languages** - Telugu (preferred language), Sanskrit, Kannada.
- **Religion** - Jainism, Hinduism (Saivism).
- **Famous rulers** – Rudradeva, Mahadeva, Ganapatideva I and Rudramadevi.
- **Temples** - Thousand Pillar Temple, Ramappa Temple, Warangal Fort, Golconda Fort and Kota Gullu.

Agariyas of Kutch

A group of saltpan workers requested Gujarat Chief Minister for state intervention over forest department officials issuing instructions barring their entry in the Little Rann of Kutch.

- **Agariyas** - Agariyas are socially recognized as Chunvaliya Koli, Miyana or Sandhi community and all of them fall in the De-notified tribe (DNT) category.
- In their language, agar means salt and those who farm it are called Agariyas.
- **Salt production** - Coastal salt is called as “Sea Salt” locally known as karkacch salt where in Little Rann of Kutch Agariyas make crystal salt called Vadagaru or Poda.
- **Current issue** - The forest department wants the Agariyas to leave the Little Rann citing but the Agariyas are pacifists who do not in any way harm the endemic wild asses that number some 5,000.
- Gujarat is the largest producer of salt in India and the agariyas produce over 30% of India’s entire salt produce from the Little Rann of Kutch.

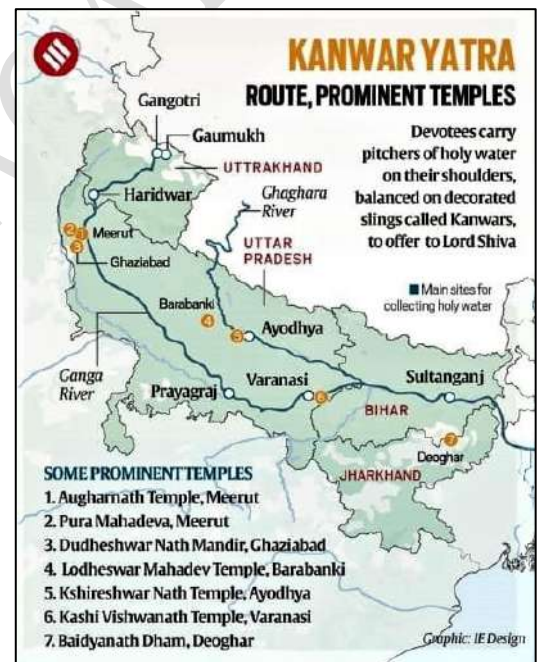
Indian Wild Ass

- The Indian Wild Ass is a species native to the countries of southern Asia.
- It is one of the 4 remaining subspecies of the Asian Wild Ass, and it can only be found in India.
- **Local terms** - Ghudkhur, Khur, or Indian onager.
- The Indian Wild Ass, in contrast to its closely related family of donkeys and horses, has not been domesticated.
- **Habitat** - These species live in a variety of habitats including wetland ecosystems, deserts, arid grasslands and shrub lands.
- They are currently only found in small numbers in India's Rann of Kutch region.
- **IUCN Status** - Near Threatened.

Kanwar Yatra

The kanwar Yatra that attracts millions of devotees of shiva in state of Uttarakhand had concluded recently.

- It is a pilgrimage organised in the Hindu calendar month of Shravana (Saavan), usually from July to August.
- During this yatra, millions of devotees of **Lord Shiva** known as 'Kanwariya' make a journey to Haridwar, Gangotri, and Gaumukh in the state of Uttarakhand.
- The pitchers of holy water balanced on decorated slings are known as **Kanwars**.
- The water is used by the pilgrims to worship Shiva lingas at shrines of importance, including the 12 Jyotirlingas, or at certain specific temples or even in the devotee’s own village or town.
- **Similarities** - Kanwar yatra in North India is celebrated as Kavadi festival in Tamil Nadu in which Lord Muruga is worshipped.
- **Mythology** - The ritual goes back to the ‘samudra manthan’, narrated in the Bhagavata Purana and in the Vishnu Purana, which explains the origin of ‘amrita’, or the nectar of immortality.



Janjaitya Darpan

Marking the completion of one year of taking charge, President Droupadi Murmu inaugurated various projects at the Rashtrapati Bhawan in New Delhi.

- The President inaugurated ‘Janjaitiya Darpan’, a gallery to represent the common and connecting cultural traits of various Janjati communities (tribals) in Bharat.
- **Janjati heroes** – Gallery consists of different themes such as unsung tribal freedom fighters, traditional natural resource management practices such as Halma, Dokra art, Gunjala Gondi script, and Warli.
- **‘Koya Pagide** – The gallery consists of scroll (Koya Pagide) depicting the life history and genealogy of Koya Janjati community from Bhadrachalam.
- **Gunjala Gondi Script** – The Script along with its detailed history is put on display at the gallery.
- **Navachara** - An Artificial Intelligence enabled gallery developed by Rashtrapati Bhavan in collaboration with Intel India.
- **Sutra-kala Darpan** - It is a Textile Collection which shows the remarkable collection of antique textiles of the Rashtrapati Bhavan.

15. GEOGRAPHY

Pangong Tso Lake

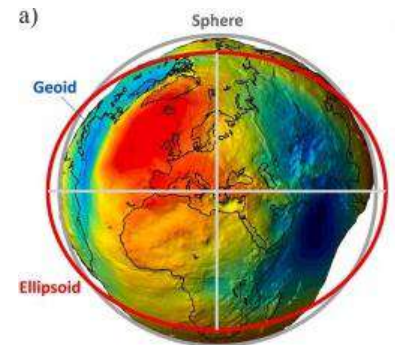
China is rushing to complete a bridge across the Pangong Tso, simultaneously India is also building a black-topped road on its side on the north bank.

- Pangong Tso is a high-altitude saltwater lake in Ladakh and is the world's highest saltwater lake.
- Pangong Lake, derives its name from the Tibetan word, "Pangong Tso", which means "high grassland lake".
- Formerly, Pangong Tso had an outlet to the Shyok River, a tributary of the Indus River, but it was closed off by natural damming.
- **Distribution** - 1/3rd of the lake is lying in India & the other 2/3rd is in China.
- Pangong Lake is a disputed territory between India and China where the Line of Actual Control passes through the lake.
- Though it is a saline water lake, it freezes completely during winters.
- The lake is in the process of being identified as a wetland of international importance under the Ramsar Convention.
- After the convention, it will be a first trans-boundary wetland in South Asia.

Indian Ocean Geoid Low (IOGL)

Recently researchers from the Indian Institute of Science may have uncovered the cause of the mysterious 'gravity hole' in the Indian Ocean.

- **Geoid** - The geoid is a model of global mean sea level that is used to measure precise surface elevations.
- Due to the uneven distribution of mass throughout the Earth, the geoid's shape is smooth but irregular.
- The shape is also affected by the planet's rotation, gravitational forces, and internal structure.
- In the absence of tides and currents on the oceans, all the water would settle onto a geoid, rising wherever there is high gravity, and sinking where gravity is low.
- The resulting unevenness in the ocean surface, known as geoid anomalies.
- **Indian Ocean Geoid Low (IOGL)** – One of the most pronounced geoid lows (gravity hole) on Earth lies just southwest of the Indian peninsula, the Indian Ocean geoid low (IOGL).
- It was discovered in 1948 during a survey by Dutch geophysicist Felix Andries Vening Meinesz.
- Here gravity is lower than average, thus making the sea level 106 meters lower than the global average at the site.
- IOGL is a consequence of a mass deficit inside the Earth's mantle beneath the Indian Ocean.



Formation

- **Formation** - The Gravity Hole is estimated to have assumed its current form around 20 million years ago and is predicted to endure for millions more.
- The IOGL comprises slabs from the Tethys Ocean which separated the supercontinents of Gondwana and Laurasia.
- The ocean is believed to have agitated the African Large Low Shear Velocity province, (LLSVP) also known as the "African blob," generating plumes beneath the Indian Ocean.
- These plumes, along with the mantle structure in the vicinity of the geoid low, are responsible for the formation of this negative geoid anomaly.

Khazans of Goa

The National Green Tribunal (NGT) dismissed the proceedings for carrying out illegal construction and illegal filling of eco-sensitive, low-lying khazan lands.

- Generally, any low-lying land close to a mangrove-fringed estuary reclaimed by salinity control structures can be called as khazan land.
- Khazans are reclaimed lands from the river or the sea; Khazans in Goa are coastal wetlands.

- True Khazan lands are carefully designed as topo-hydro-engineered agro-aquacultural ecosystems.
- The most important aspect of the structure of these lands is based on the principle of salinity regulation and knowledge of the tidal clock.
- The control of balance between the availability and flow of freshwater (rainfall+aquifer): saline (estuarine) water that determines the existence of the Khazan lands.
- The structure of these lands depends on their distance from the nearest watershed and the tidal estuary.
- Khazan lands have 3 main features - sluice gate, poim and 2 types of bunds.
- **Bunds** are classified as Inner and Outer bunds.
 - The outer bund protects the field from the tidal flows of the river.
 - The inner bunds protect from any form of nutrient leaching.
- Clay known as chanoy is used as a filler in between 2 outer layers of the outer bund to withstand any vulnerability from the tidal waves.
- A created network of bunds protects the agricultural fields and adjoining villages from tidal flows.
- Mangroves acts as a natural bund.
- **Poim** - A depression at the end of the khazan lands to act as a repository for excess water and protects agricultural fields from high tides.
- **Sluice gate** - Located at the mouth of the rivulet entering a farmland to control the water levels.

Pakkasuran Malai

Conservationists have criticized the Tamil Nadu Tourism Development Corporation's (TTDCs) plan to open up the eco-sensitive area surrounding Pakkasuran Malai, a hill in Nilgiri region to tourism.

- Pakkasuran Malai is a mountain which is also called as Hullikal Drug.
- It is situated in coonoor, Nilgiri Mountains of Tamil Nadu.
- It is a biodiversity hotspot primarily composed of rocks and grasslands.
- Droog Fort is a historic fort on the peak of Pakkasuran Malai and it has significant historical, cultural and religious values and qualifies as a sacred grove.
- Sacred groves are patches of primeval forest that some rural communities protect as abodes of deities and it helps in the protection of many rare, threatened and endemic species of plants and animals in the area.

Species in Pakkasuran Malai	
<ul style="list-style-type: none"> • Gunther's burrowing snake (Plecturus guentheri) • Valeriana leschenaultii, an endemic species (Critically Endangered) • Nesting site for the Shaheen falcon (Falco peregrinus peregrinator) 	<ul style="list-style-type: none"> • Nilgiri martens • Mouse deer • Indian gaurs • Barking deer • Leopards • Sloth bears • Indian giant flying squirrels • Indian giant squirrels • Brown palm civets • Indian crested porcupines

Kaas Plateau

A new study of the sediments from a seasonal lake in the Kaas Plateau, Maharashtra has indicated a major shift in the Indian Summer Monsoons during the Early-Mid-Holocene, around 8664 years B.P. (Before the Present)

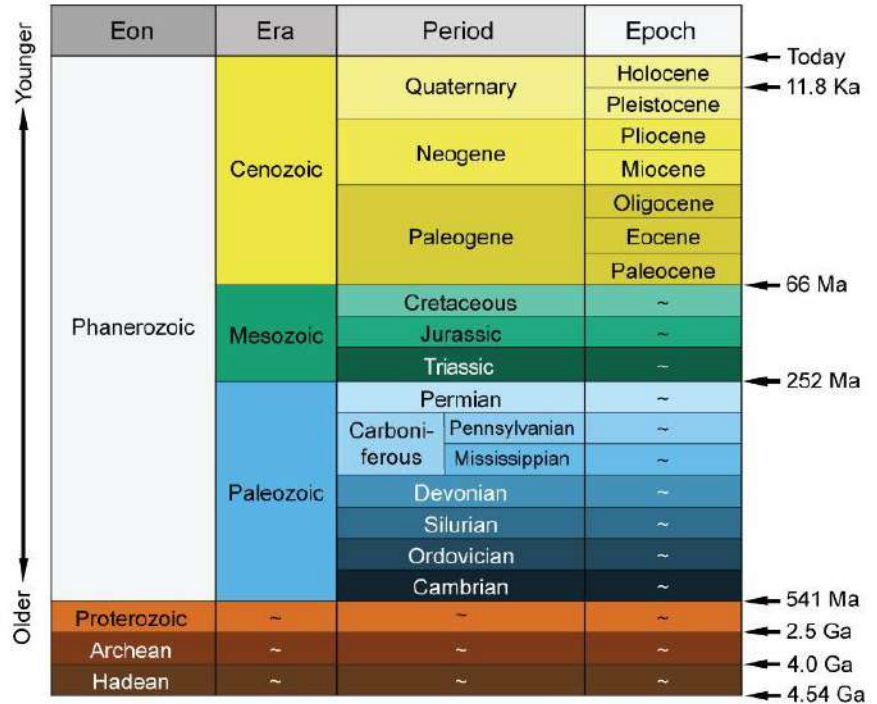
- Kaas Plateau is made of igneous rock, situated in the **Western Ghats of Maharashtra**.
- Locally called as '**Kas Pathar**' or '**Plateau of Flowers**'.
- Its name is derived from the Kaasa tree, botanically known as Elaeocarpus glandulosus (rudraksha family).
- The Kaas Plateau is designated as a biodiversity hotspot and is included in the **UNESCO World Natural Heritage Site** under the name "The Western Ghats" in 2012.
- The major portion of the plateau is reserve forest and the plateau contains 6% of the Red data species.
- **Kas Lake** is a perennial source of water supply for western part of Satara.

- It is popular for its stunning display of wildflowers (***Flower Wonder***) that come to life during monsoon in Maharashtra, this unique characteristic has earned it the endearing nickname of “*Maharashtra's Valley of Flowers*”.
- Thoseghar Waterfalls* and *Sajjangad Fort* is located in this plateau.

Anthropocene epoch

Geologists have said that sediments at Crawford Lake in Canada’s Ontario have provided evidence that the beginning of the Anthropocene epoch is between 1950 and 1954.

- The Anthropocene epoch as a term was first coined by Nobel Prize-winning chemist **Paul Crutzen** and biology professor **Eugene Stoermer** in 2000.
- It is an **unofficial unit** of geologic time that denotes the most recent period in which the *Earth’s ecosystem has gone through radical changes due to human impact*, especially since the onset of the Industrial Revolution.
- There are numerous phenomena associated with this epoch, such as global warming, sea-level rise, ocean acidification, mass-scale soil erosion, the advent of heat waves, deterioration of the biosphere.
- Anthropocene, the term has not been formally adopted by the **International Union of Geological Sciences (IUGS)**, the international organization that names and defines epochs.



Earth’s Geological Time

- The planet’s geological time scale is divided into **5 broad categories** - eons, eras, periods, epochs, and ages (Larger to smaller).
- While eon is the broadest category of geological time, age is the smallest category.
- Each of these categories is further divided into sub-categories.
- These units are classified based on Earth’s rock layers, or strata, and the fossils found within them.
- We are currently living in Phanerozoic eon, Cenozoic era, Quaternary period, Holocene epoch and the Meghalayan age.

Crawford Lake

- Crawford Lake is a small, deep lake within a protected conservation area in **Southern Ontario, Canada** as part of a **UNESCO Biosphere Reserve**.
- Topography** - The lake is situated in a *karstic limestone landscape* and fills a sinkhole created by the dissolution of underground rock.
- Meromictic Lake** - Because of the lake’s great depth (24 meters) relative to its surface area it is known as a *meromictic lake*.
- It refers to a permanently stratified body of water where the bottom layer of water does not mix with the upper layers because of *differences in chemical composition*.
- Crawford Lake and its layers of sediment preserved the annual impact of human activities on the Earth’s soil, atmosphere and biology.

Kodava Community

Members of the Kodava community are demanding constituencies in Parliament and the Karnataka Assembly on the lines of the Sangha virtual constituency.

- **Origin of kodava** - One theory says they are the descendants of Alexander the Great, while another traces their origins to a band of Kurds from Iraq.
- **Habitat** - Kodavas are a unique race of people who live in Kodagu (Coorg), the smallest district in Karnataka.
- **Occupation** - This land-owning community known for its martial traditions, has a distinct culture that is strikingly different from that of the neighbouring cultures.
- **Language** - Kodava language does not have a script, is a mixture of Kannada, Tamil and Malayalam.
- **Society** - The Kodava community of Coorg is a *patrilineal society*.
- **Religion** - Kodavas are Hindus, but priests have no role in their marriages.
- **Worship** - Kodavas are basically ancestor and nature worshippers.
- There are no idols in the kaimada, the central place of ancestor worship
- **Festivals** - Puthari (harvest festival ushered in with a gunshot) Keil Murtha (festival is dedicated to guns) and Kaveri Sankramana.

