

MONTHLY

EPIC!

*Supplementary reading material for MGP and Current Affairs classes of
ForumIAS Academy*

AN EXCLUSIVE CURRENT AFFAIRS MAGAZINE FOR

PRELIMS + MAINS

PREPARATION

July 2023

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Congratulations

Celebrating our CSE 2022 Topper's Remarkable Achievement!

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Mayur Hazarika

8 Selections in Top 10

64 Selections in Top 100

I was a part of MGP at Forum IAS. Apart from this I also took Current Affairs classes for mains by Dipin Dandekar Sir. The top notch quality of the content and the versatile perspectives I got from Sir's classes really boosted my score in GS. One on one interaction with Jayesh Sir during my interview preparation helped me.

I am really grateful to Forum IAS especially Dipin Sir and Ayush Sir for their valuable inputs.

Garima Lohia
AIR 2

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SMRITI MISHRA
AIR 4, CSE 2022

Smriti

“

I enrolled myself in multiple courses at ForumIAS - SFG, ANFG, MGP, current affairs classes and Ethust+ classes. The quality of content, the consistency of classes and availability of mentorship right when I needed it helped me throughout my preparation journey.

A special thanks to Ayush Sir and Dipin Sir for their efforts and constant support, even though I was practically invisible!

Smriti
SMRITI MISHRA
AIR 4, CSE 2022

”

5 students in Top 5, 8 students in Top 10 and 64 students in Top 100 Ranks List of CSE 2022 are ForumIAS Academy students.

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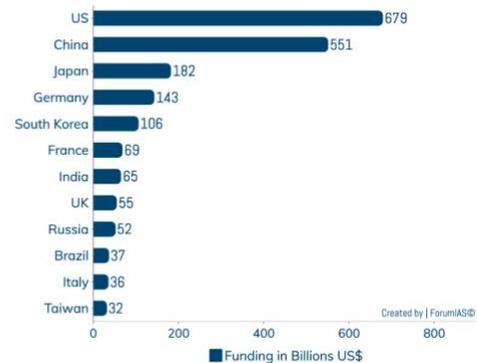
Focus Article

Status of R&D in India and the National Research Foundation (NRF)

News: India has lagged in developing a robust domestic Research and Development (R&D) Ecosystem. The Union Government has announced the setting-up of National Research Foundation (NRF). It is expected to alter the status quo and push India to the forefront of R&D spending and outcomes.

What is the current status of spending on R&D?

- India's **Gross Domestic Expenditure on R&D (GERD)** as the % of Gross Domestic Product (GDP) is **~0.67%**. According to global data portal Statista, India spent **~US\$ 65 billion on R&D (2022)**.



- According to the Department of Science and Technology (DST), of the funding allocated to R&D in 2017-18; **DRDO** (31.6%), **Departments of Space** (19%) and **Atomic Energy** (10.8%) collectively **received 61.4% share**. ~37% was allocated to the general R&D agencies like the ICAR, CSIR, DST, DBT, ICMR etc. while only 0.9% was allocated to R&D in electronics, IT and renewable energy.
- India's recent Budgets have focused on improving R&D in sectors like **Artificial Intelligence**, Geospatial Systems and Drones, **Semiconductors**, **Space**, Genomics and pharmaceuticals, **Green Energy**, and Clean Mobility Systems.
- India is a low-spender on R&D.** India's spending as % of GDP is lower than many low and middle income countries. In terms of **GERD per capita** (2018), countries like Germany (US\$ 1,701), Belgium (US\$ 1,438), China (US\$ 326), Malaysia (US\$ 293), and South Africa (US\$ 105) far outscore India (US\$ 43). Israel (4.3%), US (2.8%) and China (2.1%) have much higher share of **R&D spending as % of GDP**. **In most developed economies, private sector plays a critical role in mobilizing funds** for R&D. The magnitude and quantum of Joint Public-Private research projects is much higher in developed countries in comparison to India.

What is the need to focus on improving R&D?

- Productivity and Economic Growth:** Technology is the main driver of growth in modern digital economies. R&D helps in development of new technologies and improvement in the efficiency of existing processes (e.g., resource use efficiency). Enhancing spending in R&D can improve research outcomes and contribute to economic growth.
- Low Cost Indigenous Solutions:** India's developing economy has its **unique challenges**. India can't adopt all the practices followed in the developed countries. Domestic R&D is desired in order to create tailor made solutions for the Indian population; such solutions that are **cost effective** and **easily accessible to the poor** sections like the **Jaipur Foot**. Similarly **adapting to unique climate change challenges** will need local indigenous solutions.
- Import Dependence:** India is dependent on developed countries for high-end cutting-edge technology imports including in the defence sector. Domestic R&D can reduce dependence on imports.

- **Improve Learning Outcomes:** The best teaching and learning process at the higher education level occurs in environments where there is a strong culture of research and knowledge creation. This is testified from the experience of the world’s best universities like the Harvard, Stanford, Oxford etc.
- **Tackling Emergencies:** A strong pharma manufacturing sector had enabled India to develop COVID-19 vaccine indigenously. Government’s support during the pandemic helped built domestic manufacturing capacities for several medical devices. A strong R&D ecosystem can improve self-reliance in tackling emergency situations.
- **National Security:** Security experts have cautioned that communication and IT hardware imported from China is susceptible to surveillance and espionage. India remains the largest importer of weapons. Strong R&D sector can develop new technologies domestically and help address the national security concerns.

Government Initiatives for R&D

The Government has launched several initiatives to improve the R&D Ecosystem in India through Departments of Science and Technology, Space, Biotechnology, CSIR etc.

- > **IMPRINT Initiative:** IMPacting Research, INnovation and Technology (IMPRINT) scheme is a pan-IIT and IISc joint collaboration. It was launched in 2015. It aims to provide solutions to the most relevant engineering challenges by translating knowledge into viable technology in 10 selected technology domains.
- > **Atal Tinkering Labs:** It is an initiative of the NITI Aayog under Atal Innovation Mission. It aims to foster curiosity, creativity and imagination in young minds; and inculcate skills such as design mindset, computational thinking, adaptive learning etc.
- > **Research Parks:** Research Parks have been created in IITs to provide an interface between industry and academia. Industry can establish their R&D units in collaboration with IITs.
- > **Budget Allocation:** The Government has consistently increased budgetary allocation for R&D for new emerging technologies like Artificial Intelligence, Green Mobility
- > **IPR Laws:** India is a signatory to Trade-Related Aspects of Intellectual Property Rights (TRIPS) and has enacted its domestic IPR laws to foster IPR creation and curtail its violation.

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What are the challenges to R&D in India?

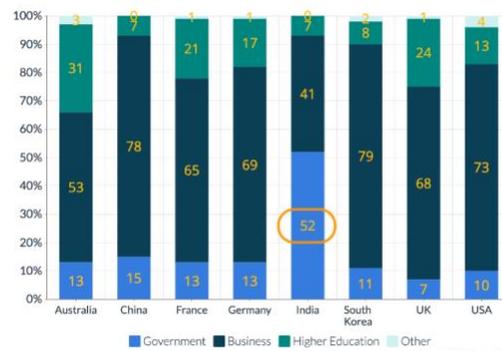
- **Funding:** The funding to R&D in India is very low. **The contribution of the private sector is poor**, compared to developed nations. Government’s funding to the sector is constrained by other obligations like welfare, infrastructure, defence and agriculture spending. Moreover, **Government funding is skewed** with State Universities receiving only 11% of Science and Engineering Research Board (SERB) funds, **IITs get 65%**.
- **Delay in Disbursals:** The research bodies often struggle with delay in release of funds, hampering the progress of projects.
- **High Dependence on Grants:** Many Universities depend on the DST, DBT, ICMR and CSIR under their extramural support system. This dependency creates a situation where quality of research at doctoral level gets hampered when less funding is provided to the public institutions.
- **Lack of Human Resource:** At present, there is a lack of adequate expertise in many emerging areas especially Machine Learning and Artificial Intelligence. The best talent of India migrate abroad (brain drain) as they don’t get the requisite ecosystem for doing good quality research.
- **IPR Issues:** Getting IP Rights in India is a long drawn process leading to lesser number of patents. China made 15.4 lakh patent applications in 2022, followed by 6 lakh in the US. India had only 45,000 applications (70% by non-residents). Poor compliance to IPR regime discourages foreign investments in R&D.

- **Outdated Pedagogy and Curriculum:** In many universities, curriculum is still focused on rote learning and oriented towards getting jobs.

Sectoral Composition of Spending on R&D (2017-18)



In most countries, majority of R&D spending (~60-70%) is undertaken by the Business Enterprise sector. In India, the Government contributes the majority of funding (52%). Contribution of the Higher Education sector is significant in Australia (31%) and the UK (24%).



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There is less emphasis on R&D due to which many universities are unable to fully utilize the research grant provided to them. They also face **bureaucratic hurdles in acquiring modern equipment**.

- **Fragmentation:** At present, research in India is largely fragmented with various institutions conducting studies in isolation, leading to inefficiencies and duplication of efforts.

What is the National Research Foundation (NRF)?

- It is modelled on the lines of the National Science Foundation of the US, which has played a vital role in fostering the R&D ecosystem in the US. NRF has been designed to be an **apex body for providing high-level strategic direction for scientific research in India**.
- It has been established based on the recommendations of the **National Education Policy (NEP), 2020**.
- The primary aim of NRF is to **foster a culture of research and innovation** throughout India's universities, colleges, research institutions, and R&D laboratories. It also aims to create a multidisciplinary approach, integrating various disciplines for a comprehensive and holistic advancement of scientific research.
- INR 50,000 crores have been allocated over the span of five years (2023-28).
 - Out of this, the Government plans to raise **INR 36,000 crores through investments from industries and philanthropists**, while the remaining amount will be funded by the Government.
 - INR 10,000 crore will be provided by the Union Government and INR 4,000 crore by subsuming Science and Engineering Research Board (SERB) into the NRF. Scientific research projects under the NRF would be funded by the DST and industry on a 50:50 basis.

What is the significance of NRF?

- **Democratisation of Funding:**

The NRF plans to shift the emphasis of funding from elite institutions towards projects in peripheral, rural, and semi-urban areas.

- **Interdisciplinary Research:**

The NRF intends to foster research in engineering, sciences, social sciences, arts and humanities. It recognizes that interdisciplinary research is necessary to

address societal challenges (e.g., issues of social equity in access to modern technology). It will promote more well-rounded and comprehensive research outputs.

- **Participation of Industry:** ~72% of the funding (for the next 5 years) is expected from the industry. Collaborative efforts between academia, research institutions and industry will lead to **more pragmatic and impactful research**, addressing real-world practical problems.
- **Mentorship:** The NRF will foster a culture of research in the academia through funding, mentorship, and providing strategic direction to scientific research. It aims to unite education and research, which have traditionally been separate domains in the Indian context.
- **Policy Framework of R&D Expenditure:** The NRF will create a policy framework and regulatory processes to **encourage increased spending by industry on R&D**.
- **Addressing Domestic Challenges:** The NRF will promote research to address unique challenges faced by India like clean energy transition, waste management etc. This will reduce dependence on foreign

Challenges before the NRF

The NRF will have to address several challenges to achieve its mandate

- > **Equitable Funding Distribution:** The NRF will have to ensure equitable access to funds in the peripheral, rural and semi-urban areas. It may be difficult to break the existing system skewed towards IITs, IISc etc.
- > **Collaborative Research:** Promoting inter-disciplinary research will require bringing together diverse stakeholders who have worked in isolation in the past. Balancing the interests, needs, and funding allocation across diverse disciplines, each with their unique requirements, will be challenging.
- > **Private Funding:** Private industry will have commercial interests that may not always align with public good. A balance will need to be ensured in private funding and public interests.
- > **Absorbing SERB:** Absorbing the SERB without disrupting the ongoing projects and initiatives will be challenging. Continuity and efficiency will need to be ensured.