Sangha Virtual Constituency	
	<ul style="list-style-type: none">• Sangha Assembly constituency is one of the constituencies in the 32-member Assembly of Sikkim, a State in the northeast region of India.• The Sangha constituency doesn't exist on the map. This seat is reserved for the Buddhist monastic community of Sikkim, Buddhist monks and nuns.• Voters recognized with monasteries in Sikkim State are the only ones who can contest and cast their votes for the Sangha constituency seat.

Batagaika Crater

Drone footage has revealed details of Batagaika crater, a 1-km long gash in Russia's Far East that forms the world's biggest permafrost crater.

- Batagaika crater is also known as the "Gateway to the Underworld" and has the scientific name: **a mega-slump**.
- It is the world's largest permafrost crater located in Russia's Sakha Republic.
- The crater is marked by an uneven terrain at the base of the depressed, which is made of irregular surfaces and small hummocks.
- They began to form after the surrounding forest was cleared in the 1960s and the permafrost underground began to melt, causing the land to sink.
- It developed first as a ravine, then by thawing in the heat of sunny days, it started to expand.



Russia is warming at least 2.5 times faster than the rest of the world.

Permafrost thawing

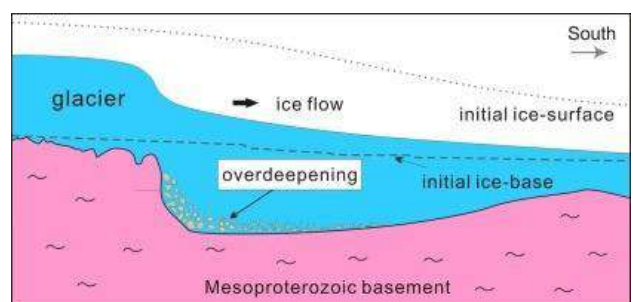
- A permafrost is a ground that remains frozen at 32°F (0°C) or colder for at least two years in a row, as per NASA.
- It comprises soil, rocks and sand that are held together by ice. The soil and ice in permafrost stay frozen all year long.
- Thawing is the process of going from a frozen state to a liquid state.
- The warming is melting the long-frozen tundra that covers about 65% of the country's landmass, releasing the greenhouse gases stored in the thawed soil.

Sub Glacial Over deepening

A recent study on Himalayan Geology found that 3 new lakes may form in Parkachik Glacier in Ladakh due to glacial retreat.

Over deepening

- It is a characteristic feature of basins and valleys that are eroded by the glaciers.
- They are found at all elevations in a glacial landscape, from glacial cirques to large depressions along valley floors.



- The distinguishing feature is the adverse slope that forms at the lip of the basin or cirque.

Cirque glaciers are bowl-shaped depression on the side of or near mountains.

Parkachik Glacier

- The Parkachik glacier is one of the largest glaciers in the Suru River valley, Kargil, Ladakh.
- The Suru River valley is a part of the **Southern Zaskar Ranges** in the western Himalayas.
- **Reasons for melting ice** – Global warming and increasing temperatures in the region
- It is at a lower altitude than other glaciers in the Zaskar region Suru River Valley, Ladakh Himalaya.
- **Glacial melt problems** – If the volume of water is large, there is a possibility of glacial lake outbursts.
- The loss of a valuable water resource since Ladakh primarily depends on glacial melt for water.



16. POLITY

Article 226

The recent verdict says that High Courts not empowered to issue a direction under Article 226 (its writ jurisdiction) of the Constitution for invocation of Article 355 of the Constitution.

- **Article 226(1)** - High Courts has the ability and power to issue orders, instructions, and writs for the enforcement basic fundamental rights and other legal rights within its own jurisdiction.
- The writs include Habeas corpus, Mandamus, Prohibition, Quo warranto, Certiorari.
- **Article 226(2)** – It empowers High Courts outside their own local jurisdiction in circumstances when the cause of action is completely or partially within their local jurisdiction.
- **Article 226(3)** - When an interim order is issued against the respondent under Article 226 in the form of an injunction or a stay without:
 - Providing the respondent with a copy of the petition and any relevant evidence; and
 - Providing the respondent with an opportunity to be heard.
- **Article 226(4)** - The jurisdiction granted to the High Courts under Article 226 does not preclude the Supreme Court from using its powers under Article 32(2).

Writ	Purposes
Habeas corpus	It is used to enforce the fundamental right of individual liberty against unlawful detention
Mandamus	It is used for enforcing the performance of public duties by public authorities of all kinds.
Prohibition	It is issued by a higher court to a lower court or tribunal to prevent the latter from exceeding its jurisdiction or usurping a jurisdiction that it does not possess.
Quo Warranto	It is issued by the court to enquire into the legality of the claim of a person to a public office.
Certiorari	It is issued by a higher court to a lower court or tribunal either to transfer a case pending with the latter to itself or to squash the order of the latter in a case.

Comparison with Supreme Court’s writ

- Articles 32 and Article 226 provide the Supreme Court and the High Courts to issue writs if any citizen’s rights and freedoms are violated.

- The High Court has broad powers to issue orders and writs to any person or authority under Article 226 of the Indian Constitution.
- The jurisdiction of the Supreme Court to issue writs extends *all over the country*.
- The jurisdiction of the High Court to issue writs is limited only to the state or the union territory which comes under the jurisdiction of the concerned High Court.
- The high court can issue writs to any person, authority and government not only within its territorial jurisdiction but also outside its territorial jurisdiction if the cause of action arises within its territorial jurisdiction.
- Thus, the territorial jurisdiction of the Supreme Court for the purpose of issuing writs is wider than that of a high court.
- A high court may refuse to exercise its writ jurisdiction.

Kui Language

The state cabinet of Odisha, recently approved a proposal to recommend the inclusion of the Kui language in the 8th schedule of the Constitution of India.

- Kui is also known as Kandh, Khondi, Khond, Khondo, Kanda, Kodu, Kodulu, Kuinga, Kuy.
- It is a South-Eastern Dravidian language spoken by the Khond tribes of Odissa.
- It is mostly spoken in Odisha, and written in the Odia script.
- It is closely related to the *Gondi* and *Kuvi* languages.
- According to UNESCO, the Kui language status is **potentially vulnerable**.
- **Significance** - Inclusion of Kui in the 8th schedule will help in the preservation, promotion and propagation of the language and culture because there are 7 lakh Kui-speaking indigenous people in Odisha.

8th Schedule

- The 8th Schedule of the Indian Constitution consists of 22 languages.
- Of these languages, 14 were initially included in the Constitution.
- Sindhi language was added in 1967 while Konkani, Manipuri and Nepali were included in 1992.
- Subsequently Bodo, Dogri, Maithili and Santhali were added in 2004.
- English is **not among** the 22 languages in the 8th Schedule and it is one of the 99 non-scheduled languages.

Reservation for Transgender Persons

The Social Justice Ministry's responded to a contempt petition accusing the government of not implementing the directions in the 2014 judgment.

Reservation status of Transgender persons

- **Reservation** – The Centre has told the Supreme Court that transgender persons can avail of any of the existing 50% reservation.
- **SEBC** – They can use the reservation in admissions and government jobs already available to Scheduled Caste, Scheduled Tribe and Socially and Educationally Backward Communities (SEBC) across the country.
- **EWS** – The government said transgender persons could also benefit from the 10% quota granted to the Economically Weaker Sections (EWS) of the society.
- However, the Ministry has not mentioned reservation for the transgender community as a separate class.
- The benefits of any of the reservation, including the four reservations [SC/ST/SEBC/EWS], can be availed by the marginalised and eligible population of the country, including transgender persons.

2014 Judgement

- **NALSA** – Supreme Court in its 2014 judgment in the National Legal Services Authority (NALSA) case had directed the Centre and the State governments to take steps for the welfare of the transgender persons.
- It directed to treat transgender persons as socially and educationally backward classes of citizens and extend all kinds of reservation in cases of admission in educational institutions and for public appointments.
- The judgment had also expressly directed the Centre and State governments to protect transgender persons from discrimination in employment and access to welfare schemes.
- It had held that educational institutions were obliged to provide them inclusive education.

- **Third gender** – The judgment had declared that hijras, eunuchs, apart from binary genders, be treated as third gender for the purpose of safeguarding their fundamental rights.
- Hijras are often born male but look and dress in traditionally feminine ways. Eunuchs are male who had their testicles removed.
- **Division Bench** – A Division Bench of the apex court had upheld transgender persons' right to decide their self-identified gender.
- It had given legal recognition to their gender identity.
- The transgender community form a reasonably sizeable class as per the statistics available in the 'National Portal for Transgender Persons' launched by the government on November 25, 2020.

17. GOVERNMENT INTERVENTIONS & SCHEMES

eSARAS

Ministry of Rural development launches eSaras Mobile App to Market products made by women of Self-help Groups.

- It is an initiative of Deendayal Antyodaya Yojna - National Rural Livelihoods Mission (NRLM).
- It was launched by the Ministry of Rural Development to collect and organize the authentic handcrafted products from across the country.
- It is an online platform for buying handicrafts and handloom items made by rural women registered with Self Help Groups (SHGs).
- This online platform showcases the products made by self-managed Self Help Groups (SHGs) and federated institutions.
- The artisans get remunerated fairly with no middlemen to manipulate prices.
- Through this online portal, customers get access to 100% authentic handcrafted products emerging straight from the heart of India.

Deendayal Antyodaya Yojna - National Rural Livelihoods Mission (NRLM) DAY-NRLM

- National Rural Livelihood Mission is also known as Aajeevika.
- It is a flagship poverty alleviation program implemented by the Ministry of Rural Development.
- It aims to reduce poverty by enabling the poor household to access gainful self-employment and skilled wage employment opportunities resulting in sustainable and diversified livelihood options for the poor.
- This is one of the world's largest initiatives to improve the livelihoods of the poor.
- The Mission seeks to reach out to around 10 Crore rural poor households in a phased manner by 2022-23 and impact their livelihoods significantly.

Scheme on minor rape survivors

Recently, the Centre has approved a scheme that will provide support to minor rape survivors who have been abandoned by their families due, often due to pregnancy.

- **About** - The scheme will provide shelter, food, safe transportation for court hearings, and legal aid for rape/gang rape survivors or minor girls who get pregnant.
- **Ministry** – Ministry of Women and Child Development (WCD).
- Under the scheme, immediate, emergency and non-emergency access to a range of services including access to education, police assistance, maternity, neonatal and infant care, psychological and mental counselling, legal support and insurance cover will be provided.
- The benefits will be provided to girl child victim and her newborn under one roof.
- It will not be mandatory for the girl child victim to have a copy of a first information report (FIR) to avail benefits under the scheme.
- A case worker will be immediately designated or appointed for taking care of the girl child and separate funds shall be provided to the Home for the care and protection of the girl.

- In case a survivor does not want the child at any stage, the child will stay at Child Care Institutions and will be made available for adoption.
- The scheme aims to support minor victims under aegis of the Nirbhaya scheme.
- It additionally leveraged the administrative structure of Mission Vatsalya in collaboration with state governments and child care institutions (CCIs) to actualise this support to minor victims on the ground.
- This additional support will be available at child care institutions for those up to the age of 18 and thereafter up in aftercare facilities up to the age of 23.
- According to National Crime Records Bureau (NCRB) data, 51,863 cases were reported under the POCSO Act in 2021, and of them, 33,348 or 64% cases were of sexual assault.

Dark Patterns

The government has set up a 17-member task force to prepare guidelines to protect consumers from dark patterns that has been used by e-commerce companies.

- Dark patterns are also known as deceptive patterns.
- It is the term used to describe the ways in which websites or apps make their users do things that the users do not intend to do or would not otherwise do, as well as to discourage user behaviour that is not beneficial for the companies.
- **Example** - An annoying advertisement with very small cross mark 'X' to make it go away.
- The term dark patterns was coined by Harry Brignull in 2010.
- The most common companies who uses dark patterns are Google, Facebook, Amazon and LinkedIn.
- Engaging in deceptive and manipulative conduct by using dark patterns in online interfaces constitutes 'unfair trade practices' under the Consumer Protection Act, 2019.
- The Consumer Affairs Ministry has identified 9 types of dark patterns being used by e-commerce companies.



Report Fish Disease App

To further strengthen the farmer-based reporting of diseases, Report Fish Disease App has been developed under the National Surveillance Programme for Aquatic Animal Diseases (NSPAAD).

- To further strengthen the disease surveillance and farmer-based reporting, an app named Report Fish Disease was launched.
- It was launched by the Ministry of Fisheries, Animal Husbandry and Dairying.
- The farmers can report disease cases in finfish, shrimps and molluscs on their farms.
- The app will be a central platform for connecting fish farmers, field-level officers and fish health experts.
- Through this app each disease case in aquatic animals are reported, investigated and scientific advice are provided.

National Surveillance Program for Aquatic Animal Diseases (NSPAAD)

- **Launch Year** – 2013.
- **Funding** - National Fisheries Development Board, (NFDB), Hyderabad,
- **Implementation** - ICAR National Bureau of Fish Genetic Resources (NBFGR) Lucknow.

Atal Vayo Abhyuday Yojana

The Ministry of Social Justice and Empowerment has been working towards creating an inclusive and equitable society for all its citizens especially it is working for the welfare of senior citizens.

- The Atal Vayo Abhyuday Yojana (AVYAY) is a comprehensive initiative aimed at empowering senior citizens in India.

- National Action Plan for Senior Citizen (NAPSrc) had been revamped, renamed as Atal Vayo Abhyuday Yojana (AVYAY) and subsumed in April 2021.
- **Aim** - To empower senior citizens in India by ensuring their active participation and inclusion in all aspects of life.
- To implement Section 19 and 20 of the Maintenance and Welfare of Parents and Senior Citizens Act, 2007.
- **Ministry** - Ministry of Social Justice and Empowerment.

Important Schemes under Atal Vayo Abhyuday Yojana (AVYAY)

- **Integrated Programme for Senior Citizens (IPSRc)**
 - It provides financial assistance to eligible organization's for running and maintenance of Senior Citizen Homes/ Continuous Care Homes to improve the quality of life of the senior citizens.
 - It is a Central Sector Scheme.
 - The funds are given to the implementing to the agencies, registered societies, Panchayati raj institutions, local bodies, non-governmental/voluntary organizations.
- **Rashtriya Vayoshri Yojana (RVY)**
 - It provides physical aids and assisted-living devices for senior citizens belonging to Below Poverty Line category.
 - It is a Central Sector Scheme.
 - The expenditure for implementation of the scheme is being met from the "Senior Citizens' Welfare Fund".
 - It is being implemented by the Artificial Limbs Manufacturing Corporation (ALIMCO), a PSU under the Ministry of Social Justice and Empowerment.

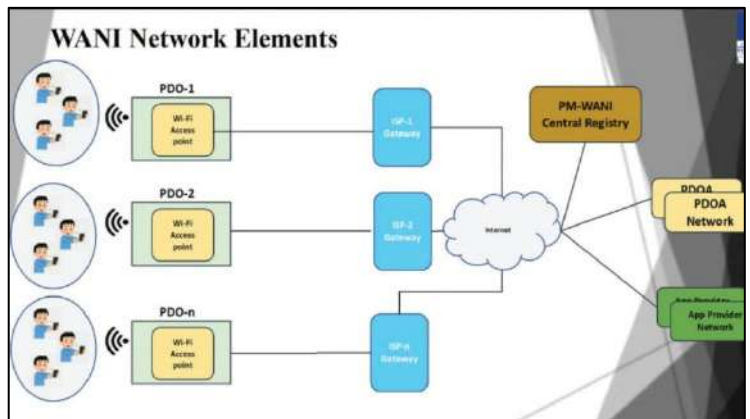
Elderline for Senior Citizens - Toll-free No (14567) is launched to provide free information, Guidance, Emotional Support and field intervention in cases of abuse and rescues in order to improve the quality of life of senior citizens is active in 31 States/UTs.

PM-WANI

Internet distributed through PMWANI can be a game changer in digital connectivity.

India's per capita data consumption is 19.5 GB per month.

- PM - Wi-Fi Access Network Interface (PM-WANI) was launched by the Department of Telecommunication (DoT) in December 2020.
- **Aim** - To enhance the proliferation of public Wi-Fi hotspots to create robust digital communications infrastructure in the country, especially in rural areas.
- **Implementation** - DOT will assist all the stakeholders in implementation and proliferation of PM WANI.



- **Elements** - Various entities such as PDO, PDOA, app providers, and a central registry are parts of the scheme.
- The Central Registry maintains the details of the App providers, PDOAs and POAs.
- The Public Data Office Aggregators (PDOAs) provide public Wi-Fi services through PDOs spread across length and breadth of the country.
- PDOAs provides aggregate services such as authorization and accounting to PDOs.
- Public Data Offices (PDOs) (last-mile providers) can be found in small shops, local establishments, and even households.

Main vision areas of Digital India Programme

- Digital connectivity
- Software and services on demand
- Digital empowerment of citizens

- PDOs establish, maintain, and operate PM-WANI compliant Wi-Fi Hotspots.
- No licence or permit is needed for operators to start operations.
- App Provider will develop an Application to register users and discover and display PM-WANI compliant Wi-Fi Hotspots.
- Data PM-WANI App is the PM-WANI compliant app which help users to easily navigate and discovering PMWANI Wi-Fi hotspots.
- **Benefits** - PM-WANI accelerates high-speed unlimited internet penetration, bridging the digital divide and empowering communities.
- It nurtures the growth of local nano entrepreneurs throughout the country.

Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS) Scheme

- It is central sector scheme that pertains to the atmospheric science programs of the Ministry of Earth Sciences (MoES).

- The sub-schemes under the ACROSS scheme are multi-disciplinary in nature and will be implemented in an integrated manner through 4 institutes.

- **The Institutes** – The four institutes are:

1. India Meteorological Department (IMD)
2. Indian Institute of Tropical Meteorology (IITM)
3. National Centre for Medium Range Weather Forecasting (NCMRWF)
4. Indian National Center for Ocean Information Services (INCOIS)

- They will cover all the aspects of the weather and climate.

Sub schemes under ACROSS
<ul style="list-style-type: none">• Upgradation of Forecast System• Weather & Climate Services• Atmospheric Observations Network• Numerical Modelling of Weather and Climate• Monsoon Mission III• Monsoon Convection Clouds and Climate Change (MC4)• High Performance Computing System (HPCS)

Manual Scavenging

The Ministry of Social Justice said that a total of 530 districts across the country had so far reported themselves to be free of manual scavenging.

- The Ministry have differentiated manual scavenging from hazardous cleaning of sewers in its 2013 and 2018 survey.
- India had seen no deaths due to manual scavenging in the last 5 years.
- 330 people had died while being engaged in cleaning sewers and septic tanks.
- **Zero manual scavenging** - 100% of districts in States like Bihar, Rajasthan, Tamil Nadu and a few others have declared themselves free of manual scavenging.
- **High** - States having highest number of districts still having manual scavenging -
 - Jammu and Kashmir, Manipur, Telangana, Andhra Pradesh, West Bengal, and Jharkhand.
- Only about 15% to 20% of the districts in several States and UTs are manual scavenging free.

Government Measures

- **App** - Swachata mobile app launched in 2016 to report instances of manual scavenging in real time.
- **Scheme** - NAMASTE scheme had been launched for mechanisation of sewer work.
- The scheme for rehabilitation of manual scavengers has now been merged with the NAMASTE scheme.
- **Legislation** - Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013.

- **Body** - National Commission for Safai Karamcharis (NCSK) works for the welfare of the safai karamcharis and also monitors the implementation of the Manual Scavengers Act.

Microsites by National Health Authority

National Health Authority (NHA) has launched 100 microsites project under Ayushman Bharat Digital Mission (ABDM).

- The project envisions creating microsites to promote digital health and improve healthcare accessibility for all citizens.
- **Microsites** - These are clusters of small and medium-sized healthcare facilities that are fully enabled with ABDM capabilities to offer digital health services to patients.
- Microsites will digitise the entire patient journey with the establishment of ABDM adopted small ecosystem within a particular geographic area.
- **Primarily implementation** - State mission directors of Ayushman Bharat Digital Mission.
- **Secondary** - Overall guidance and financial support provided by the National Health Authority (NHA).
- **Working** - ABDM-enabled applications will be installed in these facilities.
- Health records of the patients visiting these centres will be linked to their Ayushman Bharat Health ID (ABHA) and become part of ABDM

National Health Authority

- National Health Authority (NHA) is leading the implementation for Ayushman Bharat Digital Mission (ABDM).
- NHA coordinates implementation of ABDM with different ministries/departments of the Government of India, State Governments, and private sector/civil society organizations.
- It is also the apex body responsible for implementing 'Ayushman Bharat Pradhan Mantri Jan Arogya Yojana'

Meri Mati Mera Desh Campaign

Prime Minister Narendra Modi has recently announced the launch of a new campaign 'Meri Mati Mera Desh'.

- The campaign is envisaged as a culminating event of the 'Azadi Ka Amrit Mahotsav' celebration of 75 years of Indian Independence.
- **Aim** – The campaign aims to honour the memory of brave men and women who laid down their lives for the country.
- The campaign will be launched in the run-up to Independence Day, with special inscriptions to be installed in panchayats in their memory.
- Under this campaign, several programmes will be organised across the country in the memory of immortal martyrs.
- **Amrit Kalash Yatra** – 7,500 pots carrying soil from different corners of the country will be brought to the national capital along with saplings.
- **Amrit Vatika** – It is a unique garden built by fusing the soil and saplings that would arrive in 7500 urns.
- It will be built near the National War Memorial and will become a grand symbol of 'Ek Bharat Shresth Bharat'.
- **Vasudha Vandhan** – It envisages every gram panchayat or village renewing Mother Earth by planting 75 saplings of indigenous species and developing an Amrit Vatika.

18. INTERNATIONAL RELATIONS

Shangri La Dialogue

The Shangri-La Dialogue took place in Singapore which attracts senior military officers, diplomats, weapons makers and security analysts from around the globe.

- The Shangri-La Dialogue (SLD) is Asia's premier defence summit.
- It is a "Track One" inter-governmental security forum based on the Munich conference on security policy.

- **Agency** – It held annually by an independent think tank International Institute for Strategic Studies (IISS).
- **Venue, 2023** – Singapore.
- The Shangri-La dialogue first convened in 1971 in Shangri la hotel, Singapore.
- **Aim** - To debate the region's most pressing security challenges, engage in important bilateral talks and come up with fresh approaches together.
- **Focus areas of 2023** - The implications of the Ukraine war, a possible escalation in the Taiwan Straits and the overall security in the Indo-Pacific.
- **Attendees** - It is attended by defence ministers, permanent heads of ministries and military chiefs of 28 Asia-Pacific states as well as Europe and North America.
- India has *participated* in the Shangri-La Dialogue, 2023.

Colombo Security Conclave

Scientists from Bangladesh, and Mauritius came to participate in a joint ocean expedition which has been held under framework of the Colombo Security Conclave (CSC).

- **Formation** - It was formed in 2011.
- **Secretariat** – Colombo.
- **Aim** – To make maritime security, marine pollution response and maritime search & rescue priorities for the region.
- **Function** - It was formed as a trilateral maritime security grouping between **India, Srilanka and Maldives** operating in the Indian Ocean region.
- **Focus areas** – Maritime security, Countering terrorism and Cybersecurity.
- In 2020, **Mauritius** was added as a member of the grouping, with **Bangladesh** and **the Seychelles** as observers.
- Bangladesh and the Seychelles have been invited to join the group and are likely to join as full members.
- The small group provides an opportunity for India to address its own strategic concerns in the Indian Ocean while providing opportunity for the island and littoral nations to address their own challenges.

Five pillars

- In 2022, the group adopted an agenda of 5 pillars
 - Maritime safety and security
 - Countering terrorism and radicalisation
 - Combating trafficking and transnational organised crime
 - Cybersecurity and protection of critical infrastructure and technology
 - Humanitarian assistance and disaster relief

Acceleration Agenda

United Nations Secretary-General Antonio Guterres suggested the Acceleration Agenda at the SCO summit address that held recently.

- **Aim** – It helps to end the dependence on fossil fuels while providing universal, affordable and sustainable energy for all.
- It primarily focused on how Shanghai Cooperation Organization (SCO) members can contribute to the fight against climate change.
- The agenda includes some points to tackle climate change
 1. It calls for **developed countries** to reach net-zero emissions of coal as close as possible to **2040** and **emerging economies** as close as possible to **2050**.
 2. It urges developed countries to phase out coal by 2030 and developing countries by 2040.
 3. It suggests to end **all international** public and private funding of coal.
 4. It is to ensure using unabated coal for electricity will be net-zero by 2035 for all developed countries and 2040 for the rest of the world.
 5. It suggests to cease all licensing or funding of new oil and gas and consistent with the findings of the International Energy Agency.
 6. It suggests to stop any expansion of existing oil and gas reserves.

7. It suggests to achieve a global phase down of existing oil and gas production, compatible with the 2050 global net-zero target.
8. It also calls for the delivery of the \$100 billion dollars to developing countries, doubling of adaptation finance and the operationalisation of the loss and damage fund.

Grand Cross of the Legion of Honour

Prime Minister Narendra Modi has been conferred with the Grand Cross of the Legion of Honour, France's highest civilian and military honour, by French President Emmanuel Macron.

- **Launch** - It was established in 1802 by Napoleon Bonaparte.
- **Categories** - The Legion of Honour is divided into 5 classes (lower to higher) - Knight, Officer, Commander, Grand Officer and Grand Cross.
- The Prime Minister of India is awarded with the 5th honour, making him the first Indian premiere to receive this honour.
- **Purpose** - The Legion of Honor is the reward for outstanding merit acquired in the service of the nation in a civilian or military capacity.
- **Criteria** - The award is restricted to French nationals but foreigners may get this award if they have rendered services (e.g. cultural or economic) to France or supported causes defended by France.

Other personalities who received this honour

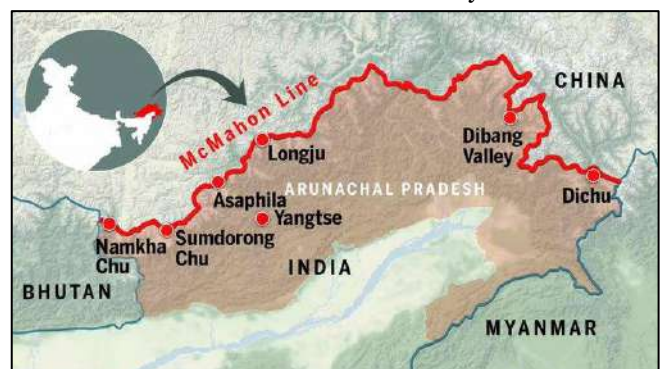
- Nelson Mandela - Former President of South Africa
- King Charles - The then Prince of Wales
- Angela Merkel - Former Chancellor of Germany
- Boutros Boutros-Ghali - Former Secretary General of the United Nations
- Vladimir Putin - Russian President

Prime Minister Narendra Modi's Other Awards		
Awards	Countries	Year
Order of the Nile	Egypt	2023
Companion of the Order of Logohu	Papua New Guinea	2023
Companion of the Order	Fiji	2023
Ebaki Award	Republic of Palau	2023
Order of the Druk Gyalpo	Bhutan	2021
Legion of Merit	US	2020
King Hamad Order of the Renaissance	Bahrain	2019
Order of the Distinguished Rule of Nishan Izzuddin	Maldives	2019
Order of St. Andrew Award	Russia	2019
Order of Zayed Award	UAE	2019
Grand Collar of the State of Palestine Award	Palestine	2018
State Order of Ghazi Amir Amanullah Khan	Afghanistan	2016
Order of Abdulaziz Al Saud	Saudia Arabia	2016

U.S. Senate Committee's Resolution on Arunachal Pradesh

Recently, U.S. Senate Committee passes resolution recognizing Arunachal Pradesh as an integral part of India.

- The resolution reaffirms that the United States recognizes the **McMahon Line** as the international boundary between the People's Republic of China (PRC) and the Indian state of Arunachal Pradesh.
- **McMahon Line** - The McMahon Line is an 890-km border that serves as the de facto boundary between China and India in the Eastern Sector.
- It is named after Sir Henry McMahon, foreign secretary of British India, who drew the line.
- It was drawn at the 1914 Simla Convention between the Great Britain, China, and Tibet.
- It runs from the eastern border of Bhutan along the crest of the Himalayas until it reaches the great bend in the Brahmaputra River into the Assam Valley.



- The McMahon Line is in alignment with the *Line of Actual Control (LAC) in the Eastern Sector*.
- **India's stand** - India recognizes *Simla Convention (1914)* and Arunachal is controlled by India.
- **China's position** - China calls Arunachal Pradesh as 'Zangnan' and refers to 'South Tibet'.
- Further China claims approximately 90,000 sq. km of territory in Arunachal Pradesh of India as its own.

Black Sea Grain Initiative

Russia has formally withdrawn from an UN-brokered deal to export Ukrainian grain across the Black Sea,

- **Background** - Ukraine is among the world's biggest exporter of foodgrains, such as wheat and corn, and a major contributor to the *UN's food aid Programme*.
- When Russia invaded Ukraine and blockaded its ports, it sent food prices soaring and raised fears of food security in the poorer nations of the world.
- Pakistan, for instance, saw wheat prices skyrocket to crisis levels.

Black Sea Grain Deal Initiative

- It is a deal brokered by the *United Nations and Turkey* in 2022 between Russia and Ukraine.
- It *enabled the movement of food grain* through the **Black Sea**, which was stranded following Russia's invasion of Ukraine.
- It reopened 3 of Ukraine's Black Sea ports – Chornomorsk, Odesa, and Yuzhny/Pivdennyi.
- From June, nearly 32 million tonnes of mostly corn and wheat have been exported by Ukraine under the deal.
- Russia alleges that the deal is not favourable to them, as commitments made to remove obstacles to Russian food and fertiliser exports have not been fulfilled.

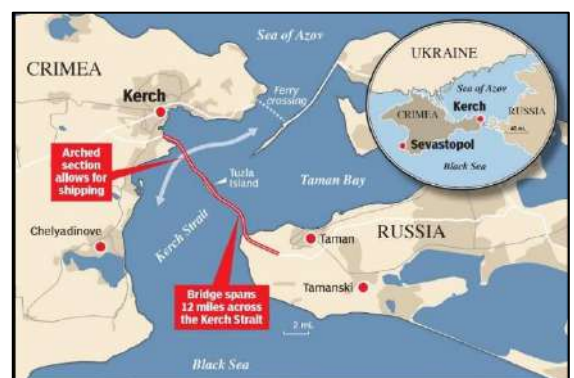


Crimea Bridge & Kerch Strait

One of the sections of the rail-and-road Crimea Bridge, which links Russia to the occupied Crimea peninsula, was blown up again.

Crimea Bridge

- The Crimea Bridge is a crucial structure for Russia as it is the **only direct link** between the transport network of the country and the Crimean Peninsula.
- It is the longest bridge in Europe and is also known as the *Kerch Bridge*.
- It was inaugurated on 2018, 4 years after Russia annexed Crimea.
- *Port of Sevastopol* is the historic home base of Russia's Black Sea Fleet.
- Through this port fuel, food and other products are being supplied.
- Since last year, the bridge has also been an important conduit for reinforcements and supplies to Russian troops who have seized control of territory in southern Ukraine.
- For the Kremlin, the bridge is a symbol of the connection it is attempting to forge between Crimea and Russia.



Kerch Strait

- It is a strait in Eastern Europe.
- It connects the Black Sea and the Sea of Azov.
- It separates the Kerch Peninsula of Crimea and Russia.

Stapled Visa

India pulled out of the Summer World University Games being held at Chengdu after China issued stapled visas to three athletes from the team who belong to Arunachal Pradesh.

- A passport is the certificate of its holder's identity and citizenship.
- A 'stapled visa' is different from a regular visa that a country gives to foreign citizens.
- Instead of stamping directly in the passport, it is a separate piece of paper attached (stapled) to the visa.
- Simply put, a '**stapled visa**' is an unstamped piece of paper that is attached by a pin to a page of the passport.
- A stapled visa can be torn off or detached at will.
- **Chinese practice** - China has a practice of issuing stapled visas to Indian nationals from Arunachal Pradesh and Jammu and Kashmir.
- They started issuing stapled visas to residents of Arunachal Pradesh in the mid-2000s and to those from Jammu and Kashmir from 2009.
- This practice of stapled visa allows China to avoid placing official stamps on the passport.
- **Concern** - When a person with a stapled visa returns to their home country, the entry and exit passes on the stapled visa are torn off.
- Thus, no details of the trip are recorded.
- It is also an expression of China that it does not acknowledge Arunachal Pradesh and J&K as part of India.

INTERNATIONAL ORGANISATIONS

Association of World Election Bodies (A-WEB)

Chief Election Commissioner & 3 members of Election Commission of India (ECI) to attend the 11th meeting of the Executive Board of the Association of World Election Bodies (A-WEB).