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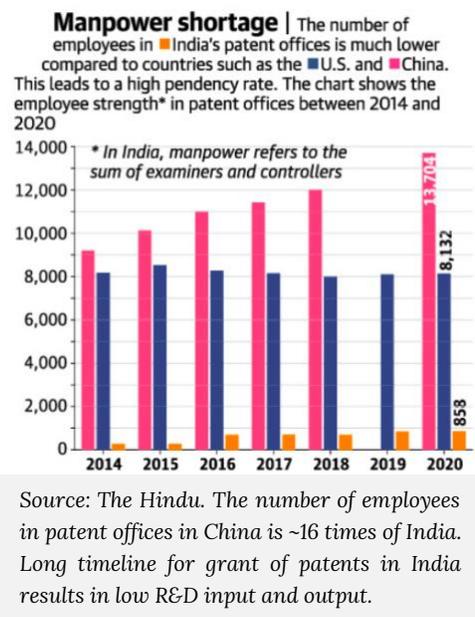
technology which may not be suitable for India e.g., batteries for EVs need modification due to hot and humid climate in India.

What should be done to ensure success of the NRF?

- **Implementation:** The NRF was proposed in the NEP. The Union Finance Minister had announced allocation of INR 50,000 crore to NRF in Budget 2021 speech. The Union Cabinet approved NRF Bill in 2023. The process need to be expedited and the NRF should be made functional at the earliest.
- **Fair and Transparent System:** The NRF should establish a fair and transparent system to evaluate research proposals. The system should be objective to the extent possible with little subjective discretion. It should account for the potential impact of the research, the capabilities of the research team, and the needs of the specific geographic area or community. This is necessary to ensure equitable distribution of funds across academia.
- **Autonomy:** The NRF should be allowed to work in an autonomous manner with no political interference. Else, the NRF will also end up like earlier arrangements and fail to achieve its mandate.

What more steps can be taken to boost R&D in India?

- **Enhance Funding:** The target should be improve the R&D spending to 2% of the GDP in the medium term (by 2027) and up to 4% in the longer term (by 2035).
- **Implementation:** Implementation of several initiatives like **Make in India** and **Atmanirbhar Bharat** has to be improved. It can enhance industrial and service output. As these sectors expand, the private sector will be able to spare greater funds for spending on R&D.
- **Human Resource:** There is a need to improve human resource engaged in R&D activities. India can collaborate with friendly nations to train its students and scientists across best laboratories in the world. **Improving remuneration for research work in the Universities** can provide better incentives to graduates to engage in R&D.
- **IP Ecosystem:** The Government must address issues faced by the IP Sector in India especially the **shortage of human resource**. A smooth process for granting patents can enhance the confidence of investors and promote investments. (Refer EPIC September 2022 (click) for Patent Regime in India: Provisions, Challenges and Solutions).
- **Infrastructure:** The focus on improving infrastructure, connectivity and access to energy should continue. It will facilitate investment in manufacturing (like semiconductors) which can eventually drive investments in R&D (like chip design).
- **Adopt New Models:** The development of Covaxin was result of unique collaboration between the Government and industry and was a huge success. Learnings from this collaboration can be scaled-up across sectors especially in defence, electronics manufacturing and AI.



To create a more dynamic R&D ecosystem would require action on many fronts. The NRF is one step in the right direction. It will have to work out ways to fast-track decision-making, promote inter-disciplinary research and industry-academic collaboration. The success of NRF in fostering a robust R&D ecosystem in India will be a major factor in realizing the goal of achieving developed status by 2047.

General Studies Paper I

1. Rising Global Prominence of Yoga

News: The Prime Minister of India attended the International Day of Yoga (IDY) celebrations at the UN Headquarters in New York. IDY has made Yoga a global movement.

How has Yoga become a Global Phenomenon?

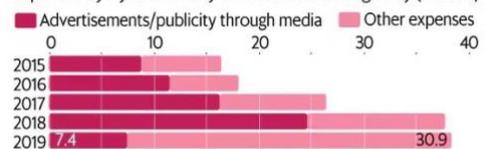
- The first International Day of Yoga (IDY) in 2015 was celebrated by 192 countries. ~400 million people participated in the IDY 2022 celebrations. This shows that Yoga has become a **global phenomenon**. It has **transcended geographical boundaries** to reach people across the world.
- The WHO in collaboration with the Ministry of AYUSH and major yoga institutions, has developed a **new mobile app (mYoga)** to educate people about the **therapeutic benefits of yoga**.
- The WHO has initiated the process of developing a **benchmark document for standards in Yoga training**. It has also helped to **promote research in Yoga**.
- Many countries have **incorporated Yoga into their healthcare systems**. A global survey found that most people practice Yoga to get physically and mentally fit, release tension and 'feel happy'.

What steps have been taken by the Government to promote Yoga?

- The Indian Council for Cultural Relations has been organising an **international conference** annually since 2018. It is aimed at creating a sound understanding of the **holistic nature of yoga**.
- The Government of India has established **150 Swami Vivekanand District Yoga Health Centres** and **125,000 AYUSH Health & Wellness Centres**. Yoga therapy has become popular for post-Covid rehabilitation.
- The **Department of AYUSH** in collaboration with **NIMHANS and S-VYASA University** has developed a **Tele Yoga Advisory**. 6 central universities have started **full-fledged departments of yoga**. Over 30% of private, state and deemed universities have started either a **certificate, diploma or UG/PG programmes** in yoga, since 2015.
- India has established **National Yogasana Sport Federation and World Yogasana Federation**. These are going to **standardise and introduce yogasana-based competitions** at national and international levels.
- The Bureau of Indian Standards has also initiated the process of creating **standards for yoga accessories**.

Ayush ministry and Indian embassies spend crores on Yoga Day publicity

Expenses by Ayush ministry on International Yoga Day (₹ crore)



Select expense heads (₹ lakh)

2015	Celebrations at Indian missions abroad*	800
2016	Yoga olympiads and other online contests	26
2017	Cinema campaign	70
2018	Coffee table book on yoga	39
2018	Letters sent to gram pradhans through India Post	18
2019	Procurement of mats and T-shirts	160

Source: Mint. Between 2015-19, the Government spent INR 137 crore on promotion of International Day of Yoga.

How has Yoga contributed to economic growth?

- Yoga has also facilitated the **creation of start-ups** focused on **yoga accessories** and **yoga services**. Lululemon, a Canada-US based company that started in 1998 by selling Yoga pants and accessories, recorded revenues of US\$ 8.1 billion in 2022.
- The global yoga industry revenues have **crossed US\$ 100 billion**. Meditation-based mobile applications, specialised yoga mats, specialty yoga therapy and integrative medicine centres within conventional medical hospitals also have gone up substantially.
- However, some Western brands are **trademarking the Yoga asanas**, limiting their **universal reach**. Yoga should be **free from copyrights, patents and royalty payments**. **Yoga piracy** should be curbed. This will ensure universal reach of Yoga. (Read more about Yoga and its Benefits).

2. Demographic Transition and Impact on Women and Reproductive Autonomy

News: The demographic transition underway in India is having a profound impact on women.

How is demographic transition impacting women?

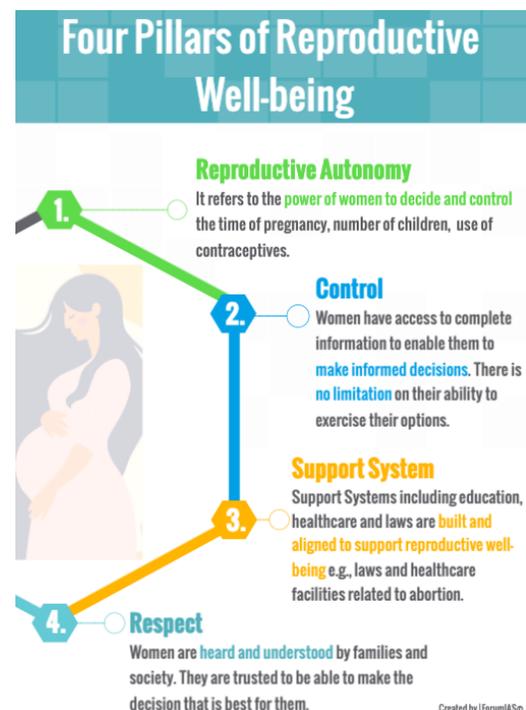
- Demographic transition in India is happening through rise in life expectancy and fall in birth rate. Women are having lesser children (TFR has fallen to 2.0). Women have **more opportunities in education and employment**; as fewer children has **reduced the motherhood responsibilities**. Women's years spent caring for children under five reduced from 14 to 8 between 1992-93 and 2018-20.
- Women have higher life expectancy than men. The proportion of women aged 65 years or more has increased from 5% to 11% between 1950 and 2022. The share is expected to reach 21% by 2050. In the absence of savings and property, **women are increasingly dependent on children for support**.
- TFR has reduced due to increased improved family planning. However, **disproportionate burden of family planning falls on women**. The rate of hysterectomies in India is high. (Refer EPIC May 2023 (click) for Check Unnecessary Hysterectomies: Union Government to States). **Women lack reproductive autonomy**. The NFHS-5 has revealed that **only 10% of Indian women can independently make health decisions**. Almost half of all pregnancies in India are unplanned.

What are the associated concerns?

- With falling fertility, the probability of having a 'son' reduces from ~94% with 4 children to 25% with 2 children. The Indian Human Development Survey found that 85% of women expected to rely on their sons for old age support. The 'son preference' is **still widely prevalent**. **Sex-selective abortions** and neglect of sick daughters reduced the number of girls per 100 boys from 96 to 91 between 1950 and 2019.
- Over 70% of girls are now enrolled in secondary education. However, despite the reduction in motherhood responsibilities, **early marriage and childbearing persist**. The average age of women at first birth is below 22 years. Early motherhood **hinders women's participation in economic activities** because the **peak childcare years clash with the period for gaining work experience and securing skilled jobs**. As a result, more women often **only have access to unskilled work**.

What measures can break the cycle of Gendered Disadvantage?

- **Gender Dividend** refers to realization of full economic potential through increased investments in women and girls. **Reproductive well-being** of women is essential to realize the gender dividend. Reproductive well-being is dependent on **Reproductive Autonomy**, Control and a robust Support System. This can be achieved through:
 - More women need to get **access to modern family planning methods**. Men have to equally share the burden of family planning.
 - There is a need to **reduce early marriages and unwanted pregnancies** as they prohibit women from achieving their personal goals and ambitions.
 - Women's **access to assets and property** should be enhanced. This will reduce dependence of older women.
 - The momentum in **addressing skewed gender ratio** should be maintained to achieve parity.



- Women's labour force participation can be improved by **providing access to affordable childcare at workplace**. In Madhya Pradesh, **expansion of the Anganwadis to include a crèche increased work participation of mothers**. Such interventions should be scaled up. Practical strategies for childcare access could involve staffing crèche under the National Rural Employment Guarantee Scheme or setting up neighbourhood childcare centres **through self-help groups**.
- A McKinsey report (2018) had pointed that raising women's labour force participation by 10 percentage points could contribute additional US\$ 770 billion to the GDP by 2025. Addressing the gender gaps can help reap this gender dividend. Reproductive well-being is central to achieve the gender dividend.

3. Urbanization and Urban Water Management

News: Rapid urbanization combined with deteriorating infrastructure and climate change has posed severe challenge to urban water management.

What are the challenges associated with urban water management?