- Association of World Election Bodies (A-WEB) is the largest association of Election Management Bodies (EMBs) worldwide.
- **Aim** - To achieve sustainable democracy around the world through the strengthening of the processes of election management in member countries.
- **Launch** - 2013 in Seoul, Republic of Korea.
- **Members** - 119 Election Management Bodies (EMBs) as Members and 20 Regional Associations/Organisations as Associate Members.
- All members may participate in all A-WEB activities, take part in making decisions for the Association, and receive services and benefits provided by the Association.
- A-WEB organises capacity building programmes and undertakes Election Visitor and Observation Programmes in various countries to study election management practices and share knowledge with other member EMBs.
- **India's position** – India is a member to the association of world election bodies (A-WEB) and is represented by Election Commission of India (ECI)

India A-WEB Centre

- India A-WEB Centre has been established at New Delhi in 2019
- **Aim** – To document and research for sharing the best practices and training and capacity building of officials of A-WEB members.
- The Centre is bringing out several publications and documents, including a world class Journal titled 'A-WEB India Journal of Elections.'
- The ECI is providing all the necessary resources for the India A-WEB Centre.

Global Gibbon Network (GGN)

The Global Gibbon Network (GGN) conducted its first meeting recently at Haikou, China.

Gibbons

- Gibbons are the smallest and fastest of all the apes.

Hoolock Gibbon

- **Habitat** - They live in tropical and sub-tropical forests of southeastern part of Asia.

- It is a primate species from the gibbon family of *Hylobatidae*.
- **Hoolock Gibbons in India** - Zoologists believed that Northeast India have 2 species of the ape
 - The **Western Hoolock Gibbon** (Hoolock hoolock) - They are widely distributed in all the seven states of the Northeast.
 - The **Eastern hoolock Gibbon** (Hoolock leuconedys) - They are found only in eastern Arunachal Pradesh and in the Sadiya subdivision of Assam.
- But a study led by Centre for Cellular and Molecular Biology (CCMB) in 2021 proved through genetic analysis that there is only one species of ape in India.
- However, the red list maintained by the IUCN separated the hoolock gibbons in India and categories them as
 - Western Hoolock Gibbon - Endangered
 - Eastern Hoolock Gibbon - Vulnerable
- Both are on Schedule I of the Wildlife (Protection) Act of India, 1972.
- IUCN states that gibbons are one of the most threatened families of primates.

Major Classification of Gibbons	Species of Hoolock Gibbon
<ul style="list-style-type: none"> • Crested Gibbons • Hoolock Gibbons • Siamang • Dwarf Gibbons 	<ul style="list-style-type: none"> • Western hoolock gibbon • Eastern hoolock gibbon • Skywalker hoolock gibbon

Global Gibbon Conservation Network Initiative
<ul style="list-style-type: none"> • Launched by - Eco Foundation Global, the Hainan Institute of National Park, the IUCN Species Survival Commission Section on Small Apes, the Zoological Society of London and other organizations. • Aim - It is a voluntary global platform to safeguard and conserve the gibbons and their habitats, by promoting participatory conservation policies, legislations, and actions. • Agenda - The GGN focuses on implementation and action according to the 2030 Agenda for Sustainable Development Goals, Global Biodiversity Framework and other global agendas targets. • International Gibbon Day is celebrated on October 24th every year.

Comprehensive and Progressive Agreement for Trans-Pacific Partnership

The United Kingdom recently signed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership treaty (CPTPP).

- The CPTPP is a free-trade agreement (FTA) launched in 2018.
- **Members** - Pacific Rim of 11 countries, which includes Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. (UK was recently added as a member).
- **Aim** - The CPTPP requires countries to eliminate or significantly cut trade barriers (reduce tariffs) and make strong commitments to opening services and investment markets.
- It also has rules addressing competition, intellectual property rights and protections for foreign companies.
- **Significance for U.K** - CPTPP will cut tariffs for UK exports to Asia Pacific countries.
- With UK membership, the trading bloc will have a combined GDP of 12 trillion pounds and account for 15% of global trade.
- Britain is keen to deepen trade ties in the Pacific region after Brexit in 2020.

Trans-Pacific Partnership (TPP) and US Withdrawal

- The TTP was a proposed free trade agreement among 12 Pacific Rim economies initially with United States (US).
- In 2017, US President Donald Trump signed to withdrawn from the Trans-Pacific Partnership (TPP).
- Following the withdrawal, in 2018, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) was signed.

World Cities Culture Forum

Bengaluru has become the first Indian city to become part of the World Cities Culture Forum (WCCF).

- World Cities Culture Forum (WCCF) was founded in 2012 by Justine Simons OBE, London's Deputy Mayor for Culture & the Creative Industries.

- WCCF is a global network of cities that share research and intelligence, and explore the role of culture in future prosperity.
- The network currently has 40 cities spanning six continents.
- Bengaluru is set to join the league of cities like New York, London, Paris, Tokyo and Dubai among others.
- WCCF will work in collaboration with Unboxing BLR Foundation in Bengaluru.
- **Summit** - The annual world cities culture summit is hosted on a rotating basis by city partners.
- The summit allows city leaders to share ideas and knowledge about the role of culture as an organising principle for the sustainable city of the future.
- **Last Summit** - Helsinki (Capital of Finland) hosted the World Cities Culture Summit 2022.

19. ECONOMY

Intellectual Property Rights Policy Management framework

- **Intellectual Property Rights (IPR)** - It refers to the legal rights that protect the creations of the mankind.
- These creations include inventions, literary and artistic works, symbols, names, and images used in commerce.
- **Objective** - To provide creators with exclusive rights to their intellectual property and to prevent others from using, selling, or reproducing their work without permission.
- Intellectual Property Rights Policy Management (IPRPM) framework was launched in the form of National IPR Policy 2016.
- It encompasses all IPRs into a single vision document setting in place an institutional mechanism for implementation, monitoring and review of IP laws.
- The framework includes the intellectual property rights of Patents, Trade mark, Industrial Designs, Copyrights, Geographical Indications, Semiconductor Integrated Circuit Layout Design, Trade Secret, and Plant Varieties.
- India is a member of the World Trade Organization (WTO) and has signed the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Types of IPR	Legal Provisions	Purposes	Term of Protection
Patents	Patent Act, 1970	Protects inventors for their inventions	20 years
Trademarks	Trademark Act 1999 & Trademark Rules 2017	Protects logos, symbols, and brand names	10 years (renewed for 10 years)
Copyrights	Copyrights Act 1957 & Copyrights Rules 2013	Protects literary, artistic, and musical works	Authors - Lifetime+60 years Producers - 60 years Performers - 50 years
Trade secrets	Common Law approach covered through IPC, Contract Act, IP Act and Copyright	Protects confidential information	Till the time confidentiality is safeguarded
Geographical indications	Geographical Indications Act 1999 & GI Rules 2002	Protects the names of products that originate from a particular region and have a unique quality or reputation.	10 years (renewed for 10 years)
Designs	Designs Act 2000 & Designs (Amendment) Rules 2021	Protects new or original designs (ornamental / visual appearance discernible to the human eye) which can be replicated industrially	10 + 5 years

Semiconductor Integrated Circuits Layout Design	Semiconductor Integrated Circuits Layout Design Act 2000 & Rules 2001	A layout of transistors and other circuitry elements including lead wires connecting such elements and expressed in any manner in semiconductor integrated circuits.	10 Years
Plant Varieties	Protection of Plant Varieties and Farmers Rights Act (PPVFRA), 2001	Traditional varieties and landraces, all developed varieties (non-traditional and non-landrace) in trade/use for older than 1 year and not older than 15 years or 18 years (in case of trees and vines), and new plant varieties.	6-10 years

Pronab Sen Committee

Government forms new panel to review all NSO data revamping a Standing Committee on Economic Statistics (SCES) set up in late 2019.

- **Pronab Sen** - India's first chief statistician and the former chairman of the National Statistical Commission (NSC).
- The committee will review and develop the country's surveys on employment, industry and services sector.
- It works under the aegis of the National Statistical Office (NSO).
- **Ministry** - Ministry of Statistics and Programme Implementation (MoSPI).
- The committee has also been mandated to provide guidance to conduct pilot surveys/ pre-testing, if necessary, before finalising schedules for data collection.
- It will also provide guidance for studying and exploring the availability of administrative statistics.
- The committee can also provide technical guidance to the central and state-level agencies for the surveys.
- **Members** - As of now, the SCoS has 14 members, out of which there are 4 non-official members, 9 official members and a member secretary, chaired by Sen.
- It is extendable based on the requirement from time to time.

India-Russia Oil Trade

Indian refiners saved at least \$7.17 billion in foreign exchange by ramping up purchases of discounted Russian crude oil following the outbreak of the war in Ukraine.

- India, the world's 3rd largest consumer of crude oil, depends on imports to meet over 85% of its oil needs.
- Russia in the wake of its invasion of Ukraine, Western buyers are cutting oil imports from Moscow.
- Thus, it has been offering discounts on its crude and Indian refiners have been lapping up these discounted barrels.
- Russia, which used to be a marginal player in India's oil trade, is now India's biggest oil supplier.
- The value of oil imports from Russia for the period from April 2022 to May 2023 was nearly \$40 billion.

SUPPLYING NATION	OIL IMPORT VOLUME (million barrels)	OIL IMPORT VALUE (\$ million)	AVG LANDED PRICE (\$/barrel)	MARKET SHARE BY VOLUME
Russia	496.39	39587.81	79.75	24.2%
Iraq	431.77	38258.55	88.61	21%
Saudi Arabia	336.07	33086.99	98.45	16.4%
UAE	176.81	18100.4	102.37	8.6%
USA	122.97	11100.12	90.27	6%

Based on analysis of data from the Directorate General of Commercial Intelligence and Statistics (DGCI&S), Ministry of Commerce, Government of India. *April 2022-May 2023

CBDC transactions through UPI QR

Recently, RBI has allowed interoperability to customers to use UPI QR codes for CBDC transactions.

- The Central Bank Digital Currency (CBDC) is digital form of fiat cash.
- E-Re or CBDC was issued by the Reserve Bank of India (RBI).
- RBI launched wholesale and retail e-Re in 2022 on after the other.
- More banks are increasingly offering e-Re wallets to customers.

- The wholesale adoption of e-Re is limited to settlement of secondary market G-Sec transactions.
- The retail e-Re was poised to be a replacement to the physical currency, though within a limited user group.
- **Working** - At the merchant-end, e-Re works on the QR scanning mechanism, just like UPI.
- However, the QR for e-Re and UPI are different.
- At present, UPI and e-Re require two different POS.
- With interoperability, the same POS can be made available for both modes.
- It also improves adoption of e-Re.
- **Front-end** - The QRs will be converged through inter-operability.
- The same QR code can be used as point-of-sales (POS) for e-Re and UPI payments.
- **Back-end** - RBI is taking efforts to converge payments at the back-end as well.
- A customer making a payment through UPI can be credited to the e-Re account of the merchant and vice-versa.

White Label ATMs (WLAs)

The Reserve Bank of India (RBI) has apprised that in order to drive ATM penetration in the country with a greater focus on Tier III to VI centres.

Automated Teller Machine (ATM)

- **Banking services** – It is a computerised machine that provides customers of banks the facility of accessing their accounts for dispensing cash.
- It also aids in carrying out other financial & non-financial transactions without the need to visit the bank branch.

WLAs

- **Non-Banks** – They are ATMs set up, owned and operated by non-banks are called WLAs.
- Non-bank ATM operators are authorised under the Payment & Settlement Systems Act, 2007 by the Reserve Bank of India (RBI).
- The WLAs provide banking services to the customers of banks in India, based on the cards (debit/credit/prepaid) issued by banks.
- **Rationale** – To allow non-bank entities to set up WLAs has been to increase the geographical spread of ATMs for increased / enhanced customer service, especially in semi-urban / rural areas.

Nonbank financial institutions are those that include insurance firms, venture capitalists, currency exchanges, some microloan organizations, and pawn shops.

Services Provided by WLAs

In addition to dispensing cash, WLAs may offer many other services / facilities which inter-alia include:

- Account Information
- Cash Deposit
- Regular Bill Payment
- Mini / Short Statement Generation
- PIN Change
- Request for Cheque Book

20. ENVIRONMENT

2023 IMO Greenhouse Gas Strategy

Recently, Maritime countries upgraded their Greenhouse House Gas (GHG) emissions strategy to reach net zero “by or around” 2050 at the UN International Maritime Organization (IMO) summit held in London.

- Member states of the International Maritime Organisation (IMO) agree to adopt the 2023 IMO strategy on the reduction of GHG emissions from ships, to mitigate harmful emissions.
- **Aim** - To limit the global temperature increase to well below 2 degrees Celsius as outlined in the 2015 Paris Agreement.

Goals of 2023 IMO GHG Strategy

- **For Ships** - Carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships.
- **For Shipping** - Carbon intensity of international shipping to decline to reduce CO₂ emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008.

- **Technologies** - Uptake of zero/near-zero Green House Gas (GHG) emission technologies or fuels to represent at least 5% (striving for 10%) of the energy used by international shipping by 2030.
- **Net Zero** - To peak GHG emissions from international shipping to reach net zero as soon as possible and to reach net zero emission by or around, i.e. 2050.

Indicative checkpoints

- **For 2030** - International shipping industry to reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008.
- **For 2040** - To reduce the total annual GHG emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008.
- According to the Intergovernmental Panel on Climate Change 2022 report, maritime shipping is responsible for 3% of global anthropogenic GHG emissions and it is growing rapidly.

Underground Climate Change

Underground climate change is worrying scientists and engineers involved with aspects of urban planning as it could adversely affect the durability of structures and infrastructures in cities.

- **Underground climate change** is the impact due to rising subsurface temperatures because of human activity like basement parking, tunnel roads, subways, and underground rail, among others.
- It is known as “underground climate change” or “subsurface heat islands and an extension of urban heat islands.
- Urban heat islands are urban regions which are significantly warmer than their rural surroundings due to human activities.
- Researchers have found that the shallow subsurface beneath cities warms by 0.1 to 2.5 degrees Celsius per decade.
- Heat diffuses from buildings and underground transportation, warming the ground at an increasingly fast rate.
- The ground underneath cities absorb and retains heat from various sources, including buildings, transport systems, industrial processes.
- It also includes waste heat from basements and other subterranean facilities.
- Over time, the accumulation of this heat can lead to an increase in subsurface temperatures.
- The heat trapped is affecting the soil by making it expand or contract.
- **Threat** - Underground climate change is a silent hazard, as no existing civil structure or infrastructure is designed to withstand these variations.

Ocean Colour

A new study revealed that Climate change has altered the colour of 56% of the world's oceans and the waters in the tropics have turned green particularly the southern Indian Ocean.

- **Findings** - The oceans appear blue, but the true colour may contain a mix of subtler wavelengths, from blue to green and even red.
- The oceans' hue changes naturally from one year to another, so the researchers observed how the 7 colours changed from region to region during a given year.
- Next, they checked how annual variations in ocean colour have changed over the 2 decades and this analysis showed that climate change was driving the change.
- They then used to model to simulate 2 scenarios - one with the addition of greenhouse gases and the other without them.
- The scenario that considered the addition of greenhouse gas emissions showed that colour could change in about 50% of the world's surface oceans, which is comparable to satellite observations.
- These observations estimated that 56% of the saltwater bodies are turning green or blue.
- Though the southern Indian Ocean is seeing a significant change, the waters near India are not following the same trend.
- Changes in the ocean colour indicate alternations to the phytoplankton communities.

- Phytoplankton are primary producers of energy - Using chlorophyll, they convert sunlight into energy, thus feeding an entire food chain above them.
- Phytoplankton consume carbon dioxide and release oxygen, making their presence crucial to marine creatures.
- They also 'fix' nitrogen making them an important part in the enrichment of oceanic waters.
- Nitrogen also plays a key role in regulating the *global carbon cycle*.
- **Green** - Indicates life, especially phytoplankton.
- **Blue** - Indicates little life, the amount of carbon dioxide (CO₂) absorbed by the ocean.
- Currently, oceans absorbed 25% of all carbon dioxide (CO₂) emissions.

Tire Particulate Pollution

A recent study says that the tires and its particulate pollution causes harmful effects to environment and human health.