- **Rapid Urbanization:** Over **150 million** people have migrated to Indian cities in the past 30 years. The demand for water in the urban regions has risen multi-fold.
- **Infrastructure:** Poor water treatment and sewage disposal capacity have been unable to meet the rising demand of water. **Delhi and Bengaluru lose 40% and 29% of their water supply**, respectively, due to **leakages and theft**.
- **Loss of Natural Water Bodies:** Unplanned urbanization has led to encroachment of water bodies like lakes and seasonal rivulets. Construction in floodplains exacerbate risk of urban floods.
- **Climate Change: Extreme rainfall events** stretch the stormwater and drainage capacities to limit e.g., Chandigarh and Delhi received 290.9 mm (6,800% more than normal) and 153 mm of rainfall respectively on July 8-9, 2023. Such extreme rainfall events are becoming more frequent every year. Overflow of Yamuna had led to shutdown of water treatment plants in Delhi and caused acute scarcity of drinking water.
- **Short-term View:** City development plans lack a long term integrated view of urban planning. Focus has been on short-term financial gains rather than long-term sustainability.

Sponge City

Sponge Cities can build urban climate change resilience and provide valuable functional services.

- Sponge City is designed in such a way that it **acts like a sponge for rainwater**.
- The water is absorbed and **allowed to naturally filter through the soil to reach the aquifers**.
- Sponge cities retain water through:
 - **Contiguous open green spaces and inter-connected waterways and ponds.**
 - **Green Roofs** over city buildings
 - **Porous design interventions** like construction of **bioswales, porous pavements** etc.
- Sponge Cities provide functions like:
 - **Regulation:** Water purification, climate regulation, flood control.
 - **Ecological:** Provision of freshwater, habitat and biodiversity conservation.
 - **Cultural:** Rejuvenation, recreation, tourism.



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What should be the approach?

- **Enhanced Infrastructure:** The city water supply and drain capacity systems need to be improved to meet the rising demand. Existing systems should also be repaired to check leakages. Massive financial investments are needed at a pan-India level to refurbish the systems in all cities.
- **Rejuvenate Natural Water Bodies:** Construction activities should be strictly forbidden in floodplains, paths of seasonal rivers, lakes etc. Rejuvenating urban lakes can improve groundwater levels, provide clean drinking water, prevent urban floods and help moderate urban micro-climate. At the same time, pollution of river bodies should be prevented through stricter implementation of laws, ensuring strict adherence to effluent treatment norms.
- **Mandatory Water Harvesting:** Wherever possible, rainwater harvesting should be made mandatory. It can check urban floods and improve groundwater recharge.
- **Adaptation:** Investments should be made for adapting to climate change and building resilience. Urban planning should focus on building **Urban Climate Change Resilience (UCCR)**. Urban resilience refers to capacity of cities to function without disruption in the events of extreme events and external shocks. **Sponge cities** offer a suitable solution in building climate resilience.
- **Integrated Urban Water Management:** Urban planning should view drinking water, sanitation, stormwater, wastewater and sewerage water management in an integrated manner. This can ensure more judicious use of water resources and reduce usage through recycling of wastewater.

4. Changing Trend of Cyclones in the Indian Ocean

News: Scientists have noted that Arabian Sea is warming up faster. The frequency of cyclones in the Arabian Sea may rise.

How is the trend of Cyclones in the Indian Ocean changing?

- **Decreasing Frequency:** The number of cyclonic disturbances in the North Indian Ocean has declined considerably over the past 4 decades. This decline has been primarily due to a **rapid decrease in the number of cyclonic disturbances originating from the Bay of Bengal**. Most cyclones in the Northern Indian Ocean region originate in Bay of Bengal. In contrast, the number of such disturbances originating from the Arabian Sea has been steadily increasing in recent years, though the count is still relatively low.
- **Greater Intensity:** Global warming is causing the **Arabian Sea to heat up**. Warming up is resulting in stronger cyclones. Data show that about **34% of all disturbances that originated in the Arabian Sea have become severe cyclonic storms**. In comparison, only 19% disturbances originating from the Bay of Bengal became severe cyclonic storms.

What are the challenges before IMD with the changing trend?

- Greater frequency of cyclones over Bay of Bengal had enabled IMD to undertake comprehensive studies and **develop robust models for predicting cyclones, their path and time of landfall** etc. e.g., Cyclones Mocha (2023), Mandous (2022) and Yaas (2021), all originated in Bay of Bengal, accurately followed paths predicted by the IMD in advance. On the other hand, there were considerable deviations in the duration, path and landfall predicted by the IMD in case of Biprajoy.
- IMD's forecast of cyclones in the Arabian Sea is impacted by many reasons. Such as:
 - Nearly 48% of cyclones originating in Arabian Sea have never reached land, as opposed to 13% in the Bay of Bengal.
 - Steering winds are present in the upper reaches of the atmosphere. They influence the direction and recurving of cyclones. Heat within the ocean layers determines the strength and duration of cyclones. **IMD's prediction models fully capture the heat within the ocean but not the steering winds.**

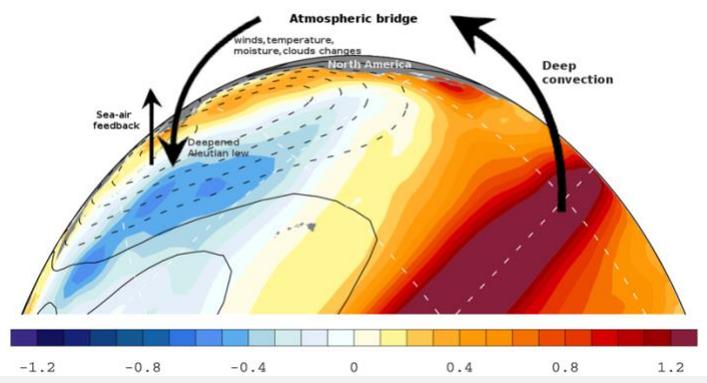
- There are factors unique to the Arabian Sea that influence a cyclone’s intensity and movement e.g., the Arabian Sea has a **much deeper** (up to 40 metres) **layer of warm water** compared to the Bay of Bengal. These sub-surface values aren’t captured in the IMD’s prediction models.

How do cyclones impact onset of Monsoons?

- Cyclones can have both **positive and negative impact on onset of monsoon**, depending on the location.
- Circulation of winds around the cyclones is in the **anti-clockwise direction**. Back-winds (blowing from south-west to north-east) associated with a cyclone located near the northern end of the Bay of Bengal will **pull the monsoon trough forward** and **assist in the onset of monsoon**.
- The Cyclone Biprajoy that developed over the Arabian Sea in June 2023, reduced the cloud cover and **pulled moisture away from the west coast**, leading to **delay in the onset of monsoon** (.

What are Atmospheric Bridge and Ocean Tunnels?

- **Atmospheric Bridge** refers to **connection between ocean basins through the atmosphere**. Sea Surface Temperature anomalies influence the atmospheric conditions through **winds, circulation, temperature, cloud cover** and **atmospheric moisture**. Atmospheric Bridge impact the climate at far off regions e.g., **Upper air circulation** connects the Arctic Ocean and the Indian subcontinent and can influence the Indian monsoon by affecting wind patterns and moisture transport. This has a deep impact on the timing and intensity of the monsoon rains.
- **Oceanic Tunnel** refers to connection of different regions through oceanic circulation. The global ocean conveyor belt circulates ocean water around the entire planet and has a deep impact on climate and weather patterns e.g., the Gulf Stream acts as an oceanic tunnel, transporting warm water from the tropics to higher latitudes, affecting the climate and weather patterns in those regions.

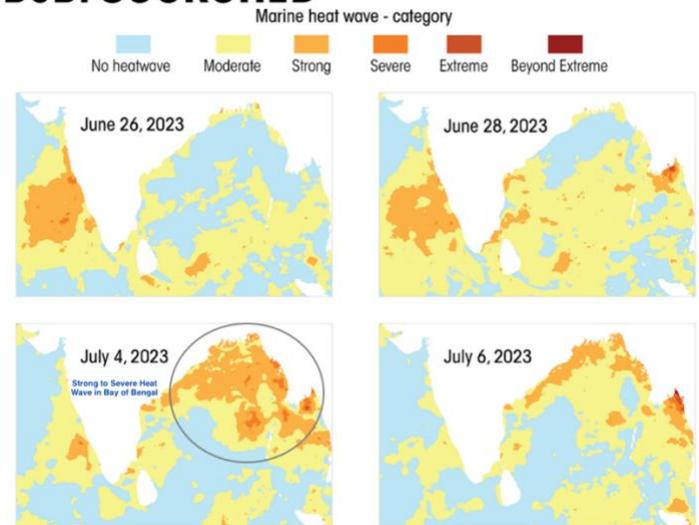


Source: Wikimedia Commons. Atmospheric Bridge in the Pacific Ocean linking tropical region (warm) with the polar region (cool).

What has caused high rainfall in the Northwest India?

- Scientists have attributed the high rainfall to presence of marine heatwaves in the Bay of Bengal. The warmer than usual seas have led to higher moisture and extreme rainfall in the northwest India. (Refer EPIC February 2022 for Marine Heatwaves).

BoB: SCORCHED



Source: Down to Earth. The image shows the increased intensity of marine heatwaves in the Northern Bay of Bengal in early July 2023. The period corresponded with large precipitation in the Northwest India.

General Studies Paper II

1. Challenges to the Revocation of Special Status of J&K under Article 370

News: The Supreme Court will start hearing the petitions challenging the revocation of special status granted to J&K under the Article 370 from August 02, 2023.

What are the provisions of the Constitution (Application to Jammu and Kashmir) Order, 2019?

- The Government had issued the Constitution (Application to Jammu and Kashmir) Order, 2019 to supersede the **Constitution Order, 1954**.
- The new order made **“all the provisions of the Constitution” applicable to Jammu and Kashmir**.
 - Earlier, Article 370 had provided for application of **only Article 1 and Article 370** to J&K.
 - Other provisions of the Constitution did not **automatically extend to J&K**. **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.

Article 370(3)

Under Clause (3) of Article 370, the President can declare Article 370 to cease to operate through a public notification. The **recommendation of the Constituent Assembly of the State is necessary** before the President can issue such a notification.

What are the Constitutional Issues associated with the 2019 Order?

- The President can cease the operation of Article 370 on the recommendation of Constituent Assembly of J&K. It is being argued that since the Constituent Assembly of J&K no longer exists, the power of the President has ceased, unless a new Constituent Assembly is established.
 - At the time of issue of the 2019 Order, the State was under the President's Rule (between December 12, 2018 to August 05, 2019). It was not possible for the President to obtain consent of the State Government. Thus there was **no constitutional and legal mechanism available for the Union Government to abrogate or amend Article 370**.
- The Union Government utilised the **President's powers under Article 370(1)(d)** to modify Article 367, which provides **guidelines for interpreting the Constitution**. Clause (4) was added to Article 367 to replace the 'Constitutional Assembly of the State' (mentioned in Article 370(3)) with the 'Legislative Assembly of the State'. **Article 370 could have been amended only upon the recommendation of the Constituent Assembly** under Article 370(3), not through Article 370(1)(d).
- Under the President's Rule, the President of India became in effect the J&K State Government, and Parliament was in effect the State Legislature. However, President's Rule serves as an **interim arrangement** until an **elected government** is established. The administration under President's Rule should not make decisions that fundamentally alter the **Constitutional Structure of the State**.
- Article 147 of the Constitution of J&K barred the J&K Legislative Assembly from “seeking to make any change in provisions of the Constitution of India as applicable in relation to the State”. It has been argued that this

Union Government's Stand on Abrogation of Article 370

The Union Government has defended the abrogation of Article 370 of the Constitution and has argued that the decision has brought 'unprecedented stability and progress' to the region.