- **Findings** - The study revealed that tires produce more than 1 trillion ultrafine particles for each kilometre driven, meaning particles **smaller than 23 nanometres**, that are hard to measure.
- According to a report shared by Emissions Analytics, a single car sheds 4 kilograms of tire particles weight per year, on average.
- In 2021, 52% of all the small particle pollution from road transport came from tyre and brake wear, plus a further 24% from abrasion of roads and their paint markings.
- **Impacts** - The tire particles pollute air, water and soil and contain a wide range of toxic organic compounds, including known carcinogens.
- These are of special concern to health, as their size means they can enter organs via the bloodstream.
- Also, tires contain volatile organic compounds (VOCs), which are hazardous to human health, and react in the atmosphere to create smog.
- The particulate itself washes into waterways and has been found to be a significant source of oceanic microplastics.
- **Salmon deaths** - A specific chemical used in tyres has been linked to salmon deaths in the US, and California has proposed a ban.
- **6PPD** - 6PPD is an organic chemical widely used as stabilising additive in rubbers.
- 6PPD is water-soluble, so it is carried off of roads by rain and washed into rivers and oceans where it has been linked to mass salmon and trout die-offs.
- 6PPD is absorbed by edible plants like lettuce and that the compound can be found in human urine.

Zombie fires (Arctic Soil Fires)

The blanket of wildfire smoke spread across large parts of the U.S. and Canada in 2023 due to zombie fires.

- Zombie fires also known as overwintering fires, happen as a result of wildfires, they're called zombie fires as they seem to come back from the dead.
- After a wildfire has been extinguished on the surface, some of it can still burn belowground in secret, fuelled by peat and methane.
- These fires can continue to burn all through winter, hidden under a layer of snow.
- In spring as the temperature rises, the snow melts and the soil dries out, the wildfires can re-ignite and spread once again.
- Soil fires that spread underground are harder for firefighters to tame and extinguish, thus demanding more resources for longer periods of time.
- Peat fires can make the ground unstable, using heavy equipment to excavate the fire areas also becomes risky.
- Northern ecosystems store twice as much carbon in their peat and permafrost as the atmosphere, and both are increasingly vulnerable to fire.

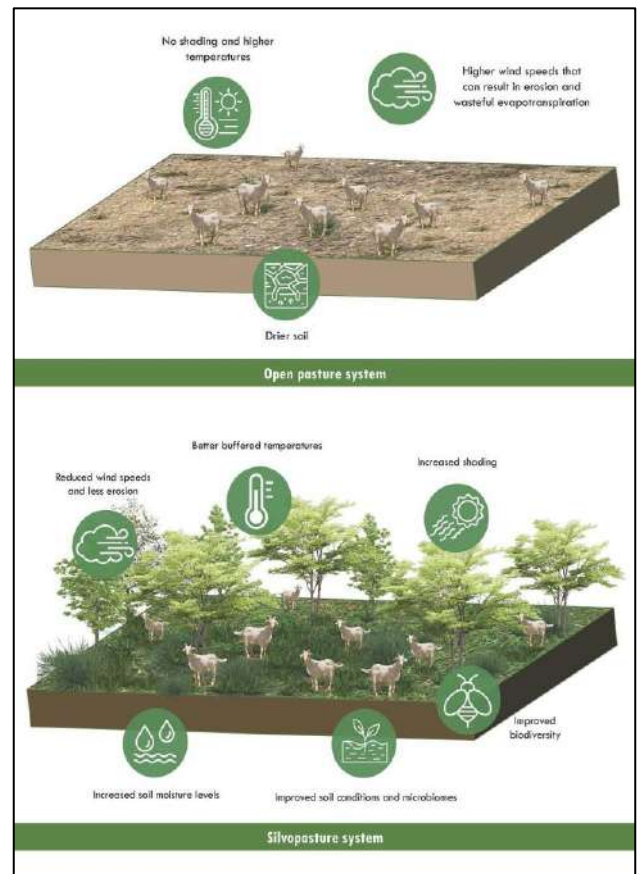
Silvopasture Systems

In light of the global deterioration of natural resources and forests, silvopasture systems offer a relevant solution to deforestation trends.

- **The system** – Silvopasture is an ancient and proven practice that harmoniously integrates trees, forage and livestock on the same land.
- **Deforestation** – Silvopasture can play a vital role in reversing the negative trend of deforestation for pasture land.
- **Carbon Sinks** – The trees on silvopasture lands act as natural carbon sinks, sequestering significantly five-10 times more carbon than pastures without trees.
- Silvopasture practices currently cover a vast expanse of 550 million hectares worldwide.

Benefits

- **Climate conditions** – Silvopasture systems also regulate local climatic conditions, buffering against temperature and wind extremes, providing a favorable living environment for livestock.
- **Nutrition cycle** – The extensive root systems of trees within silvopasture plots contribute to nutrient cycling, improved soil stability and quality, while effectively combating erosion.
- **Soil infiltration rates** – Soil infiltration rates in silvopasture systems surpass those of open pastures, enhancing water storage potential.



Resource Efficiency Circular Economy Industry Coalition (RECEIC)

The Resource Efficiency and Circular Economy Industry Coalition (RECEIC) was launched by Union Minister for Environment, Forest and Climate Change.

- Resource Efficiency [Circular Economy](#) Industry Coalition (RECEIC) is an industry-driven and a self-sustaining initiative which would continue to function beyond India's G20 presidency.
- RECEIC was launched on the sidelines of 4th G-20 Environment and Climate Sustainability Working Group meeting.
- **Aim** - It is aimed at promoting resource efficiency and circular economy practices globally.
- **Members** - 39 companies headquartered in 11 different countries have joined the coalition as its founding members.
- The MNCs pledged to adopt resource efficiency and circular economy principles to address environmental challenges rising from waste.
- **Headquarters of RECEIC** - Will be located at Federation of Indian Chambers of Commerce and Industry (FICCI) in New Delhi.
- **Functions** - It will enhance resource efficiency and accelerate circular economy transition.
- The coalition will facilitate knowledge-sharing, best practice sharing, and sustainable practices among the participating industries.



Merger of Project Tiger & Project Elephant

Recently, Centre has merged Project Tiger and Project Elephant into a new division called 'Project Tiger and Elephant Division'.

- The new division 'Project Tiger and Elephant Division' will be under the Ministry of Environment, Forest and Climate Change (MoEF&CC).
- **Changes** - The additional director general of forests (ADGF), Project Tiger (PT) has now been designated as ADGF (PT&E).
- The staff and divisional heads of Project Elephant (PE) will now report to the ADGF (PT&E)
- The Inspector General Forests and Project Director, Project Elephant, will be the divisional head of the PT&E division and will be reporting to the ADGF (PT&E).
- **Concerns raised** - The merger may dilute the importance of Project Tiger.
- It will impact the funding pattern for tiger reserves as well as Project Elephant.
- As the splitting of funds is not clear, shortage of funds may affect key developmental activities.
- Undermine the conservation of both signature animals.
- **Arguments in support** - The amalgamation will bolster the conservation of both the animals, as they often share the same landscapes.
- The top of the carnivorous and herbivorous families, the benefits for one would percolate to the other.

Project Tiger	Project Elephant
<ul style="list-style-type: none"> • Launched in 1973 by the central government. • Ministry - Centrally Sponsored Scheme of the Ministry of Environment, Forests and Climate Change. • Objective - Conservation of tiger and ensures the preservation of their natural habitat. • The Project Tiger has 53 tiger reserves spread over 75,000 km. • This year 2023 observed Project Tiger's 50th commemorative year. • It is one of the most successful species conservation programmes in the world. • The National Tiger Conservation Authority (NTCA) was created to provide statutory backing to the project. 	<ul style="list-style-type: none"> • Launched in the year 1992 as a Centrally Sponsored Scheme. • Objectives <ul style="list-style-type: none"> ○ To protect elephants, their habitat & corridors ○ To address issues of man-animal conflict ○ Welfare of captive elephants • Ministry - Ministry of Environment, Forest and Climate Change provides financial and technical support to major elephant range states in the country. • There are 33 elephant reserves in India, latest being Terai Elephant Reserve in Uttar Pradesh. • Project Elephant completed 30 years in 2022.

National Adaptation Fund for Climate Change

Despite India's focused approach to fighting the climate crisis, the National Adaptation Fund for Climate Change (NAFCC) sees drastic cut.

- The National Adaptation Fund for Climate Change (NAFCC) was created in 2015 to fund the states in fighting this global challenge.
- **Aim** - To support concrete adaptation activities which mitigate the adverse effects of climate change.
- **Implementation** - NABARD is the National Implementing Entity (NIE).
- **Projects eligible for funding** - Adaptation projects in sectors such as agriculture, animal husbandry, water, forestry, tourism etc.
- **Eligibility** - The States/UTs are to be prepared the project proposal in consultation with NIE (NABARD) and to be approved by the State Steering Committee on Climate Change.
- **Funding** - Central Sector Scheme
- The grants under NAFCC released to different states and Union territories have drastically declined over the years.

NAFCC funding came down to around Rs 20 crore in 2022-23 from Rs 118 crore in 2015-16.

SPECIES IN NEWS

White-rumped Vulture

Despite protective measures, the future of white-rumped vulture remains extremely perilous in the Sigur plateau in the Nilgiris.

Sigur plateau

- Sigur plateau, Nilgiris is the last southernmost viable breeding population for the White-rumped vulture in India.
- It is one of the most vital wildlife corridors linking the western and eastern ghats.
- It is bounded to the northwest by the Bandipur National Park, to the east by the Sathyamangalam Wildlife Sanctuary, and to the west by the Wayanad Wildlife Sanctuary.
- It is a part of the World Network of Biosphere Reserves of UNESCO.
- The corridor is critical for preserving the genetic diversity of the region's tigers and elephants.
- The Sigur plateau is home to the Irular community tribals.

White-rumped Vulture

Scientific name - *Gyps bengalensis*.

- **Conservation Status**
 - **IUCN Red List Status** - Critically Endangered.
 - **CITES** – Appendix II
- **Habitat** – Forest, Savannah, shrub land and grassland
- **Spread** – Indian Sub-continent and southeast Asia
- **Distribution in India** – Found throughout India.
- They occur in temperate areas, mostly in plains and occasionally in hilly regions.
- [Vultures in India](#) | [Threats to Vultures](#)

Oriental white-backed vulture

India's tiger reserves and other wild spaces give conservationists hope that the captive-bred the Oriental white-backed vulture will thrive again.

- Oriental white-backed vulture (*Gyps bengalensis*) is also known as White-rumped vulture.
- They have blackish plumage, a white neck-ruff, and a white patch of feathers on the lower back and upper tail.
- **Habitat** - Forest, Savanna, Shrubland and Grassland.
- **Distribution** - Bangladesh, Bhutan, Cambodia, India, Myanmar, Nepal and Pakistan.
- **Threat** - Veterinary drugs Aceclofenac and Ketoprofen
- **Conservation status**
- **Conservation Efforts** - In 2020, 8 captive-bred White-rumped vultures were released into the wild for the first time ever in India from the JCBC in Pinjore, Haryana.
- After that, 31 Oriental white-backed vultures were released in batches in West Bengal in 2021.
- The BNHS and Royal Society for Protection of Birds (RSPB) have been managing 4 JCBCs in partnership with the State governments of Haryana, Madhya Pradesh, West Bengal, and Assam.

IUCN status	Critically Endangered
CITES	Appendix II

Jatayu Conservation Breeding Centre

- The Jatayu Conservation Breeding Centre (JCBC) is a joint project of the Haryana Forest Department and the Bombay Natural History Society (BNHS).
- The centre is spread on a 5 acre land of Haryana Forest Department.
- It is located at village Jodhpur on the edge of the Bir Shikargaha Wildlife Sanctuary.
- It is a collaborative initiative to save the 3 species of vultures from looming extinction.
- The 3 species of Vultures are - White-backed, Long-billed and Slender-billed.

Candida Auris

Recently, *Candida auris*, a drug-resistant fungus that was identified as a global threat was found in hospitalised stray dogs in Delhi.

- **About** - *Candida auris* is an emerging multidrug-resistant oval-shaped fungus causing life-threatening outbreaks.
- The World Health Organization has declared *Candida auris* as one of the world's 4 'critical priority' fungal pathogens.
- **Origin** - First reported in Japan in 2009, *C. auris* has since spread all over the world.
- It grows as yeast and causes candidiasis in humans.
- The fungus is hard to identify with standard laboratory methods and can be misidentified in labs without specific technology.
- **Infections Caused** - *C. auris* has caused bloodstream infections, wound infections, and ear infections.
- It also has been isolated from respiratory and urine specimens, but it is unclear if it causes infections in the lung or bladder.
- **Spread** - *C. auris* can spread in healthcare settings through contact with contaminated environmental surfaces or equipment, or from person to person.
- **Treatment** - Most *C. auris* infections are treatable with a class of antifungal drugs called echinocandins.
- However, some *C. auris* infections have been resistant to all 3 main classes of antifungal medications, making them more difficult to treat.
- In this situation, multiple classes of antifungals at high doses may be required to treat the infection.
- **Findings** - Report documents for the first time the isolation of live *C. auris* culture from an animal source.
- Overall, 4 of the 87 dogs (4.5%) contained evidence of *C. auris* infection or colonisation in their ear and on the surface of their skin.
- The recent finding suggests pets could act as reservoirs for superbugs, potentially transmitting infections to humans.

Desiccation-tolerant (DT) vascular plants

In the Western Ghats, researchers have found 62 species of plants, 16 are Indian endemic, and 12 are exclusive to Western Ghat outcrops that can survive extreme dehydration.

- Hydration and desiccation-tolerance are two commonly studied strategies for plants in extreme habitats.
- Hydration is a condition where plant tissues can tolerate more than 30% of water content.

- But in desiccation, plants undergo longer dry days during which the moisture content of the leaves is the same as in the air.
- **Desiccation-tolerant (DT) vascular plants** are able to withstand extreme dehydration, losing up to 95% of their water content, and they revive themselves once water is available again.
- **Characteristics** - DT plant varieties are found in both flowering and non-flowering species and in both temperate and tropical climates.
- They are usually found in rocky outcrops and can recover quickly when water supplies are restored.
- Ferricretes (layers of sedimentary rock) and basaltic plateaus seemed to be the preferred habitats.

Species	Changes
Tripogon	It changes its colours from greyish in dry conditions to green in hydrated situations.
Oropetium Thomaeum	Changes colour from green in hydrated phase to dark purple or orange From greyish to ash colour during the period of desiccation.
Ferns (fronds)	Curling inwards towards the costa, exposing spores at the start of the dry season and during brief dry spells.
C lanuginosus	Not directly exposing them to sunlight during the desiccation phase.

- Some species were found to survive at increasing temperatures, which is crucial for the warming planet.
- **Extremophytes** - Some plant species ranging from algae to angiosperms thrive in harsh environments and are termed as extremophytes.
- **DT in India** - India now has 9 new generic records for the global list of desiccation-tolerant (DT) plants.

- They are identified as Pyrrosia, Aleuritopteris, Corallodiscus, Arundinella, Bhidea, Bothriochloa, Danthonidium, Dimeria and Glyphochloa.
- Colour changes and morphological characteristics were also observed in the species to adapt to the dryness.

Silver Cockscomb

Silver cockscomb which is widely regarded as a weed is found to have benefits that is being largely used by the Soliga tribal community.

Silver Cockscomb

- Silver cockscomb is a short-lived beautiful but *troublesome weed* that is 50-60 cm-tall with simple, spirally arranged leaves around the stem.
- In Karnataka's Chamarajanagara district, the silver cockscomb is referred to as *anne soppu*.
- It is also known as lagoon spinach, the weed belongs to the Amaranthaceae family, which includes economically important plants like spinach (*Spinacia oleracea*), beetroot and quinoa.
- **Benefits** – The Soliga tribes consume the silver cockscomb as a leafy vegetable as they are high in nutrients such as beta-carotene and folic acids, and have vitamin E, calcium and iron.
- Most farmers use the plant as fodder for livestock.
- It is frequently used in traditional Chinese and Indian medicine for treating eye diseases and ulcers.
- **Issues** – If left unchecked, it can spread quickly and suppress the growth of other crops, affecting their yield.
- It also attracts insects, caterpillars, worms and moths that can harm crops.
- Although it is of the same family as spinach, silver cockscomb leaves have lower levels of oxalic acid (0.2%) and phytic acid (0.12%). Spinach leaves on the other hand are high in calcium, oxalates, vitamin K and potassium, which can lead to formation of kidney stones.

Soliga Tribes
<ul style="list-style-type: none">• Soligas are an <i>indigenous tribe of Karnataka</i>.• They are indigenous people of South India and are credited with being the first at many things:<ol style="list-style-type: none">1. They are considered the first settlers of India.2. Their home, Biligiri Rangan (BR) Hills, was among the first areas to be declared a wildlife sanctuary in India, in 1974.3. In 2011, when the region was declared a tiger reserve, the Soligas were the first community to win resident rights in a tiger reserve.

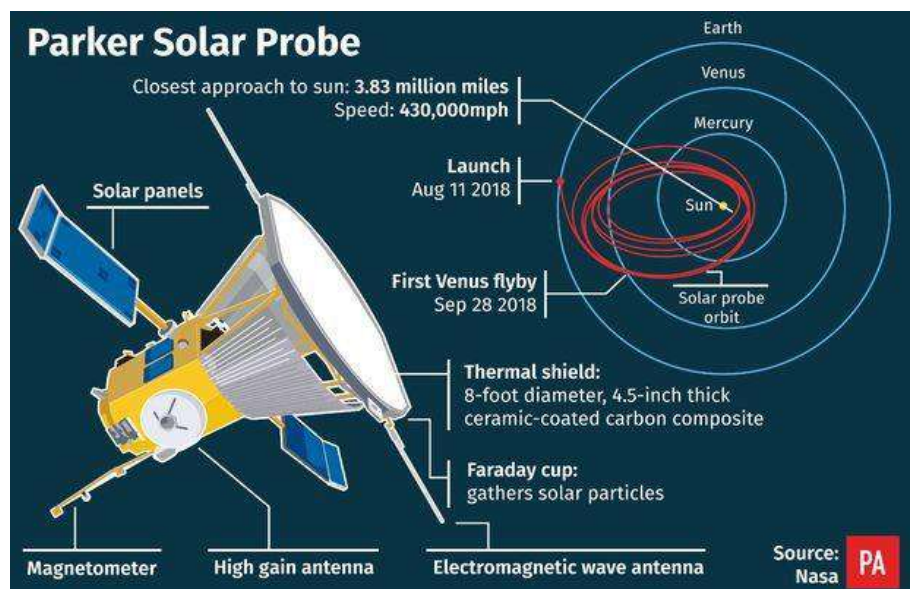
21. SCIENCE AND TECHNOLOGY

SPACE

NASA's Parker Solar Probe

Recently the NASA's Parker Solar Probe just completed its 16th close approach to the Sun.

- **Aim** - To unlock the mysteries of the Sun's corona and solar wind.
- It is a part of *Living with a star* programme of NASA.
- It carries 4 instrument suites that are designed to study magnetic fields, plasma and energetic particles and image the solar wind.
- The spacecraft travels directly through the Sun's atmosphere ultimately to a distance of about 4 million miles from the surface.



- NASA's Parker Solar Probe is the first-ever mission to "touch" the Sun.
- Launched using Delta IV-Heavy with Upper Stage in 2018.
- The spacecraft and its instruments are protected from the heat of the Sun by a 4.5-inch-thick carbon composite shield that can withstand temperatures of around 1,777 degrees Celsius.

Granite under moon's surface

NASA scientists discover huge granite 'mass' buried on Moon based on the data gathered by the Chinese Chang'E-1 and Chang'E-2 lunar orbiters and NASA's Lunar Prospector and Lunar Reconnaissance Orbiters.

- Scientists have discovered a mass of granite 50km in diameter below the thorium-rich feature and an extinct volcanic caldera between the craters Compton and Belkovich on the Moon's far side.
- The heat measurements revealed that the temperatures under the surface at the site were at least 10 degrees Celsius higher than the geothermal gradients in the surrounding regions.
- This heat flux is due to the radiogenic-rich (heat caused by radioactivity) granite mass below the surface.
- Granite is known to have higher concentrations of radioactive uranium and thorium than in other rocks in the lunar surface.
- A colossal granite formation, located beneath the lunar surface, is believed to have resulted from the cooling of molten magma that once fueled a volcano.
- This active volcano is estimated to have erupted over 3.5 billion years ago, during the Moon's early history.
- Given that the Moon is approximately 4.5 billion years old, this discovery provides valuable insights into its volcanic past.
- Granites are igneous rocks that form remnants of the underground plumbing systems of extinct volcanoes

VSS Unity

Recently a 6-person crew on Virgin Galactic's VSS unity spaceship took a suborbital flight and reached the edge of space.

- Virgin Galactic is a British-American space tourism company, operating in the United States.
- Virgin Galactic is launching space tourists and researchers onto suborbital trajectories.
- **VSS unity** - It is a rocket-powered plane which took its first commercial space flight in the 'Galactic 01' mission.

Solar Missions	Aim	Countries	Launch
Helios 1 and 2	To study the solar wind from an orbit carrying the spacecraft inside Mercury's orbit.	US & Germany	1970
Pioneer 9	To measure solar wind and solar magnetic field)	U.S.A	1983
SOHO	Investigation of Sun's core, corona, and solar wind; comet discoveries	Europe & U.S.A	1995
Yohkoh	To observe the solar flares at X-ray wavelengths	Japan	1991
Solar Terrestrial Relations Observatory (STEREO) mission	To capture unseen images of Sun	U.S.A	2006
Interface Region Imaging Spectrograph (IRIS)	To study the solar atmosphere.	U.S.A	2013
Aditya L1	Solar corona observation	India	Yet to be launched

Important Lunar Missions		
Missions	Countries	Objective
Luna 2	Soviet Union	First spacecraft to impact the Moon's surface
Luna 3	Soviet Union	First pictures of the lunar farside.
Chang'E-1 & Chang'E-2	China	Lunar orbiters
Korea Pathfinder Lunar Orbiter	South Korea	Basic lunar exploration
Lunar Reconnaissance Orbiter	U.S.A	To study the moon's surface
Chandrayaan-1 & 2	India	To study lunar surface

- ‘Galactic 01’ took about 90 minutes for the entire trip.
- The space plane reached a peak altitude of more than 52 miles (85 kilometers).

The Edge of Space

- **Karman line** - The Karman line is the boundary between the Earth’s atmosphere and outer space at an altitude of 100km above sea level.
- It is an internationally recognised boundary of space.
- The Karman line is near the transition between the upper mesosphere and lower thermosphere.
- NASA and the US Air Force, considers 50 miles as the border of space.

Suborbital Trajectory
<ul style="list-style-type: none"> • When an object travels at a horizontal speed of about 28,000 km/hr or more, it goes into orbit once it is above the atmosphere. • Satellites need to reach that threshold speed in order to orbit Earth. • Such a satellite would be accelerating towards the Earth due to gravity, but its horizontal movement is fast enough to offset the downward motion so that it moves along a circular path. • Any object travelling slower than 28,000 km/hr must eventually return to Earth.

Zhuque-2 carrier rocket

A private Chinese company launched first methane-liquid oxygen rocket into orbit named Zhuque-2 recently, beating U.S. rivals.

- The rocket successfully delivered a test payload into sun-synchronous orbit (SSO)
- The Zhuque-2 mission became successful in its second attempt.
- Zhuque-2 mission carried *no payload* and the rocket’s first stage was not recovered.
- The rocket is currently expendable but LandSpace is working on a restartable version of the 80-ton-thrust TQ-12 engine which powers the Zhuque-2 first stage.
- **Launched by** – LandSpace, a Chinese private company.
- **Fuel** - It is a *methane-liquid oxygen* rocket.
- A methane-powered rocket, also known as Methalox, uses methane as the fuel and liquid oxygen (LOX) as the oxidizer.
- **Mission** - In this mission 2 planned rockets will carry the spacecraft; one will land on the moon’s surface and the other will transport the astronauts.
- Both the rockets will enter the moon’s orbit and after a successful docking the Chinese astronauts will enter the lunar lander to descend onto the moon’s surface.
- After Chinese astronauts have completed their scientific tasks and collected samples from the moon, the lander will transport the astronauts back to Earth using the orbiting spacecraft.
- **Advantages** - Less polluting, Safer, Cheaper, and are suitable propellant for a reusable rocket.
- **LandSpace** - It became the 2nd private Chinese company to ever launch a liquid-propellant rocket.
- Previously, Beijing Tianbing Technology successfully launched a *kerosene-oxygen rocket*.

Methane-based rockets in development stage		
Methane based Rockets	Agencies	Country
Starship	SpaceX	U.S.A
New Glenn	Blue Origin	U.S.A
Vulcan Centaur	United Launch Alliance	U.S.A
Neutron	Rocket Lab	U.S.A
Terran R	Relativity Space	U.S.A

To know more about India and reusable rockets - [Next-Gen Launch Vehicle \(NGLV\)](#), [RLV-TD](#)

Different Kinds of Moon Missions

ISRO has launched Chandrayaan-3, India’s 3rd lunar mission and 2nd attempt to make a soft landing on the surface of the moon.

- To know about Chandrayaan–3, [click here](#).
- There are largely 6 kinds of Moon missions, including flybys, orbiters, impact missions, landers, rovers, and human missions.

- **Flybys** - Flybys are the missions in which the spacecraft passed near the Moon but *did not get into an orbit* around it.
- These were either designed to study the Moon from a distance or were on their way to some other planetary body or deep space exploration and happened to pass by the celestial body.
- Example - **Pioneer 3 and 4 (U.S.A), Luna 3 (USSR)**
- **Orbiters** - Orbiters were spacecraft that were designed *to get into a lunar orbit* and carry out prolonged studies of the Moon's surface and atmosphere.
- Example - **Chandrayaan 1 & 2 – India, Lunar Orbiter program – U.S.A**
- **Impact missions** - Impact missions are an *extension of Orbiter missions*.
- While the main spacecraft keeps going around the Moon, one or more instruments on board make an uncontrolled landing on the lunar surface.
- They get destroyed after the impact, but still send some useful information about the Moon while on their way.
- Example - **Chandrayaan-1's Moon Impact Probe**.
- **Landers** - Lander missions involve the *soft landing* of the spacecraft on the Moon.
- Example - The first landing on the moon was accomplished on 1966, by the *Luna 9 spacecraft* of the then USSR.
- **Rovers** - Rovers are an extension of the lander missions and special wheeled payloads on the lander that can detach themselves from the spacecraft and *move around on the moon's surface* to collect data.
- Example – Pragyaa rover in Chandrayaan-2 (India).
- **Human missions** - These involve landing of astronauts on the moon's surface.
- So far, only *NASA of the United States (Apollo mission)* has been able to land human beings on the moon.
- **NASA's Artemis III**, currently planned for 2025, humanity is set to once again to the lunar surface.

Dark stars

Recently, Webb telescope captures tantalizing evidence for three mysterious 'dark stars'.

- Dark stars are immense, ultrabright hypothetical objects that are powered by dark matter rather than nuclear fusion.
- Dark matter is an invisible material whose presence is known mainly based on its gravitational effects at a galactic scale.
- Dark matter is invisible to us it does not produce or directly interact with light.
- As per the findings of Webb telescope, Dark stars are described as made almost entirely of hydrogen and helium with 0.1% of their mass in the form of dark matter.
- **Mass** - Dark stars would be able to achieve a mass at least a million times greater than the sun and a luminosity at least a billion times greater.
- **Diameter** - Roughly 10 times the distance between Earth and the sun.
- Dark stars are cooler than ordinary stars and unlike ordinary stars, they would be able to gain mass by accumulating gas falling into them in space...
- They can continue to accrete the surrounding gas almost indefinitely, reaching supermassive status as long as there was enough dark matter to fuel them.
- Dark stars are so massive that they end their lives as a black hole.
- It was the nuclear fusion occurring in the cores of those stars that spawned elements heavier than hydrogen and helium.

NASA's DIMPLE Instrument

NASA selects Artemis instrument – DIMPLE to study Irregular Mare Patch on the Moon.

- **DIMPLE** – Refers to “Dating an Irregular Mare Patch with a Lunar Explorer” scientific payload.

- **Aim** - To establish the age and composition of hilly terrain created by volcanic activity on the near side of the Moon.
- **Program** - It travels to the Moon as a part of *Artemis* program.
- DIMPLE is accepted through NASA's *Payloads and Research Investigations on the Surface of the Moon (PRISM)* program via the *Commercial Lunar Payload Services (CLPS)* initiative.
- It will investigate the **Irregular Mare Patch**, (smooth, rounded, slightly mounded areas on the Moon) discovered in 1971 by Apollo 15 orbital images.
- The mission will use a rover, a collection instrument and a spectrometer that can determine the composition of lunar material.
- **Significance** – Dimple will add to a growing body of knowledge about the Moon, which in turn helps us understand the origins of Earth and other planets in the solar system.
- Additionally, the more we understand about our closest neighbor, the more we can support long-term human exploration at the Moon, and someday, Mars.
- **Artemis programme** is an American-led effort to return humans to the moon by 2025, with the ultimate goal of expanding space exploration to Mars and beyond.

Commercial Lunar Payload Services (CLPS) initiative

- This initiative allows rapid acquisition of lunar delivery services from American companies for payloads that advance capabilities for science, exploration or commercial development of the Moon.
- Under Artemis, commercial deliveries beginning in 2022 will perform science experiments, test technologies and demonstrate capabilities to help NASA explore the Moon and prepare for human missions.

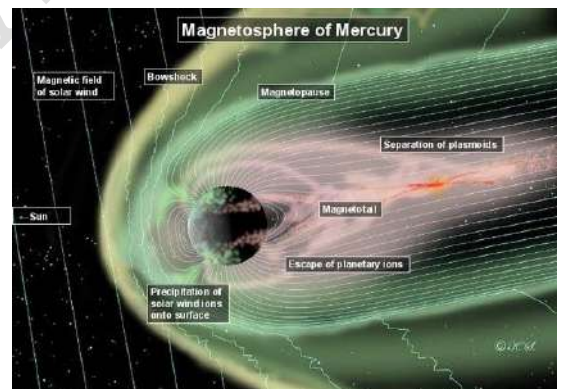
X-ray Auroras

During a close Mercury flyby, the *BepiColombo* spacecraft collected data that showed how electrons raining down on the planet's surface are triggering X-ray auroras.

- **Auroras** - An aurora is a natural colourful light display that shimmers in the sky.

X-ray Auroras in Mercury

- High energy electrons from the solar wind rain down on Mercury's surface and, because they are *not restricted by a thick atmosphere*, they hit the surface.
- This process emits an auroral glow in the form of X-rays.
- For the first time, scientists have witnessed how electrons are accelerated in Mercury's magnetosphere and precipitated onto the planet's surface.
- **MESSENGER Mission**- Aurorae at Mercury had previously been observed by the MESSENGER mission, but the exact processes that cause the x-ray aurora had not been well understood.
- Mercury's magnetosphere is much smaller than Earth's and has a different structure and dynamics, that is evident that generates aurorae is the same throughout the Solar System.
- BepiColombo is a joint mission by the European Space Agency (ESA) and the Japanese Aerospace Exploration Agency (JAXA).
- To know more about the **Bepi Colombo mission** click [here](#).



Auroras in Earth	Auroras in Mercury
Auroras on Earth are triggered when a stream of charged particles emitted by the Sun interact with the ionosphere, the electrically charged upper layer of the planet's atmosphere.	Mercury has thin/no atmosphere and auroras on the planet are created when solar wind interacts directly with the planet's surface.

Markarian 421

NASA's *IXPE Mission unveils twisted mysteries of the Supermassive Black Hole Markarian 421.*

Markarian 421

- **Black hole** – It is a supermassive black hole that is firing high energy particles directly towards Earth.

- Markarian 421 is situated about 400 million light years from Earth.
- **Ursa Major** – It is located in the constellation Ursa Major and is a strong source of gamma rays.
- Blazar is the name given to black hole systems that have jets pointed at Earth and blazars can outshine all the stars in the galaxy that they inhabit.
- They are also often exceptionally bright since particles approach the speed of light.

Supermassive Black holes (vs) Stellar Black holes

Stellar Black holes	Supermassive Black holes
<ul style="list-style-type: none"> • Stellar-mass black holes are formed from the gravitational collapse of a single star or from the merger of two neutron stars. • Therefore, stellar-mass black holes have masses similar to the masses of stars. • More specifically, stellar-mass black holes have masses ranging from about 3 times the mass of our sun to about 50 times the mass of our sun. 	<ul style="list-style-type: none"> • Supermassive black holes have a mass greater than about 50,000 times the mass of our sun. • They are typically millions to billions times the mass of our sun. • Supermassive black holes are far too large to have formed from the gravitational collapse of a single star. • Scientists do not currently know how supermassive black holes form.

- Supermassive black holes are always found at the center of a galaxy and almost all galaxies have a supermassive black hole at its center, which suggest that each supermassive black hole is formed as part of the formation of its galaxy.

Imaging X-ray Polarimetry Explorer (IXPE) Mission

- **X-Rays** – IXPE is NASA's first mission to study the polarization of X-rays from many different types of celestial objects.
- It discovers the secrets of some of the most extreme objects in the universe, the remnants of supernova explosions, powerful particle streams spit out by feeding black holes, and more.

PSLV C-56

The Indian Space Research Organization (ISRO) successfully launched the PSLV-C56 carrying Singapore's DS-SAR satellite and six other satellites.