- There has been a **significant increase in tourist visits** to the valley since 2019. As of December 2022, 1.88 crore tourists have visited the region.
- The anti-terror actions have led to the **dismantling of the terrorist ecosystem**, resulting in a significant drop in terrorist recruitment from 199 in 2018 to 12 in 2023.
- **Reservation has been extended** to persons residing in areas adjoining the Line of Control. Seats have been reserved for Scheduled Tribes persons and the Pahari speaking people.
- Stone-pelting incidents, which reached as high as 1,767 in 2018, have now ceased completely in 2023.
- **Duly-elected three-tier panchayati raj system could be established** for the first time in the history of Jammu and Kashmir after 2019.
- Central Laws, including **Right to Free Education** for children and land acquisition compensation statutes, are now applicable in Jammu and Kashmir.
- The **annual budget** of Jammu and Kashmir has **grown from ₹ 80,423 crore in 2019-20 to ₹ 1,18,500 crore in 2023-24**.

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means **even the Jammu & Kashmir Legislative Assembly wasn't legally competent to give consent to the President's order.**

- Changing the Status of J&K from a State to Union Territory is **violative of Article 3 of the Constitution.** Any Bill proposing reorganisation of a State must be referred to the concerned State Legislative Assembly. **The view of Parliament on such a Bill cannot replace the view of the State Legislature.** Under President's Rule, only those powers of a State Legislature can be exercised as are essential to run the day-to-day affairs of the state.
- The challenge is also based on the argument that the constitutional changes are '**colourable legislation**' and thus legally untenable. The doctrine of colourable legislation is the legal principle that says what cannot be done directly cannot be done indirectly.

2. Use of AI in Judicial, Legislative and Governance Functions

News: Artificial Intelligence can play an important role in facilitating Judicial and Legislative functions.

What are various uses of AI in the Legislative and Governance Functions?

- AI can be used to model various datasets such as the Census, data on household consumption, taxpayers, beneficiaries from various schemes, and public infrastructure. The insights can be used in policy making and formulating laws.
- AI can also **simulate the potential effects of various laws.**
- AI can **uncover potential outcomes of a policy.** It can also help in identifying laws that are outdated in the present circumstances and require amendment e.g., the Epidemic Diseases Act, 1897.
- AI can **analyse citizens' grievances** and **social media responses.** It can help identify issues and priorities that need immediate attention. It can also assist Parliamentarians in **seeking citizen inputs for public consultation of laws** and **preparing manifestoes.**

Global AI Initiatives

Several Countries have launched AI tools to assist in Legislative and Governance Functions

- > The House of Representatives in the US has introduced an AI tool to **automate the process of analysing differences** between Bills, Amendments and current laws.
- > The Netherlands House of Representatives has implemented the 'Speech2Write' system. It converts voice to text and translates voice into written reports. It comprises **automatic speech recognition** and automated editing capabilities.
- > Japan's AI tool assists in the preparation of responses for its legislature and also helps in the **automatic selection of relevant highlights in parliamentary debates.**
- > Brazil has developed an AI system called **Ulysses** which supports **transparency and citizen participation.**

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How can AI support the Judiciary?

- More than 4.7 crore cases are pending in Indian courts and new cases are being added every year. According to the **World Bank's Doing Business Report 2020**, India ranks 136th out of 190 countries in **the enforcement of contracts**, much below China (46th). The **average time taken to enforce a contract in India is nearly 4 years** which is more than 4 times the global average of 358 days. The problem can be rectified to an extent through the use of AI.
- **Analysis and Categorization of Cases:** Multiple types of disputes are pending in the courts. AI can analyse rulings and filings to identify the majority number of pending cases. It can be used to **conduct in-depth root-cause analyses** for these cases. The insights can be **used to bring procedural and substantive reforms** e.g., if it is found that most cases pending in the court are over land disputes, then the dispute resolution mechanism could be changed to focus more on settling such cases.

- **Feedback:** AI can help in providing real time feedback of the caseload on courts due to the appeals made on the laws made by the legislatures. This feedback would help in **improving the design of the laws formulated by the legislatures**.
- **Adjudication:** The Punjab and Haryana High Court recently **used the response of ChatGPT** in seeking worldwide practice on granting bail in case of assault accompanied by cruelty. The AI tool responded, “... judge may be less inclined to grant bail or may set the bail amount very high to ensure that the defendant appears in court and does not pose a risk to public safety”. Based on this, the Court denied bail to the accused. Hence **AI can assist the Judges in forming their opinion**. Similarly, AI tools can be used to **prepare case summaries** for easy referral by the Judges for adjudication.
- China has already implemented a similar system **known as Xiao Zhi 3.0 (Little Wisdom)**. The AI has helped to cut a judge’s average workload by over a third (~33%) and saved Chinese citizens 1.7 billion working hours from 2019 to 2021. An estimate suggests that even a 10% improvement in judicial efficiency could help unlock at least INR 4,000 crore for India’s GDP.

What can be done to harness the potential of AI?

- Digitalisation can be utilised in the field of law, policy-making, and parliamentary activities by harnessing the power of AI. All laws, including subsequent rules, regulations and amendments, must be codified to bridge the translation gap between law-making, law-implementing and law-interpreting organisations.
- It needs to be ensured that the **use of AI must be encouraged in an open, transparent, and citizen-friendly manner**.

However, Policymakers need to be mindful of the fact that the use of AI is a means to an end and not an end in itself. (Refer EPIC June 2023 (click) for Regulation of Artificial Intelligence (AI) and EPIC February 2023 (click) for Generative Artificial Intelligence (AI): Benefits and Concerns).

3. Concerns with Master of the Roster System

News: The Supreme Court’s handling of the *Ritu Chhabria* Judgment has raised concerns regarding the functioning of the Master of Roster System.

What is the meaning of Master of Roster?

- The **Chief Justice of India (CJI) is the Master of Roster**. Certain administrative powers have been granted to the CJI for smooth functioning of the SC.
- The CJI has the **privilege to constitute Benches to hear the cases**. Other Judges do not hear cases on their own, but are allocated by the CJI.

Handbook On Practice and Procedure of the Supreme Court

Chapter 6 (Roster) of the Handbook notes that, “The roster shall be prepared by the Registrar under the orders of the Chief Justice. It may contain general or special instructions regarding assignment/allocation of work to a Bench”.

What happened in the *Ritu Chhabria* Case?

- In the Judgment, a Division Bench of the SC had affirmed an undertrial’s **right to be released on default bail** in the case of **incomplete investigation**. (Refer EPIC May 2023 (click) for Supreme Court on Right to Statutory Bail).
- The Court of the Chief Justice of India (CJI) entertained a **recall application** moved by the Union of India against the Judgement. The CJI passed an interim order directing courts to **decide bail applications without relying on the decision laid down in the *Ritu Chhabria*** for a short period of time.

- Through this, the Court of the CJI **indirectly stayed the decision** despite not having any connection with the verdict.
- Ordinarily, the only recourse available to the Union of India was the filing of a **review petition**. A recall application cannot be filed against a judgement before a different Bench. It is equivalent to **bench fishing or forum shopping**. (Refer EPIC June 2023 (click) for Forum Shopping).
- The CJI has effectively instituted an intracourt appeal mechanism. There is no legislative or constitutional backing for such a mechanism.
- The order has the effect of **enlarging the powers** of the CJI on the **judicial side**.
- Many legal experts have called the development as arbitrary. In future, the Government can resort to this mechanism if they are displeased with a judgment of a Bench, instead of filing a review petition.

Review vs Recall

In a **Review petition**, the Court **considers on merit** whether there has been an error apparent on the face of the record. The Court considers if it has failed to consider any binding precedents, or if some grave injustice has been caused as a consequence of its decisions.

According to the Supreme Court Rules, 2013, a **review petition must be filed within 30 days** after the original judgment, and **must be placed before the same bench**.

In a **Recall**, the **Court does not go into the merits** but simply recalls an order which has been passed without giving an opportunity of hearing to an affected party.

What is the position of the CJI in relation to other judges of the Supreme Court?

- Within the Constitutional scheme, **all judges of the SC are equal in terms of their judicial powers**.
- In any Bench that includes the CJI, the vote or power given to the CJI is the same as that of his companion judges. On numerous occasions, the CJI's have authored or have been part of minority Judgments.
- The CJI has additional administrative responsibilities, as a Master of Roster. He is considered as **'first among equals'** in relation to companion judges. Most Commonwealth countries like the UK, Australia and Canada follow this system. The US has a different system, where all the judges collectively exercise power and render decisions as they sit en bloc.

What are the concerns with the System?

- In 2018, 4 senior judges of the SC had alleged **serious irregularities** in the **administration and assigning of cases** for hearing to Benches of the Court. The arbitrary use makes the CJI the 'Master of All Judges' and not just the roster. The arbitrary use is apparent in emergency hearings of certain cases even on holidays or at odd hours beyond the normal working hours of the Court.
 - There has been **no codification of the powers of CJI** as the Master of Roster. There is no written procedure to allocate cases. In the absence of codification, the system is susceptible to misuse. In **Shanti Bhushan vs Supreme Court of India (2018)**, it was contended that:
 - The current practice with the CJI deciding the allocation is **unconstitutional under Article 14**. Also, **Article 145 did not grant any special powers to the CJI**.
 - The CJI is not supposed to be senior than other judges and **should consult the collegium** of senior-most Judges in deciding upon the roster.
 - It was claimed that the **power is being misused to assign cases where a pre-determined decision could be assured** as an outcome.
 - However, the SC refused to alter the system arguing that it will disrupt the functioning of the Court.
- It is imperative that the CJI refrains from expanding the powers as Master of the Roster. Experts argue that the practice of constituting Benches and allocating cases should be **completely computerised** and left out of the hands of the CJI.

4. 21st Law Commission's Paper on Uniform Civil Code

News: The 22nd Law Commission has sought fresh views on the Uniform Civil Code. The 21st Law Commission had released a consultation paper on the issue.

What were the recommendations made by the 21st Law Commission?

- **Gender Justice:** The Commission had recommended that rather than enacting a UCC, **family laws of every religion must be reformed to make them gender-just**. It had talked about the **uniformity of rights**.
 - It emphasized that women must be guaranteed their freedom of faith **without any compromise on their right to equality**. It also focused on **economic rights of women**.
 - It recommended a series of **reforms in the personal laws of all religions** as well as the secular laws that have placed women and children at a disadvantage. It also included recommendations concerning the rights of **Parsi** and **Christian women** and those married under the **Special Marriage Act**.
- **Inheritance:** The Commission criticised the Hindu coparcenary system: the Hindu Undivided Family (HUF). It stated that it was being **exploited for tax evasion purposes** and recommended its abolition.
 - It suggested the codification of the Muslim law of inheritance and succession and bringing in **uniform provisions** for Shias and Sunnis. It emphasized that succession and inheritance should be **determined by proximity to the deceased rather than favouring male agnates**.
 - It suggested that a **childless Muslim widow should be recognized as a Class I heir** and inherit the deceased's property.
- **Divorce:** It recommended **the introduction of 'no-fault divorce' in all personal laws** and proposed that **all property acquired after marriage should be divided between both partners in case of divorce**. The report also highlighted the rights of individuals with disabilities in marriages.
- **Polygamy:** The Commission noted that while polygamy is permitted within Islam, it is rarely practiced among Indian Muslims. It also noted that individuals from other religions sometimes convert to Islam solely to engage in polygamous marriages. This is in concurrence with the Supreme Court's observation in **Sarla Mudgal etc. vs the Union of India (1995)**. The SC had recommended the enactment of a UCC in relation to conversion and bigamy.
- **Custody and Guardianship:** The Commission stressed that courts must follow the principle of the **'best interest of the child'** on custody and guardianship.
- **Other Issues:** The Commission had refrained from making recommendations on issues such as triple talaq and the constitutional validity of adultery under Section 497 of the IPC, as these matters were already being addressed by the Supreme Court or Parliament.

Classes of Heirs

The **Hindu Succession Act** groups the heirs of a male Hindu into **4 categories** and lays down that the inheritable property devolves firstly upon the heirs specified in **Class I**. In the absence of any Class I heirs, the property devolves upon the enumerated heirs specified in **Class II** and subsequently to **Agnates** (no Class I, II heir) and then **Cognates**.

Class I heirs include sons, daughters, widow, mother, sons/daughters of pre-deceased sons/daughters etc.

Class II heirs include father, brothers, sisters, son's daughter's sons etc.

Agnates are heirs related by blood or adoption wholly through male while **Cognates** are related through male (blood or adoption) **but not wholly** like mother's brother's son or brother's daughter's son.

What should be the approach on UCC?

- There are too many customary diversities among numerous communities in India including tribals. Multiculturalism cannot justify the continuation of **unjust and discriminatory personal laws**. Such provisions of the personal laws must be made consistent with **substantive equality and gender justice goals**.

- The 21st Law Commission has favoured **equality between men and women in communities** rather than equality between communities. Many experts contend that a **just code** should be the primary goal rather than a uniform law. (Refer EPIC May 2022 (click) for The Issue of Uniform Civil Code).

5. Criminalization of Politics: Challenges and Remedies

News: Association for Democratic Reforms (ADR) has written to the Election Commission of India (ECI) to seek action against political parties that have failed to publish details of criminal records of their candidates.

What has been the trend of 'Criminalisation of Politics'?

- 'Criminalisation of Politics' refers to the entry of criminals and corrupt individuals into the political system. These individuals then **exploit their positions of power and influence** to prioritize their personal agendas over the welfare of the nation and its people.

- The proportion of MPs with pending criminal cases has risen from **24% in 2004** to **43% in 2019** (30% in 2009 and 34% in 2014). In the recently held Assembly elections in Karnataka, 45% candidates had criminal cases, with 30% accused of grave offences like rape and murder. 1,777 Out of the 4,001 MLAs (44%) currently in session have criminal cases. 53% Delhi MLAs have serious crime cases.

SC Order on Publishing of Criminal Antecedents

- > In *Public Interest Foundation v. Union of India (2018)*, a Constitution Bench had ordered political parties to publish the criminal details of their candidates on their websites; print and electronic media for public awareness. The SC had observed, "*Rapid criminalisation of politics cannot be arrested by merely disqualifying tainted legislators but should begin by 'cleansing' political parties*".
- > In February 2020, the SC heard **contempt petition** for lack of compliance to its 2018 Order. It reiterated the requirement of publication of details along with reasons for selecting candidates with criminal antecedents. The Court had remarked, "*No political party offers an explanation for selecting candidates with pending political cases*".
- > ADR has noted that the proportion of candidates with criminal records has increased. It filed a petition (2022) in the SC seeking **contempt proceedings** against political parties for lack of compliance. The SC asked the ADR to pursue the remedies before the Election Commission.

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What are the reasons responsible for criminalisation of politics in India?

- **Attraction of the Strongmen:** Experts say that political and governance system in India has failed to address the socio-economic and political concerns of the people. They get attracted to strongmen who are able to fulfil basic needs of the local people. Hence they vote for such strongmen.
- **Vote-bank Politics:** Political mobilization is driven by factors like caste, religion etc. Influential people with resources are able to mobilize the electorate. Such candidates are preferred by political parties.
- **Role of Money:** A media report has estimated the electoral expense in 2019 General Elections was ~INR 55,000 crore (US\$ 8 billion). It was ~INR 9,000 crore in 1998. Political parties are dependent on rich strongmen for resource/money mobilisation. A study had noted that a rich candidate with a tainted reputation is 3 times more likely to win an election than a candidate with a clean record. (Refer EPIC September 2022 (click) for Issues in Electoral Funding in India).
- **Inner-Party Democracy:** Political parties in India lack inner-party democracy. Most parties have dynastic leadership and the decisions on selection of candidates is taken by elite leadership. Politicians with criminal records escape scrutiny by local leadership and party workers.
- **Lack of Deterrence:** Due to low level of convictions, delay in trials, political parties have no deterrent in selecting tainted candidates. NOTA has also been ineffective in acting as a factor for cleaner politics.
- **Limitations of Election Commission:** The Election Commission lacks adequate powers to take action against political parties for fielding criminal candidates. In 2022, the SC had dismissed a plea seeking directions to the Election Commission to de-register political parties that fail to publish details regarding criminal cases of candidates.

What are the impacts of criminalisation of politics in India?

- **Undermines Democracy:**

Election of representatives with criminal record erodes electorates trust and undermines the credibility of the democratic system.

- **Poor Governance:** Many candidates lack the skills, education and acumen necessary for effective governance. They often focus on their own personal interests rather public good.

- **Corruption:** Candidates spending large amount of money on winning elections indulge in corrupt practices to recover their money and raise money for subsequent elections.

- **Law and Order:** The Police, under the control of State Government, are constrained to act freely against the criminals patronized by corrupt leaders. The law and order conditions deteriorate.

- **Socio-Economic Development:** Poor governance and corruption hamper economic development. Poor law and order deter domestic and foreign investment. Social development takes a backseat as funds for welfare activities are diverted. The poor disadvantages group suffer the most.

SC Judgments Related to Criminalisation of Politics



- *Union of India (UOI) v. ADR (2002)*: The SC held that every candidate, contesting an election to the Parliament, State Legislatures must declare their criminal records, financial records and educational qualifications along with their nomination paper.
- *Ramesh Dalal vs. Union of India (2005)*: The SC held that a sitting MP or MLA shall be subject to disqualification from contesting elections if he is convicted for more than 2 years of imprisonment.
- *Lily Thomas v. Union of India (2013)*: The SC held Section 8(4) of The RoPA, 1951 as unconstitutional. The section allows convicted MPs/MLAs to continue in office till an appeal against conviction is decided. The SC held that MP/MLA sentenced for 2 years or above would be disqualified immediately.
- *Public Interest Foundation vs Union of India (2018)*: The SC directed political parties to publish online the pending criminal cases of their candidates. The SC left the matter of disqualification of politicians carrying criminal charges to the Parliament.

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What steps can be taken to de-criminalize politics?

- **Implement Recommendations:** Law Commission in its 244th Report on Electoral Reforms and the 2nd Administrative Reforms Commission (ARC) have given several recommendations. These include expediting trials, disqualification of candidates accused of heinous crimes and debarring them from contesting elections (amending Section 8 of The Representation of the People Act, 1951), increasing punishment for filing wrong affidavits among others.

- **Fast-track Trials:** Expediting trials through fast track courts can help weed out corrupt elements from the political system. 12 Special Courts have been set up for speedier trails of criminal cases involving MPs/MLAs. More such courts should be set-up.

- **Enforcement:** The Election Commission should be given greater power to implement the SC orders regarding declaration of criminal antecedents. There should be heavy penalties, to be paid by tainted candidates, in case of lack of compliance.

- **Pressure on Political Parties:** There must be public pressure on political parties for selecting clean candidates.

- Some experts have suggested making the option of None of the Above (NOTA) more effective by ordering re-poll if it receives highest vote share or if the winning margin is less than the number of NOTA votes.

- Civil Society Groups can make comprehensive publicly accessible database of cases pending against political leaders and circulate the information widely on the social media.

- **Inner-Party Democracy:** Promoting inner-party democracy and providing greater role of local workers in selecting candidates can aid the selection of candidates with cleaner image. (Refer EPIC August 2022 (click) for Lack of Inner-Party Democracy in India).

6. Internet Shutdowns in India

News: India has been at the top of the list of countries with the highest number of internet shutdowns for the last 5 years.

What are the legal provisions for internet shutdown?

- Until 2017, there was no distinct codified law to order internet shutdowns. The power to do so was vested in District Magistrates under **Section 144 of the Code of Criminal Procedure (CrPC)**.
- **Section 5 of the Indian Telegraph Act of 1885** can be interpreted broadly to mean that the Government has the power to impose internet shutdowns. It allows the Government to block or intercept messages transmitted through telegraph under certain circumstances.
- The **Temporary Suspension of Telecom Services (Public Emergency or Public Safety) rules, 2017** have been notified under the Indian Telegraph Act, 1885. The rules state that internet shutdowns can now only be ordered by the **Home Secretary of the Union or State Governments**.
- The shutdowns could be ordered where “**necessary**” or “**unavoidable**”, during a “**public emergency**” or in the “**interest of public safety**”.

What are the concerns associated with the Rules?

- **Conflict of interest:** According to the rules, the **oversight of internet suspension** is assigned to the **Review Committee**, which consists entirely of members from the Executive. This arrangement creates a **conflict of interest** because it concentrates the authorization, conduct, and review functions within a single arm of the Government.

Judicial View on Temporary Suspension of Telecom Services Rules, 2017



- The Supreme Court laid down a set of guidelines to **regulate internet shutdown orders** in the *Anuradha Bhasin versus Union of India (2020)*.
- The Court held that **freedom of speech and expression** and **freedom of trade and commerce** through the medium of the internet are **constitutionally protected rights** under Articles 19(1) (a) and Articles 19(1)(g).
- The SC ruled that an indefinite suspension of internet services would be illegal and that orders for internet shutdown must satisfy the **tests of necessity and proportionality**.
- Though the Government was empowered to impose a complete internet shutdown, any order imposing such restrictions had to be made public and would be **subject to judicial review**.
- After the Judgment, the rules were revised in 2020, making it obligatory that **any suspension order issued must not remain in effect for more than 15 days**. All such orders would be made public.

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- **Limited Powers of the Review**

Committee: The Review Committee is empowered to only to “record its findings” but not set aside an illegal suspension order, thus making it a toothless committee.

- **Unreasonable Timeline:** The Review Committee is given 5 days for the review. This is not reasonable since most internet shutdowns run for less than five days.
- **Grounds for Suspension of Services:** Under the 2017 Rules, telecom/internet shutdowns may be ordered on grounds of ‘public emergency’ and ‘public safety’. Both have not been defined in the 1885 Act or the 2017 Rules. There is an element of subjectivity in ordering shutdown.

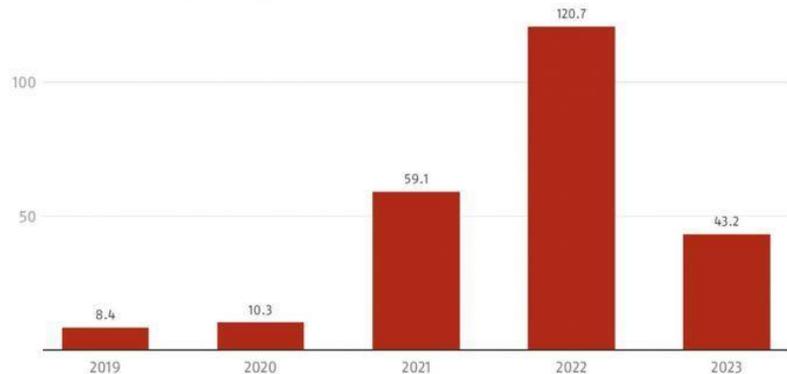
What are the impacts of internet shutdowns?

- **Economic:** Internet shutdowns disrupt the economy. Sectors dependent on internet services such as e-commerce, tourism, and IT services are impacted the most. Financial transactions, labour markets and the availability of platforms for the delivery of services are negatively impacted. Frequent shutdowns create a climate of uncertainty for investment, which can prove disastrous for companies and for start-up ecosystems. According to a report, the total economic impact of internet shutdowns in India has reached **INR 15,600 crore (US\$ 1.9 billion) in the first half of 2023**. There was a loss of INR 1,000 crore on foreign investment and estimated 21,000 job losses (*Refer EPIC May 2022 (click) for Cost of Internet Shutdowns*).