PSLV C56 Mission

- PSLV-C56 is configured in its core-alone mode similar to that of C55.
- Core alone mode is one of the variants of PSLV.
- **Core-alone mode** does not utilize solid rocket strap-on motors in its first stage, making the launch vehicle incredibly flexible and adaptable to meet various mission requirements.
- PSLV-C56 / DS-SAR, is the Dedicated Commercial Mission of NewSpace India Limited (NSIL) for ST Engineering, Singapore.
- This is the 58th flight of PSLV and 17th flight of PSLV in Core Alone configuration.
- After injecting all the 6 satellites, the upper stage of the rocket would be placed in lower orbit to ensure its reduced orbital life.

DS-SAR satellite

- It is a Radar Imaging Earth Observation satellite and the primary satellite for the mission.
- It is a 360 kg satellite launched into a Near-equatorial Orbit (NEO).

Other satellites launched in the mission	
Satellites	Purposes
VELOX-AM	Technology demonstration microsatellite
ARCADE	Atmospheric Coupling and Dynamics Explorer (ARCADE) is an experimental satellite
SCOOB-II	A 3U nanosatellite flying a technology demonstrator payload
NuLiON by NuSpace	It is an advanced 3U nanosatellite enabling seamless IoT connectivity in both urban & remote locations
Galassia-2	A 3U nanosatellite that will be orbiting at low earth orbit
ORB-12 STRIDER	Satellite developed under an International collaboration

- The DS-SAR satellite is developed under a partnership between *DSTA (representing the Government of Singapore) and ST Engineering (Singapore)*.
- Once deployed and operational, it will be used to support the satellite imagery requirements of various agencies within the Government of Singapore.
- DS-SAR carries a Synthetic Aperture Radar (SAR) payload developed by *Israel Aerospace Industries (IAI)*.
- This allows the DS-SAR to provide for all-weather day and night coverage, and capable of imaging at 1m-resolution at full polarimetry.

Nano Satellite
<ul style="list-style-type: none">• Nanosatellites are loosely defined as any satellite weighing less than 10 kilograms.• Nanosatellites has been developed under CubeSat standards.• Standard CubeSat unit - 10x10x10 centimetres with a mass of somewhere between 1 and 1.33 kg. This unit is known as 1U.• This modular unit “U” was multiplied and larger nanosatellites are now common. For example, 1.5U, 2U, 3U, 6U or 12U.

HEALTH

National Sickle Cell Anaemia Elimination Mission

Recently, Prime Minister launches the National Sickle Cell Anaemia Elimination Mission.

- Sickle Cell Anaemia (SCA) is a collection of inherited red blood cell conditions that have an impact on *haemoglobin*, which transports oxygen throughout the body.
- To know more - [Sickle cell Anaemia](#)

National Sickle Cell Anaemia Elimination Mission

- **Aim**
 - To eliminate Sickle Cell Anaemia by 2047
 - To improve the care and prospects of all sickle cell disease patients
- **Objectives**
 - Provision of affordable and accessible care to all SCD patients
 - To ensure quality of care for SCD patients
 - To reduce the prevalence of SCD

Three Pillar Strategy
<ul style="list-style-type: none">• Health promotion - Awareness generation & pre-marital genetic counselling• Prevention - Universal screening and early detection• Holistic Management & continuum of care<ul style="list-style-type: none">○ Management of persons with sickle cell disease at primary, secondary and tertiary health care levels; treatment facilities at tertiary health care facilities○ Patient support system○ Community adoption

- **Ministry** - It is a joint mission of Ministry of Health and Family Welfare, and the Ministry of Tribal Affairs and state governments.
- It focuses on addressing the significant health challenges posed by sickle cell disease, particularly among *tribal populations* of the country.
- It is now implemented in *17 high-focus states* across the country.
- The program is executed as part of the *National Health Mission (NHM)* through the platform of *Rashtriya Bal Swasthya Karyakram (RBSK)* and *Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)*.
- **Beneficiaries** - Mission mode to cover 0 to 18 years of age and shall incrementally include the entire population up to 40 years as a part of National Health Mission.
- The program envisages *Sickle Cell Genetic Status Cards* to beneficiaries.
- World Sickle Cell Day observed each year on June 19.

Cucumber Mosaic Virus (CMV) & Tomato Mosaic Virus (ToMV)

The current sharp increase in the price of tomato is due to lower production of the vegetable because of CMV and ToMV viruses in Maharashtra and Karnataka.

Virus	Cucumber mosaic virus (CMV)	Tomato Mosaic Virus (ToMV)
Origin	It was first found on cucumber and other cucurbits.	It was first found in tomatoes in Europe.
Distribution	It is distributed worldwide, primarily in temperate to tropical climate zones.	It is distributed worldwide, primarily in temperate to tropical climate zones.
Family	<i>Bromoviridae</i>	<i>Virgaviridae</i>
Hosts	Cucumber, melon, eggplant, tomato, carrot, lettuce, celery, cucurbits squash, pumpkin, zucchini, some gourds, and some ornamentals.	Tomato, tobacco, peppers, and certain ornamental plants.
Spread	Spread by aphids, which are sap-sucking insects. CMV can spread through human touch, but the chances of that are extremely low.	Spread by infected seeds, saplings, agricultural tools. It can spread through the unsanitised hands of nursery workers.
Favorable conditions to spread	Conditions of high temperature followed by intermittent rain, which allow aphids to multiply.	It can transmitted plant-to-plant by many species of aphids. It would require only a few infected saplings for the virus to take over an entire field in a matter of days.
Damage	It can cause almost 100% crop loss unless properly treated on time.	It can cause almost 100% crop loss unless properly treated on time.
Symptoms	CMV causes distortion of leaves. In cucumber - the virus causes a mosaic-like pattern of alternating yellow and green spots. In tomato - fruit formation is affected, and in some cases the fruit is distorted and small.	The foliage of plants shows alternating yellowish and dark green areas, which often appear as blisters on the leaves. Distortion of leaves and twisting of younger leaves. The fruit develops necrotic spots, which leads to overripening.

Biosimilar Guideline (2016)

Health activists and patient groups seek revision of existing Biosimilar Guideline for increased access to critical drugs.

- **Biologics** – Biologics are medicinal products which are mainly composed of living tissues or cells.
- It mainly include vaccines, blood and blood components, gene therapy, tissues and recombinant therapeutic proteins.
- **Biosimilar** – A biologic which is found similar to another biologic is called a biosimilar (similar biologic).
- It is a medicine that is very close in structure and function to a biologic medicine and is safe and effective treatment options for many illnesses including arthritis, kidney conditions, and cancer.
- They increase access to lifesaving medications at potentially lower costs.

Biosimilar Guideline (2016)

- **Prepared by-** Central Drugs Standard Control Organization (CDSCO), Ministry of Health & Family Welfare.
- **Aim** – To address the regulatory pathway regarding manufacturing process and safety, efficacy and quality aspects for similar biologics.
- **Features** - A 'similar biologic' can only be developed against an authorized reference biological that has been approved using a complete data package in India.
- If the reference biological is not authorized in India, it should have been approved/licensed and marketed in an ICH (International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use) country.
- The Draft Guidelines document the eligibility criteria for conducting clinical trials on biosimilars.
- Phase III trials on biosimilars should include minimum 100 patients for evaluation, whereas Phase IV trials need at least 200 evaluable patients.

- As other drugs and formulations, the biosimilars are allowed to be manufactured and marketed after the patent of the original drug or product expires.

Crimean- Congo Haemorrhagic Fever

Alert has been sounded about the Crimean-Congo haemorrhagic fever (CCHF), an infection spread by ticks that has a high fatality rate, according to the World Health Organization (WHO).

- Crimean- Congo Haemorrhagic Fever** - It is a viral haemorrhagic fever usually transmitted by Ixodid (hard) ticks, especially those of the genus, *Hyalomma*, are both a reservoir and a vector for the CCHF virus.
- It can also be contracted through contact with viraemic animal tissues (animal tissue where the virus has entered the bloodstream) during and immediately post-slaughter of animals.
- The disease progression can be subdivided into 4 different stages - incubation period, pre-hemorrhagic, hemorrhagic and the convalescent phases.
- Transmission** - Transmission to humans occurs through contact with infected ticks or animal blood.
- CCHF can be transmitted from one infected human to another by contact with infectious blood or body fluids.
- Diagnosis** - Laboratory tests like antigen-capture *enzyme-linked immunosorbent assay (ELISA)*, *real time polymerase chain reaction (RT-PCR)*, virus isolation attempts, and detection of antibody by ELISA (IgG and IgM).
- Treatment** - The virus is sensitive in vitro to the antiviral drug *ribavirin*. It has been used in the treatment of CCHF patients reportedly with some benefit.
- Spread so far** - The CCHF is endemic to Africa, the Balkan countries, Middle East, and parts of Asia.
- In India, one person recently succumbed to CCHF recently in Gujarat, the state that reports the majority of the country's cases of this disease.
- Prevention** - Insect repellants containing *DEET (N, N-diethyl-m-toluamide)* are the most effective in warding off ticks.

HERVH

A mechanism that quietly removes unfit cells that don't express a particular gene before an embryo starts to develop is discovered.

- HERVH is a virus-like gene that's important in maintaining pluripotency.
- Human embryonic stem cells express a gene called HERVH.
- HERVH itself is also a transposon but without the ability to jump and plays a protecting role.
- Transposons (jumping genes) are dangerous little pieces of DNA that can insert themselves into different regions of the genome, damaging it and leading to cell death.
- Research shows that the inner cell mass expresses HERVH.
- The non-committed cells do not express HERVH and eventually die and get eliminated out of development.
- HERVH actually protects the cells in the inner cell mass from the damage inflicted by transposons.
- But the non-committed cells which don't express HERVH, are killed off by the uncontrolled transposon activity.
- Inner cell mass is a blob of pluripotent cells that gathers towards one side of the embryo and the other cells arrange themselves around this blob.

INFORMATION TECHNOLOGY

Claude 2

AI start-up Anthropic unveiling the latest iteration of its AI chatbot Claude- 2

Chatbots	Claude 2	Bard	ChatGPT
Creator	Anthropic	Google	OpenAI

Accessibility	It is free to use for anyone.	It is free to use for anyone.	It is free to use for anyone.
Comparison of documents	Users can find commonalities between the two documents.	Users can upload images along with prompts, thus making Bard multi-modal.	ChatGPT can compare two documents
Information cutoff date	Early 2023	Early 2023	September 2021
Token Limit	Up to <u>1,00,000 tokens</u>	Up to <u>2,000</u>	Up to <u>8,912</u> .
Regions	UK and the US	More than 180 Countries	Most of the countries in the world.
Languages	-	40 languages	-
Privacy	It allows users to delete their conversations and reportedly supports VPN browsing.	It comes with an option to auto-delete interactions in around 18 months. It does not allow users to retrieve past interactions.	ChatGPT allows users to delete their interactions and it does not support VPN access.
Limitations	It lacks internet access and is likely to offer incorrect information if prompted with requests for real-world data.	It supports VPN access making it available across the world, bypassing local restrictions. Bard's API access is limited and context handling capabilities are significantly lesser compared to Claude 2.	It has fewer context-handling abilities than Claude 2. It has been reported that while doing complex tasks, ChatGPT can throw up inappropriate results.

OTHERS

Lithium Titanate Battery

Lithium titanate battery technology a boon to the energy storage market overcoming the limitations of Li-ion batteries.

- A lithium-titanate or lithium titanate oxide (LTO) battery is an improved version of Lithium ion batteries (LiB).
- Click here to know more about [Lithium-ion Battery](#).
- **Comparison** - Lithium titanate battery utilises lithium-titanate nanocrystals instead of carbon on the surface of the anode.
- Lithium-titanate nanocrystals allow the anode to gain more surface area than carbon which permits the electrons to enter and exit the anode quickly.
- The ability to donate or accept electrons in the electrolytic solutions of lithium ions with titanium oxides is more likely than the same reaction with graphite.
- This allows for *fast charging capacity* in the case of lithium titanate than in the case of carbon.
- Unlike conventional LiB, it has lower inherent charge.
- Lithium dendrites are less likely to form in the case of titanate.

Lithium dendrites are extensions of metal that enter into the solid electrolyte and finally cross from one electrode to the other and ultimately short out the battery cell

- **Advantages of LTO over Li battery**
 - It offers fast charging.
 - It has long battery life.

- It has low-temperature resistance.
- It is fire-resistant.
- Suitable for solar batteries
- Suitable for applications with dedicated line buses, terminal trailers and other transportation systems.
- **Disadvantages**
 - It will induce low specific energy of about 30–110 watt-hours per kilogram.
 - High cost of production.

Bharat 6G Alliance (B6GA)

Department of Telecommunications Launches Bharat 6G Alliance aimed at launching the next-generation technology in India.

- It is a collaborative platform consisting of public and private companies, academia, research institutions, and Standards development organizations.
- **Objective** - To understand the business and societal needs of 6G beyond technology requirements, foster consensus on these needs, and promote high-impact open research and development (R&D) initiatives.
- Its one of the main objectives is to deploy 6G technologies to act as a powerful force multiplier for India by 2030.
- **Ministry** - Ministry of Communications.
- It accelerates an active contribution to international standardization organizations such as 3rd Generation Partnership Project (3GPP) and International Telecommunication Union (ITU).
- It seeks to position India at the forefront of 6G innovation and atleast 10% of the intellectual property rights (IPR) related to 6G technology originate from India.

Telecom Technology Development Fund (TTDF)

- **Launch** - The fund was launched by Department of Telecommunications /Universal Service Obligation (USO) in 2022.
- **Aim** - To bridge the digital divide by developing and manufacturing state-of-the-art technologies to build and develop the telecom ecosystem.
- 5% of annual collections from USOF will be available for TTDF Scheme.
- Universal Service Obligation Fund (USOF) aims to provide for quality and affordable mobile and digital services across the rural and remote areas of the country.
- The scheme entails grants to Indian entities to encourage and induct indigenous technologies tailor-made to meet domestic needs.

Nano Knife

Recently a patient suffering from non-alcoholic steatohepatitis associated with renal cancer has been treated with nanoknife technology.

- Also known as electroporation, nanoknife is a surgical procedure developed to help treat certain cancerous tumours, including cancer of the prostate using pulses of electricity.
- It is a removal approach to permanently damage the cancer cells that may be difficult to reach and treat with traditional methods.
- The device is used to remove small tumours of up to 3 cms in size.
- **Process** - The needles are placed in or around a tumour and very high voltage electricity between any two needles at a time.
- This process punctures very small holes into the cell membranes because of which the cells die while the peripheral tissues are left intact.
- Since it is high voltage electricity, the procedure has to be done under full general anaesthesia and the needles have to be placed with such absolute accuracy that need imaging guidance (Ultrasound and CT scans).
- **Treatment** - It is mostly used for treating pancreatic cancer, tumours of the liver and kidney.

- **Eligibility criteria for the patient** - The patient has to be fit for general anaesthesia and should not have pacemaker implanted in him/her.
- **Advantages**
 - It's very precise and targeted.
 - It will not harm the blood vessels even if they are in close vicinity of the tumour or even sometimes within the tumour.
 - The success rate has been around 95%.
- Radio frequency ablation or microwave ablation require heating of the tissues and effectively burning them whereas cryoablation requires lowering the temperature and actually freezing the tumour to death.

Immersive Reality

A French crime series shows the police using immersive technology to recreate the 3D image of a crime scene.

- Immersive reality creates a new virtual reality by using 360-degree space.
- Immersive reality immerses the user in a new reality using special and sensing technologies and augmented reality.
- Immersive reality technologies use sensing technologies and spatial computing.
- **Applications** - They find wide range of applications which includes -
 - Virtual fitting rooms
 - Immersive learning experience.
 - Virtual layouts for construction of houses and residential locality.
 - Advertisement and marketing providing interactive ads and better recall value.