- **Fundamental Rights:** Internet shutdowns limit the rights to freedom of expression and access to information. Frequent shutdowns impact India's image as a modern democracy.
- **Marginalized Communities:** A lot of Government services are now being delivered digitally e.g., ration shops now require internet for Aadhaar authentication for providing subsidized food grains. Internet shutdowns negate access to basic services which impact marginalized communities disproportionately.

Over 40 million people affected

Internet users affected (in million)



Note: Data for 2023 as of June 18.

Source: Business Standard. The number of people affected by internet shutdowns in India has increased drastically from ~84 lakhs in 2019 to ~12.1 crore in 2022.

- **Social:** It becomes harder for citizens to **contact family members** and friends. The efforts of **first responders** and **healthcare providers** are hindered if a shutdown prevents their ability to effectively coordinate and communicate in the event of an emergency or natural disaster.
- **Political:** Governments have been accused of frequent resort to internet shutdowns as a means to stifle dissent, control information, and restrict political opposition. Additionally, shutdowns profoundly impact the work of the media and journalists.
- **Misinformation:** Experts believe that in the absence of credible information sources like news outlets, **rumours tend to spread even more during internet shutdowns**. Without access to the internet to verify facts; widespread rumours, hate-mongering, and fake news spread locally among communities.

What should be done?

The **Parliamentary Standing Committee on Communications and Information Technology** has made several recommendations in this regard.

- Review the Rules to address all aspects of internet shutdown and **codify the parameters** that constitute as **public emergency** and **public safety**.
- Bring the Rules in tune with changing technology to ensure minimum disturbance to the public and put in place a **mechanism to decide the merit of an internet shutdown**.
- Issue uniform guidelines for States/UTs to follow while ordering an internet shutdown.
- The Department of Telecommunication (DoT) should conduct a study analysing internet shutdown rules in other democratic countries and **adopt best global practices** that suit the specific context of India.
- Review Committees should be made more inclusive by including non-official members such as retired judges and public members. DoT should ensure that Review Committees are constituted in all States/UTs.
- DoT should formulate a policy to **selectively restrict the use of certain services instead of banning the internet as a whole**. This will **ensure minimum inconvenience to the general public** and at the same time, meet the objectives such as curbing misinformation.

7. Regulation of OTT Communication Service Providers and Platforms

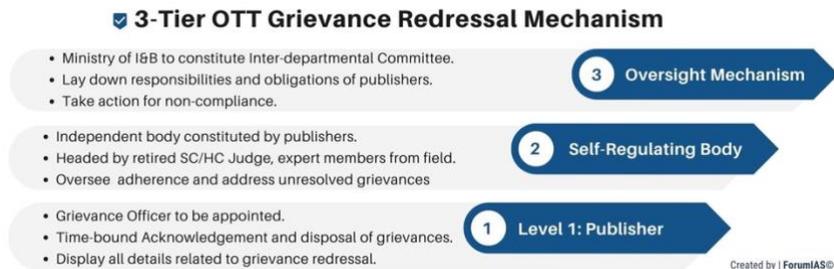
News: TRAI has opened discussions on regulating Over-The-Top (OTT) communication service providers like WhatsApp, Facebook, Telegram etc.

What is the rationale for regulating OTT Communication Services?

- Telecom Service Providers (TSPs like Jio, Airtel, Vodafone etc.) and OTT Service Providers (like WhatsApp) offer similar services. OTT SPs are not bound by the same requirements as TSPs. There is a **need for regulatory parity**.
- **TSPs need a service license** for offering voice and SMS services. OTT SPs offer messaging, voice and video call services similar to TSPs, without any such licence.
- TSPs are regulated by several laws like Indian Telegraph Act, 1885, the Wireless Telegraphy Act, 1933 and Telecom Regulatory Authority of India Act, 1997 and have to adhere to requirements such as lawful interception. Such requirements are not applicable on OTT SPs at present.
- **OTT services do not financially contribute towards increasing telecom services penetration** in the country unlike the TSPs who have to pay towards the Universal Service Obligation Fund (USOF).

What is the rationale for regulating OTT Content Platforms?

• OTT streaming platforms like Netflix, Hotstar and Amazon Prime have gained rapid popularity. According to an estimate, there 119 million active paid OTT subscriptions across 49 million paying (SVOD) audiences in India (2.4 subscriptions per subscriber).



- **Regulation:** There is no separate legislation or regulatory body for OTT Platforms. Motion pictures (films) require certification by the Central Board of Film Certification (CBFC) before release. However, there is no requirement of certification for content released on OTT Platforms.
- **Content Moderation:** Several web-series released on OTT Platforms have been criticized for excessive vulgarity, violence, graphic content or nudity. Adolescent children with impressionable minds are exposed to such content which can have negative impact on their mental development. They lack discretion and maturity to distinguish between reality and fiction. Hence, age-appropriate content moderation is necessary.
 - IT Rules, 2021 have introduced a soft-touch self-regulatory mechanism and prescribed a system of **content self-classification** for online content: **U** (Universal for all ages), **U/A 7+** (parental guidance for children below 7 years), **U/A 13+**, **U/A 16+**, **A** (Adult). The classification can be done on the basis of Themes and messages; Violence; Nudity; Sex; Language; Drug and substance abuse.
- **Ineffective Self-regulation:** OTT platforms have developed self-regulation/censorship standards on their own, but in the absence of implementation standards, may prove to be ineffective in the long term. The IT Rules, 2021 have mandated the display of contact details relating to grievance redressal mechanisms on OTT websites. However, compliance has been very poor.

What should be the way forward?

- The Government should consult all stakeholders to address the concerns. The current approach of ‘co-regulation’ with ‘self-regulation’ at the industry level and final ‘oversight mechanism’ at the Ministry level is ~2 years old and can be given more time to check its effectiveness. In the long term, the Government can consider setting up an autonomous body or extending the mandate of the CBFC to regulate the content on the OTT platforms, if the current system fails to address concerns.

- o IT Rules, 2021 require only the data related to number of complaints received and addressed to be published. Rules should also mandate disclosure of nature of complaints and the action taken by the OTT platform to address them.
- The concerns of the TSPs regarding OTT SPs piggybacking on their infrastructure causing loss of revenue should be addressed, while ensuring access to internet is not hampered. All the concerns related to regulation should be comprehensively covered in the Telecommunication Bill.

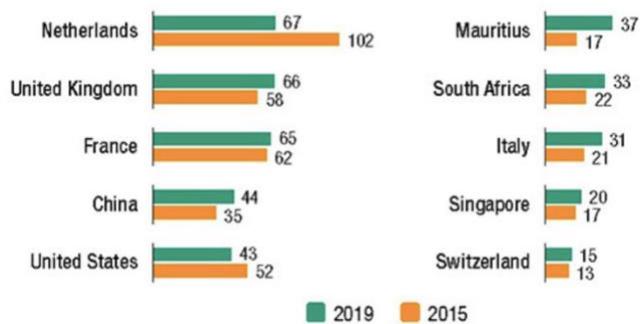
8. Improving India's Relationship with Africa

News: Vivekanand International Foundation (VIF), a think-tank, has released a report 'India-Africa Partnership: Achievements, Challenges and Roadmap 2030'.

What are the key takeaways from the Report?

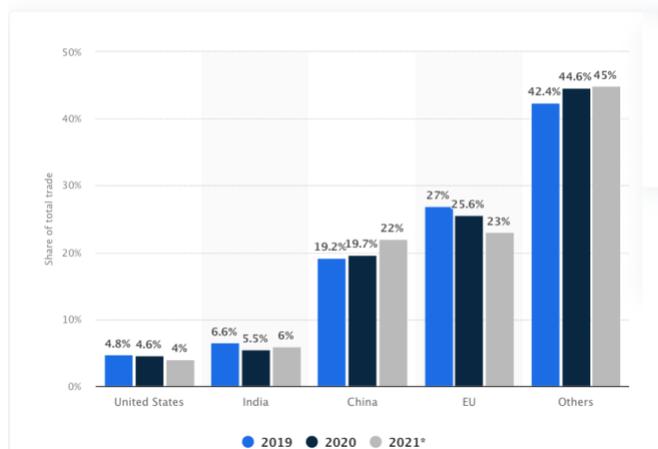
- **Transformation in Africa:** The Report has noted that rapid transformations are unfolding in Africa: Demographic, Economic, Political and Social. These changes, along with changing geopolitics, offer new opportunities. The African continent is heading towards broader regional integration. There is greater commitment to democracy, peace and progress. However, several countries still struggle with insurgencies, ethnic conflicts and terrorism.
- **International Competition:** The new developments have led to greater competition in Africa. China, Russia, the US, the EU are vying with each other for greater **market access, energy and mineral security, and enhanced political and economic influence** in the region.
- **China's Lead:** China has gained an edge over others with a consistent focused policy since 2000. China has become **Africa's biggest economic partner** and has played the role of 'infrastructure developer', 'resource provider' and the 'financer'. Since 2007, senior Chinese political leadership has visited Africa 123 times, while 251 African leaders have visited China.
- **India's Standing:** India enjoys a substantive partnership and **rich goodwill**. However, India should review its policy towards Africa, given latest developments and rising Chinese influence. India should bring greater focus on implementation. (Read More on India-Africa Relationship).

Top 10 investor economies by FDI stock, 2015 and 2019 (Billions of dollars)



Source: UNCTAD. European nations lead the investments in Africa. China is catching up.

Leading trade partners of Africa from 2019 to 2021



Source: Statista. The EU, China, India, and the US are among the largest trading partners of Africa.

What are the suggestions to improve India-Africa Partnership?

- **Political and Diplomatic Cooperation:** Cooperation should be strengthened through leaders' summits.

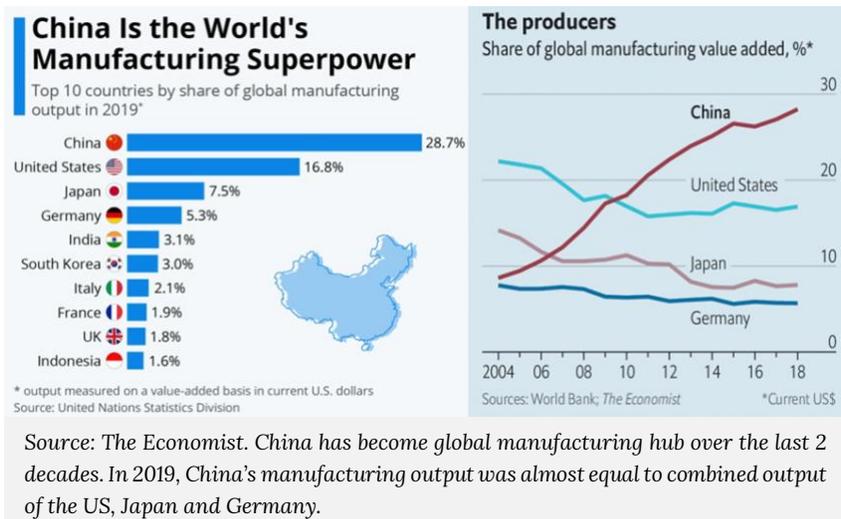
- A new **annual strategic dialogue** between the chairperson of the African Union (AU) and India's External Affairs Minister should be launched in 2023.
 - India should lead the way to forge consensus among G20 to **make African Union a full G20 member**.
 - The Ministry of External Affairs should have a **Secretary-level officer exclusively in charge of African affairs** to enhance implementation of India's Africa policy.
 - **Defence and Security Cooperation:** India should increase the number of **defence attachés** deployed in Africa and **expand dialogue on defence issues**.
 - India should widen the footprint of **maritime cooperation** and **expand lines of credit** to facilitate **defence exports**.
 - The cooperation on **defence training, counter-terrorism, cyber security** and **emerging technologies** should be expanded.
 - **Economic and Development Cooperation:** India-Africa trade touched US\$ 98 billion in FY2022-23. This can be further enhanced by improving access to finance through creation of **Africa Growth Fund**.
 - A special package to improve project exports and build cooperation should be launched. Special focus on **cooperation in Science and Technology domain** can pay rich dividends.
 - **Socio-Cultural Cooperation:** It can be enhanced through greater interaction between universities, think tanks, civil society and media organizations. India should set-up a National Centre for African Studies.
 - **Indian Technical and Economic Cooperation (ITEC)** and **ICCR scholarships** awarded to Africans should be named after famous African figures.
 - Visa norms for African students can be liberalized and can be provided short-term work visas.
- The Report has suggested close cooperation between the Ministry of External Affairs and the National Security Council Secretariat for effective implementation of the Roadmap 2030.

9. China Plus One (China + 1) Strategy

News: Rising tensions between the US and China has led to a race among nations to become the '+1' in 'China+1'. India has several advantages over other nations.

What is China + 1 Strategy?

- Over the last 3 decades, China became global manufacturing powerhouse. MNCs invested heavily in China due to its **low labour and production costs** as well as its **expanding domestic consumer market**. This led to **over-concentration** of business in China.
- In 2019, China alone accounted for **~30% of global manufacturing output**. Too much concentration in China has given rise to several **economic and geopolitical risks**.
- China + 1 refers to the strategy in which companies avoid investing only in China and **diversify their businesses to alternative destinations**. Companies had started to think about diversification as early as 2008. However, it was only after the **US-China tensions** and **supply chain disruptions** caused by the COVID-



19 pandemic (aided by China's **Zero COVID policy**), 'China + 1' gained traction as an alternative strategy. Technology Companies are exiting because of **strict data privacy laws** in China.

- Experts say 'China + 1' has benefited the EU, Mexico, Taiwan, and Vietnam, across sectors such as machinery, automobiles, and transport and electrical equipment. India has been able to make marginal gains in the machinery sector.

What are the factors that are in favour of India?

- **Workforce:** India has the largest workforce in the world. The UN has estimated India's working age population to be ~950 million in 2021.
- **Low Wage Rate:** India has lower wage rate due to large workforce (over-supply) and lower per-capita income. 45% of India's workforce is engaged in agriculture and ready to switch to manufacturing.
- **Domestic Market:** India is the single biggest market for multiple products. This makes India attractive to global MNCs.

What are the challenges before India?

- **Global Value Chains:** South-east Asian nations are much more integrated with the Global Value Chains (GVCs) through the regional trade agreements like the RCEP, Comprehensive Progressive Trans-Pacific Partnership (CPTPP) etc. This has attracted manufacturing units to countries like Vietnam, Malaysia etc.
- **Policy:** Experts lament lack of consistency in India's trade policy. There are frequent changes e.g., ban on exports of rice or wheat, increase in tariff duties etc.
 - India's decision to suspend and review the Bilateral Investment Treaties (BITs) raised concerns related to protection guaranteed to foreign investments. Policy inconsistency adds to uncertainty, making MNCs apprehensive about investments in India. (*Refer EPIC February 2023 (click) for Bilateral Investment Treaties: India's Approach and Concerns*).
 - Issues like land acquisition, infrastructure deficits hamper manufacturing sector in India.
- **Competition:** Vietnam, Cambodia, Malaysia and Thailand etc. are becoming preferred destinations because of cheap labour, tax incentives, regional integration, and geographical location.

How can India become a viable option in China+1?

- **Infrastructure:** Government has launched several laudable initiatives like Gati Shakti, National Logistics Policy to improve infrastructure in India. The focus has to be on proper implementation and outcomes.
- **Reforms:** The Government must aim at greater integration of India's economy with global economy through carefully negotiated FTAs, keeping in mind India's strengths. There should be more consistency in India's trade and investment policies to create a conducive environment for investments. (*Refer EPIC April 2023 (click) for Parliamentary Panel's Observations on Attracting Foreign Companies Leaving China*).

10. NATO Plus: Should India Join?

News: A US House Select Committee has recommended inclusion of India in NATO Plus to strengthen it against competition against China.

What is NATO Plus?

- NATO is an **intergovernmental military alliance** comprising 31-member States mainly from Europe and North America. It aims to ensure **freedom and security of its members** through **political and military cooperation**.
- NATO was established in 1949 to counter the threat posed by the USSR.
- It is a **collective security system**: its member States agree to defend each other against attacks by 3rd parties.

- At present, NATO Plus includes 5 more member nations which are allies of the US: **Australia, Japan, South Korea, New Zealand and Israel**. It is a security arrangement that brings together NATO and five aligned nations to enhance global defence cooperation. The term 'NATO Plus' is **not officially recognised** within NATO but has been used in discussions regarding the potential expansion of the alliance.

Why does the US want India to join NATO Plus?

- The US aims to **strengthen security cooperation with India** based on their **shared interest in countering Chinese dominance in the Indo-Pacific region**.
- The US believes that India should join NATO to **safeguard its borders from China** and enhance global security to counter Chinese aggression.
- The American strategic culture emphasizes **treaty-bound alliances**. By enhancing India's capabilities and promoting military-to-military cooperation, the US hopes to establish a formalized relationship.

What are the arguments in favour of joining NATO Plus?

- **Counter Chinese Aggression:** Rising Chinese aggression in the Indo-Pacific and along the LAC, has prompted India to seek closer partnership with the US. Joining NATO Plus can formalize this partnership and give a proper direction to enhancing security and defence cooperation.
- **Strengthen Defence Capabilities:** Formalizing security alliance through the NATO Plus can increase India's access to modern defence technologies and improve intelligence-sharing systems. Frequent military exchanges with NATO members will enhance the capabilities of India's defence forces.
- **India-Russia Relationship:** India has tried its best to maintain the relationship with Russia amidst the Russia-Ukraine war and pressure from the West to cut the ties. Prolongation of war reduces India's choices vis-à-vis cooperation with Russia, as Russia becomes more dependent on China in its war effort. India has sought to reduce over-dependence on Russia with respect to supply of military equipment. NATO Plus offers a viable alternative.
- **Engagement with Europe:** India has tried to improve its ties with European nations like France, Germany and the Nordic Countries as highlighted by PM's visit to Europe in 2022. China's aggression has made the EU wary and it is looking for new partners in the Indo-Pacific. Engagement with NATO can become an important aspect of India's European strategy. (Refer EPIC May 2022 (click) for India's Relationship with EU).

Alliance vs Partnership

Alliances are **formal agreements** between two or more nations. **Alliances are codified** (usually through Treaties) and require actions of each member under defined circumstances like war. In national defence, they're promises that each nation will support the other. **NATO is an alliance** created through **North Atlantic Treaty**. NATO members are US Allies.

Partnerships are less formal and mean **cooperation on a narrow set of issues** or a broader alignment between countries at a given time. **Partnerships don't involve a treaty** and level of engagement between Partners can vary greatly over time.

What are the concerns with joining NATO Plus?

- **Strategic Autonomy:** India has secured its strategic interests through an independent foreign policy. India cooperates with various nations and blocs like Quad and SCO. Joining a formal military alliance will limit India's strategic autonomy in engaging with other nations especially those considered threat by NATO. It might drag India into NATO's conflicts.
- **India-Russia Relationship:** Russia has been India's trusted partner for long and has supported India at global platforms (like the UN Security Council) and in dealing with multiple challenges related to regional security.

India is still dependent on Russia for supply of spare parts and maintenance of military equipment. Joining NATO Plus will put Russia firmly on the side of China.

- **China Factor:** India has consciously avoided turning QUAD into a military alliance as it wants to avoid escalate tensions with China. Joining NATO Plus can complicate India's border security with further Chinese military build-up along the border.

- **Benefits-vs-Cost:** India can enjoy benefits of close defence cooperation with the US without joining a formal treaty-based framework. Indo-US defence cooperation has progressed rapidly in recent years. India can build on this without joining any military alliance. NATO Plus may have limited benefits as it doesn't provide Article 5 protection enjoyed by NATO members. India may also have to set-up a US military base on its territory which it has avoided till now.

- **Great Power Aspirations:** India intends to transition from Middle Power to a Great Power in future. A junior-partner status in an alliance would mean giving up its great-power aspirations.

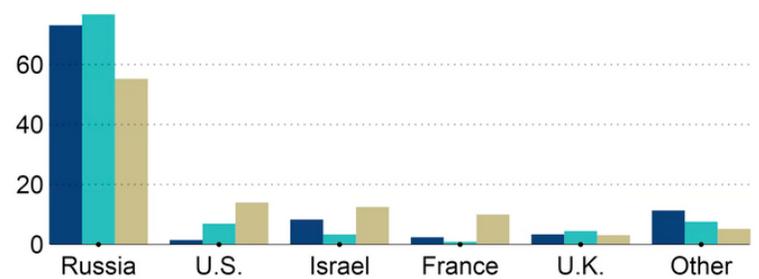
What should be India's Approach?

- India should **prioritize addressing regional security challenges** such as border disputes, terrorism, and regional conflicts. NATO has certain competencies to deal with such issues. However, its larger geopolitical agenda **may divert India's resources and attention away from these issues.**
- India should seek to profit from its status as a **swing state** amid great power rivalries. Though it has steadily intensified security and defence partnership with the US, it is under no obligation to take part in the security competition or any possible conflict over Taiwan.
- India should focus on **strengthening the cooperation in Quad** to deepen economic, diplomatic and military ties. India should **continue to develop its domestic capabilities** to take on China independently.

India's arms suppliers

(In percent of total)

■ 2002-07 ■ 2008-13 ■ 2014-19



Source: Stockholm International Peace Research Institute

Source: SIPRI. Russia's share has decreased but it still accounts for 45-50% of India's imports. Dependence is high because of requirement of spare parts of existing equipment.

Swing State

Global swing states are nations that possess **large and growing economies** and **occupy central positions in a region** or stand at the hinge of multiple regions. Swing States are active at regional and global level. They **seek changes in the existing global order** but do not seek complete scrapping of global institutions and rules that have helped build global peace.

The term has been coined based on 'Swing States' in the US Presidential elections that have **disproportionate impact** on the outcome of elections in comparison to their population or status of economy.

The US foreign policy experts consider **India, Brazil, Indonesia** and **Turkey** as **Swing States**. They believe a focus on these nations can deliver a large **geopolitical payoff** because their approach to the international order is **more fluid and open** than that of more established powers like China or Russia.

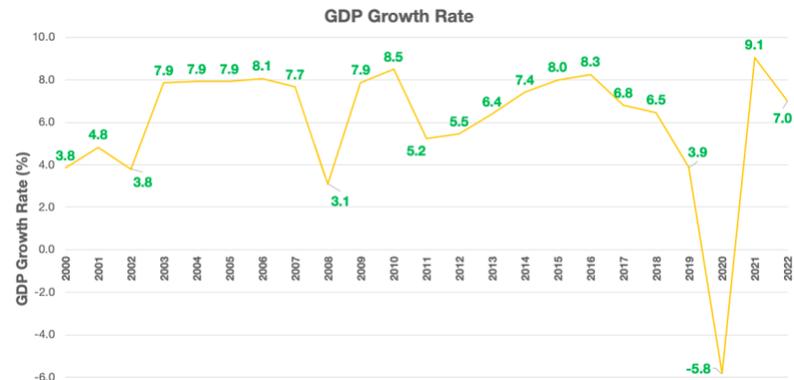
General Studies Paper III

1. Challenges to India's Economic Growth

News: Former RBI Governor C. Rangarajan has outlined the path for India to achieve 7% growth rate.

What is the trend of India's Growth?

- India's per capita Income stood at US\$ 2,379 IN 2022-23. The Gross Fixed Capital Formation rate is 29.2% in 2022-23.
- India has achieved the status of 5th-largest economy in the world. However, in terms of per capita income, India's economy ranks at ~140th out of 194.
- Most economic experts have pegged India's growth rate between 6-7% over the coming decade. While it is impressive, a growth rate of > 8% is required to achieve the developed economy status by 2047. (Refer EPIC September 2022 (click) [India as a Developed Nation](#)).