Underlying Technologies

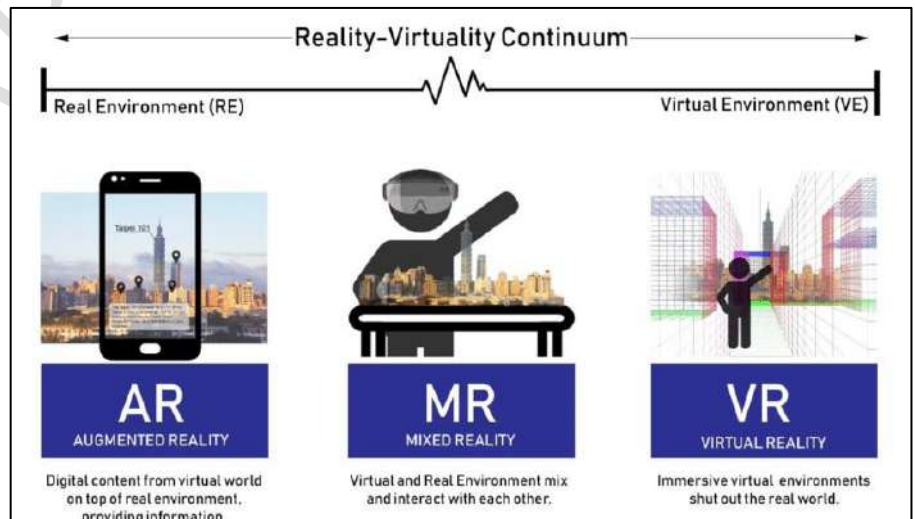
- **Extended Reality (XR)** - It is an umbrella term encapsulating Augmented Reality (AR), Virtual Reality (VR), Mixed Reality (MR), and everything in between.
- **Augmented Reality (AR)** - It is the overlay of digital content on the real-world environment.
- It uses different tools to make the real and existing environment better and provides an improved version of reality.

Examples - Snapchat filters, Pokémon Go

Virtual Reality (VR) - It is a simulated 3D environment that enables users to explore and interact only with the virtual environment.

The users need to wear devices such as headgears or goggles to interact with the environment.

360 VR - This technology is an interactive and immersive VR that allows the user to be in the middle of a virtually created scene.



- **Mixed Reality (MR)** - It is a mix of virtual reality and augmented reality in which one can interact with the digital as well as the real world simultaneously.
- It integrates digital objects and real-world in such a way that it makes it look like the objects really belong there.
- **Spatial computing** - It allows to use computer graphics, images and other functions in the backdrop of a physical space instead of a computer screen.
- It enables computers to blend in with the physical world in a natural way.

22. INDEX AND REPORT

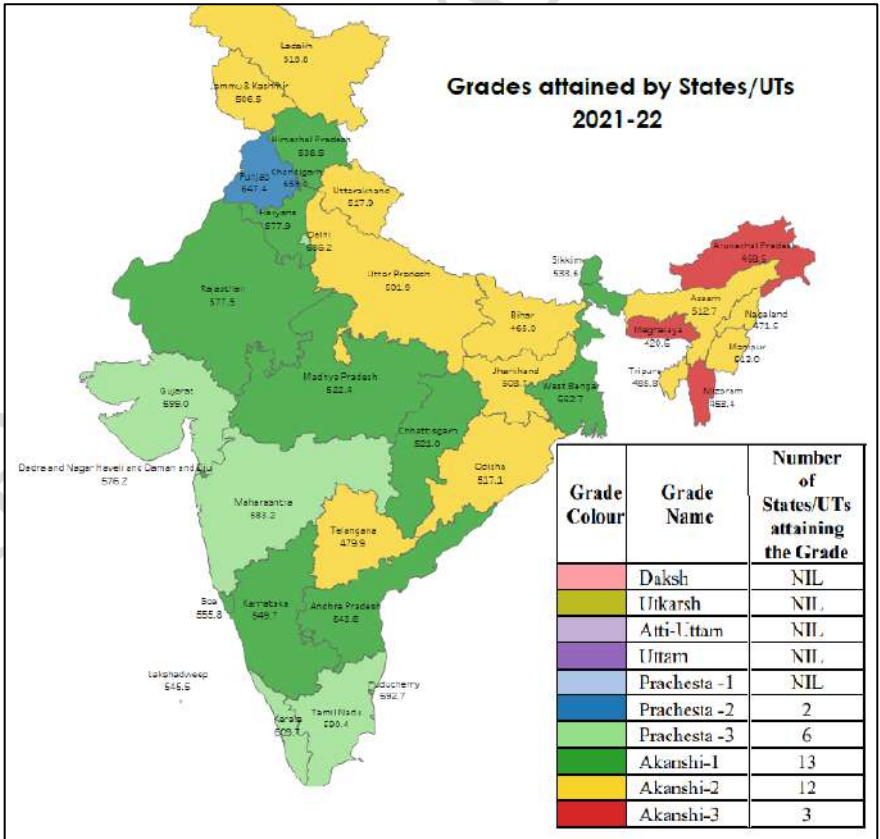
Performance Grading Index

Ministry of Education releases report on Performance Grading Index 2.0 for States/UTs for the year 2021-22.

- Performance Grading Index (PGI) measures the performance of states/UTs in school education.
- **Launched** – In 2017-18 and so far, has been released up to the year 2020-21.
- **PGI 2.0** - To align with the National Education Policy, 2020, and to monitor indicators relating to Goal 4 of SDG, and to replace existing indicators which have achieved optimal target, the PGI has been revised and renamed as PGI 2.0.
- Sustainable Development Goal 4 (SDG4) adopted by India in 2015 seeks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030.
- **Aim** - To assess the relative performance of all the State/UTs in a uniform scale to encourage State/UTs to perform better.

Categories	Domain
1. Outcomes	Learning Outcomes and Quality (LO)
	Access (A)
	Infrastructure & Facilities (IF)
	Equity (E)
2. Governance Management (GM)	Governance Processes (GP)
	Teacher Education & Training (TE&T)

- **Ministry** - Department of School Education and Literacy (DoSE&L), Ministry of Education.
- The PGI 2.0 is completely aligned with Unified District Information System for Education Plus (UDISE +), National Achievement Survey (NAS), PM POSHAN portal, PRABAND portal and Vidyanjali Portal data Outcomes.
- **Categories** - The PGI 2.0 is constructed based on 73 indicators grouped in to 2 Categories viz, Outcomes and Governance & Management.
- It further contains 6 domains.
- PGI-D grades the State/UT into 10 grades – Daksh, Utkarsh, Ati-Uttam, Uttam, Prachesta-1, Prachesta-2, Prachesta-3, Akanshi-1, Akanshi-2, Akanshi-3.



- **Highest achievable Grade** – Daksh (Districts scoring more than 90% of the total points in that category or overall).
- **Lowest grade** - Akanshi-3 (scores upto 10% of the total points)
- None of the States/UTs has attained the highest Grade i.e., Daksh.
- The top-most grade attained in PGI 2.0 is Prachesta – 2 by Punjab and Chandigarh.

UN's Multidimensional Poverty Index

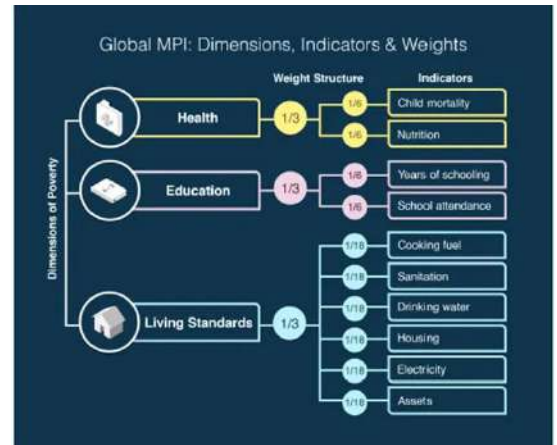
Some 415 million Indians escaped poverty between 2005-06 and 2019-21, according to the latest Multidimensional Poverty Index (MPI) highlighting the remarkable achievement by India.

- It is an international index released annually by United Nations.

- The index reflects the multiple deprivations that poor people face in the areas of education, health, and living standards.
- **Released by** –UN Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) since 2010.
- **Indicators**
- **Report Findings – India** - According to it, India has pulled 415 million Indians out of poverty between 2005-06 and 2019-21 with incidence falling from 55.1% to 16.4%.

Global Values

- According to the report, 1.1 billion out of 6.1 billion people live in acute multidimensional poverty across 110 countries.
- Sub-Saharan Africa and South Asia are home to approximately five out of every six poor people.
- Children under the age of 18 account for half of MPI-poor people (566 million).
- Poverty predominantly affects rural areas, with 84% of all poor people living in rural areas.
- As per data collected in 2021/2022, some countries like Mexico, Madagascar, Cambodia, Peru, and Nigeria have persisted a momentum on poverty reduction even during the pandemic.
- 25 countries along with India, Cambodia, China, Congo, Honduras, Indonesia, Morocco, Serbia, and Vietnam have halved their MPI values.



Indicators	Declining Percentage
Nutrition indicator	From 44.3% to 11.8%
Child mortality	From 4.5% to 1.5%
Cooking fuel	From 52.9% to 13.9%
Sanitation	From 50.4% to 11.3%
Drinking water	From 16.4% to 2.7%
Electricity	From 29% to 2.1%
Housing	From 44.9% to 13.6%

World Drug Report 2023

The recently released UN Office on Drugs and Crime’s (ONDCs) report says that highest prevalence of opioid use disorders were in eastern parts of India.

Global Scenario

- The number of people globally abusing drugs rose by 23% between 2011 and 2021.
- Among all countries that ranked the drugs leading to drug use disorders,
 - The majority 46% of countries reported cannabis in first place
 - 31% of countries reported opioids in first place, mainly heroin.
 - Amphetamine-type stimulants, in particular methamphetamine, were reported in first place by 13% of countries.
- As per the report, the ranking in each country was determined mainly by 2 factors – prevalence of use and dependence potential.
- The report also found that the cocaine demand and supply has also risen worldwide and methamphetamine trafficking has also occurred mainly in Afghanistan.

- **In India** - According to the report, in 2018 alone, India had the highest prevalence of opioid use in South Asia at 2.1%.
- The report states that the opioid use in India is mainly a male phenomenon with more than 95% of all opioid users being males.
- The opioid users are among the population aged 10-75, the overall rates of opioid users range between 0.2 and 25.2%.
- The highest prevalence of people with opioid use disorders in India is observed in the eastern parts of the country.

- The largest numbers of people with opioid use disorders are found in north-western India (Uttar Pradesh, Punjab and Haryana) as well as in central-western States (Maharashtra and Madhya Pradesh).
- The high level now also found in Maharashtra appears linked to the increasing quantities of opiates being trafficked to India from Southwest Asia by sea.

Heat Index

India Meteorological Department (IMD) has recently launched the Heat Index on experimental basis.

- The heat index, also known as the apparent temperature, is what the temperature feels like to the human body when relative humidity is combined with the air temperature.

- **Launched by** - India Meteorological Department (IMD)

- **Aim** - To provide general guidance for the regions within India where, the apparent temperature/feel like temperature are on the higher side causing discomfort for the people.

- **Ministry** – Ministry of Earth Sciences
- Colour codes used for experimental heat index, according to IMD are as follows:

Colours	Experimental Heat Index	COLOUR-CODED WARNINGS
Green	Less than 35 deg C	GREEN ALERT No risk
Yellow	In the range 36-45 deg C	YELLOW ALERT Be aware of high heat
Orange	In the range 46-55 deg C	ORANGE ALERT Be prepared to take precautionary action against heat, or avoid exposure
Red	Greater than 55 deg C	RED ALERT Be vigilant, step out only if necessary

- A **severe heatwave** is declared when the temperature is above 40 degrees Celsius and 6.5 degrees above normal.
- The higher the humidity, the higher the heat index.
- It is important to factor in humid heat, even more so than dry heat, as there is loss of life even at lower temperatures when humidity is high.
- At present, heat index is derived using the heat index equation similar to what is used by National Weather Service, National Oceanic and Atmospheric Administration (NOAA), USA.
- Heat index for Bhubaneshwar and Ahmedabad under Heat Action Plan is done under project mode by National Disaster Management Authority (NDMA) in collaboration with local agencies like Indian Institute of Public Health (IIPH).

Global Education Monitoring Report 2023

UNESCO endorses banning smartphones from schools.

The Report

- The Global Education Monitoring Report 2023, titled Technology in Education: A Tool on Whose Terms was released by the United Nations Educational, Scientific and Cultural Organization (UNESCO).
- The report has endorsed banning smartphones in schools in situations where technology integration does not improve learning or if it worsens student well-being.
- **Distraction** – It highlighted that mere proximity to a mobile device was found to distract students and to have a negative impact on learning in 14 countries.
- **Performance** – It also cited research studies to point out that banning mobile phones from schools improves academic performance, especially for low-performing students.
- **Digital infrastructure** – The report also flagged the higher costs of delivering basic education where there is a dependency on the setting up of digital infrastructure.
- The situation could worsen the problem of unequal access in low-income countries.
- **Privacy** – Another major concern around the indiscriminate use of digital technology in education was children’s privacy.
- Children’s data are being exposed, yet only 16% of countries explicitly guarantee data privacy in education by law.
- Globally, one in four countries has imposed such bans either as law or as a policy out of concern for data privacy, safety, and child’s well-being.

Export Preparedness Index (2022)

NITI Aayog is releasing the 3rd edition of Export Preparedness Index (EPI) for States/UTs of India for the year 2022.

- **Aim** - The index undertakes a comprehensive analysis of States and UTs across export-related parameters in order to identify their strengths and weaknesses.
- It is a comprehensive tool which measures the export preparedness of the States and UTs in India.
- It seeks to assist the States and UTs in driving policy changes which are relevant to address their specific challenges rather than comparing with the previous editions.
- Each pillar is composed of sub-pillars, which in turn capture a state's performance using relevant indicators.
- **10 sub-pillars** – Export Promotion Policy; Institutional Framework; Business Environment; Infrastructure; Transport Connectivity; Export Infrastructure; Trade Support; R&D Infrastructure; Export Diversification; and Growth Orientation.
- The ranking is based on 4 types of states namely, Coastal states, Landlocked states, Himalayan and UT/Small States.
- The most 'Coastal States' have performed well with top 5 performers are Tamil Nadu, Maharashtra, Karnataka, Gujarat and Haryana and the least performing state/UT is Lakshadweep in all categories.

Pillars of EPI	
EPI assess the performance of the States and UTs across 4 pillars	
<ul style="list-style-type: none"> • Policy, • Business Ecosystem, • Export Ecosystem, • Export Performance. 	

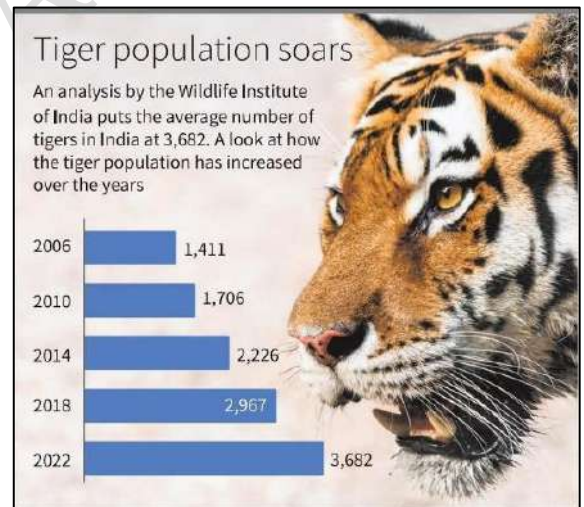
Top 5 states/UTs in the EPI (2022)

Rank	State	Category	Score
1	Tamil Nadu	Coastal	80.89
2	Maharashtra	Coastal	78.20
3	Karnataka	Coastal	76.36
4	Gujarat	Coastal	73.22
5	Haryana	Landlocked	63.65

All India Tiger Estimation Report, 2022

Ministry of Environment, Forest and Climate Change recently released the All-India Tiger Estimation, 2022 at Corbett Tiger Reserve on Global Tiger Day celebrated on 29th of July every year.

- India currently harbors almost **75% of the world's wild tiger population**.
- India categorized tiger habitats into 5 major landscapes based on biogeography and interconnectivity, enabling effective ecological and management-based strategies.
- An increase in unique tiger sightings from 2461 in 2018 to 3080 in 2022, now more than **3/4th of the tiger population** is found within protected areas.
- It reflects a commendable **annual growth rate of 6.1%** per annum.
- **Increasing trend** - Central India and the Shivalik Hills and Gangetic Plains, particularly in the states of Madhya Pradesh, Uttarakhand, and Maharashtra.
- **Declining trend** - Western Ghats has experienced localized declines in the tiger population.
- **Large tiger population** - **Madhya Pradesh**, followed by Karnataka (563) & Uttarakhand (560), and Maharashtra (444).
- **Small tiger population** - Mizoram, Nagaland, Jharkhand, Goa, Chhattisgarh, and Arunachal Pradesh.
- Approximately 35% of the tiger reserves urgently require enhanced protection measures, habitat restoration, ungulate augmentation, and subsequent tiger reintroduction.



Tigers within Tiger reserves	
Corbett (260)	Kanha (105)
Bandipur (150)	Kaziranga (104)
Nagarhole (141)	Sundarbans (100)
Bandhavgarh (135)	Tadoba (97)
Dudhwa (135)	Sathyamangalam (85)
Mudumalai(114)	Pench-MP (77)