Data Source: World Bank. India's GDP growth has trended below 7% since 2017. It reached 9.1% in 2021 due to low base effect in 2020 (COVID-19 pandemic).

What are the threats to India's future growth?

- **Geopolitical Uncertainties:** The Russia-Ukraine war has negatively hit global economy. It has led to world-wide high inflation. Sanctions imposed by Western countries on Russia have complicated trade with Russia. Rising China-Taiwan tensions can further deteriorate global economic and investment climate.
- **Trade Barriers:** Countries have become inward-looking and retracting from global trade. There has been a rise in tariff and non-tariff barriers, most prominent being the trade war between the US and China. A slowdown in global trade will affect India's growth negatively.
- **Technological Disruptions:** Advent of AI may increase productivity but may not create commensurate number of jobs. Indian economy, where most of workforce is unskilled or semi-skilled, may be left out in the transition. (Refer EPIC May 2023 for [Advent of Knowledge \(Brain\) Economy and Implications](#)).
- **Environmental Commitments:** India may face increasing pressure from developed countries to undertake greater climate action commitments. Transition to a cleaner economy, reducing pollution may add additional costs on the economy reducing potential growth. Additionally, damages caused by climate-induced disasters and expenditure on rebuilding may reduce development fund.
- **Capital Constraints:** India needs to achieve desired Gross Fixed Capital Formation (GFCF) rate of ~32%. It is currently at 29.2%. Raising the rate will require greater investments in capital formation.
- **Job Market:** The economic growth must be accompanied by commensurate increase in jobs. Jobless growth will hamper long-term growth prospects. (Refer EPIC August 2022 (click) for [The Issue of Jobless Growth in India](#)).

What should be done to boost growth?

- **Key Sectors:** Focus should be on agriculture, manufacturing and exports. Expansion of Manufacturing sector is necessary for employment generation and shifting workforce away from agriculture.
- **Job Creation:** Growth in the MSME sector can support employment generation. Addressing their concerns related to finance, capacity, export potential can help them grow.

- **Enhance Investment Rate:** The GFCF rate should be raised by facilitating private investments. This requires favourable, stable policy environment, enhanced infrastructure and lesser regulatory constraints.
- **Harnessing Technology:** AI and other cutting edge technologies should be adopted. While ensuring their integration, the workforce must be prepared for potential changes in job dynamics. The education system should be suitably adapted to equip the students with relevant skills for evolving industries.
- **Review Trade Strategy:** Given the changing stance of developed countries on trade, India should re-evaluate its global trade partnerships and navigate the barriers.
- **Sustainable Growth:** Sustainable growth should be ensured through environmental sustainability measures. India is on path to achieve its climate action goals. However, concerns regarding forest cover should be addressed. Transition to green economy should be faster through greater investments.
- **Basic Income:** The Government should explore introducing a basic income system. Such a system can provide financial security, possibly leading to more consistent consumer spending and reduced reliance on other subsidies. (Refer EPIC June 2022 (click) for Universal Basic Income).

Gross Fixed Capital Formation

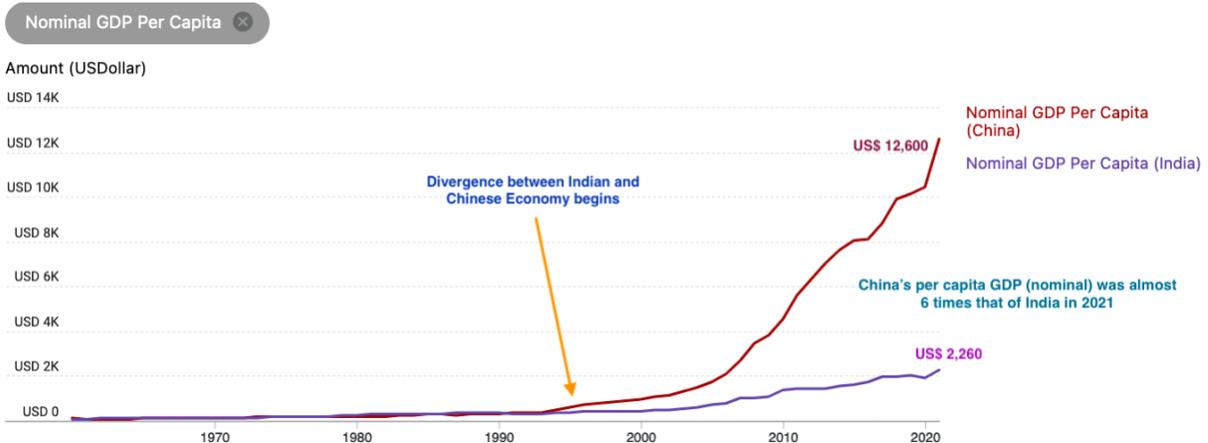
It consists of investments (minus disposals) in fixed assets during a given period. It includes land improvements; plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings etc. Net Fixed Capital Investment subtracts depreciation from GFCF. Financial Assets are not considered for measuring GFCF.

2. Comparison of Indian and Chinese Economies

News: The Economy of India is approximately at the same stage as the Chinese Economy in 2007. However, Indian Economy may not be able to follow the same trajectory of the Chinese Economy.

What are the areas of divergence in Indian and Chinese Economies?

- India’s estimated per capita income, US\$ 2,601 in 2023 is similar to China in 2007 (US\$ 2,694). Similarly, the employment in agriculture, manufacturing and services was 41%, 27% and 32% respectively in China in 2007 and 44%, 25% and 31% respectively in India in 2021. However, there are significant divergences between the two economies.



Source: datacommons.org. The per capita GDP (nominal) of India and China was almost same till mid 1990s. Then they diverged since China had initiated economic reforms earlier than India. India’s present per capita income of ~US\$2,600 was achieved by China in 2007. Chinese population grew at 0.6% (annually) or less, since 2005, hence growth in its per capita GDP was rapid. India will have to achieve economic growth rate higher than 8-9% as India’s population growth is still ~0.8-0.9% (annual).

- **Investments:** China maintained an investment to GDP ratio ~40% between 2003-2011 and ~43% between 2012-2021. In contrast, India's highest investment ratio has trended ~33%, and has fallen to 29% in recent times. Investment is one of the most vital component for economic growth.
- **Trade Surplus/Deficit:** In 2022-23, India's exports of goods and services surpassed US\$ 770 billion, while imports were around US\$ 890 billion. In 2007, when the Chinese economy was of comparable size, its exports had crossed US\$ 1.2 trillion while imports stood at US\$ 950 billion. China maintained large trade surplus (imports greater than exports), while India has consistently witnessed trade deficit.
- **Tariff Reduction:** The reduction of tariffs has made China as the hub of the global supply chains. Its tariff rate declined from 10.69% to 5.32% in 2020. In contrast, India's tariff rate declined from 25.63% in 2003 to 8.88% in 2017 but **has risen thereafter**.
- **Labour Force Participation Rate:** In 2007, China's labour force participation rate (LFPR) was nearly 73%, but it has declined to 67% since then. India's estimated LFPR has been ~50% (2022). The major difference is due to Female LFPR. In China, FLFPR was 66% in 2007 and 61% in 2022. In India, **FLFPR was ~30% in 2007 and only 24% in 2022**.
- Most job creation in India has happened in construction, trade and transport sectors, rather than in manufacturing. As Economic Survey has observed, the manufacturing sector has higher productivity than construction, transportation etc. Hence, **low growth in manufacturing and low employment share of manufacturing is the biggest challenge before India**.
- Chinese economy grew by average 8% between 2007 and 2021. India will have to boost investments, enhance exports (especially in goods), increase female labour force participation, and promote low and semi-skilled employment in formal manufacturing to ensure consistent economic growth.

3. Standing Committee on Statistics: Issues with India's Statistical System

News: The Ministry of Statistics and Programme Implementation has formed a new Standing Committee on Statistics (SCoS) to advise on the official data generated by the National Statistical Office (NSO).

What is the importance of Government Statistics?

• **Welfare and Public Policy:**

Data are essential for estimating current level of economic and human development. Data can help measure effectiveness of existing policy measures and corrective steps required. Statistics plays a key role in planning, monitoring and

evaluation of socio-economic policies. Statistical agencies provide accurate, timely and credible information for future policy formulation. (Refer EPIC June 2023 (click) for *The Importance of Census and Consequences of Delay in Census 2021*).

- **Information:** Information regarding demographics is essential for governance. Statistics provide information for researching and comprehending **economic issues**. Statistics aid in the analysis of

India's Statistical System

- > The collection of statistics relating to any subject is generally the responsibility of the concerned department. Several Union/State Government entities have full-fledged statistical divisions/cells.
- > The Ministry of Statistics and Programme Implementation (MoSPI) was established as an independent ministry in 1999, after the merger of Departments of Statistics and Programme Implementation.
- > The National Statistical Office (NSO) was created in 2019 by merging the National Sample Survey Office (NSSO) and the Central Statistical Office (CSO). The NSO is the nodal agency for planning and facilitating the integrated development of the national statistical system.
- > The National Statistical Commission (NSC) created through a Government resolution based on the recommendations of the Rangarajan Commission. Its mandate is to evolve policies, priorities and standards in statistical matters.

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economic issues including production, consumption, price, income distribution, population, unemployment, and poverty by bringing a quantitative component to qualitative claims.

What is the need for new Standing Committee on Statistics?

- **Survey Design:** Members of Economic Advisory Council to the Prime Minister have critiqued the sampling methods of several surveys. The sampling methods are old and not representative. It has been argued that current surveys have underestimated India's urban population.
- **Data Quality:** There have been concerns regarding the credibility of certain data from the NSSO especially the household surveys.

Government officials have also raised concerns about methodology and findings. The Government had rejected consumption expenditure due to quality issues.

Legal Framework for Data Collection

Census Act, 1948: Population Census is a Union subject. It is conducted under the Census Act, 1948. The Central Government can conduct the census whenever it may consider it necessary or desirable.

Collection of Statistics Act, 2008: The 2008 Act facilitates the collection of statistics related to social, economic, demographic, scientific and environmental aspects, by Central, State and Local Governments.

What are the functions of the Standing Committee on Statistics (SCoS)?

SCoS will replace the existing Standing Committee on Economic Statistics.

- The Committee's terms of reference include reviewing the current framework and addressing issues raised regarding subject, results, and methodology.
- It will provide advice on **survey methodology**, such as sampling frame and design and provide guidance for conducting pilot surveys and pre-testing.
- It will provide guidance on studying and exploring the availability of administrative statistics related to surveys, as well as **identifying data gaps** and additional requirements.
- The Committee can also offer **technical guidance** to **Central and State-level agencies** for surveys involving participation from States.
- The committee will **help finalize survey results**, but the **National Statistical Commission will have the ultimate authority** to approve the publication of those results.

Parameter	Standing Committee on Statistics	Standing Committee on Economic Statistics
Mandate	<ul style="list-style-type: none"> • Broader. • Review the framework and results of all surveys conducted by the NSO. • Provide insights about existing data and identify areas with data gaps. • Propose solutions to fill the gaps, propose and refine new methodologies. 	<ul style="list-style-type: none"> • Narrow. • Review the framework for economic indicators like industrial, service sectors, labour statistics. • Limited to high-frequency data like CPI, IIP, PLFS.
Composition	14 members, with 9 official and 4 non-official members, 1 member-secretary.	28 members, difficult to reach consensus.

How can the SCoS prove to be helpful?

- It can help fill the data gaps and make the survey data more comprehensive and reliable. It can help promote better understanding and interpretation of data, leading to better policy formulation.
- Its expertise can be useful in finalizing data of important surveys.

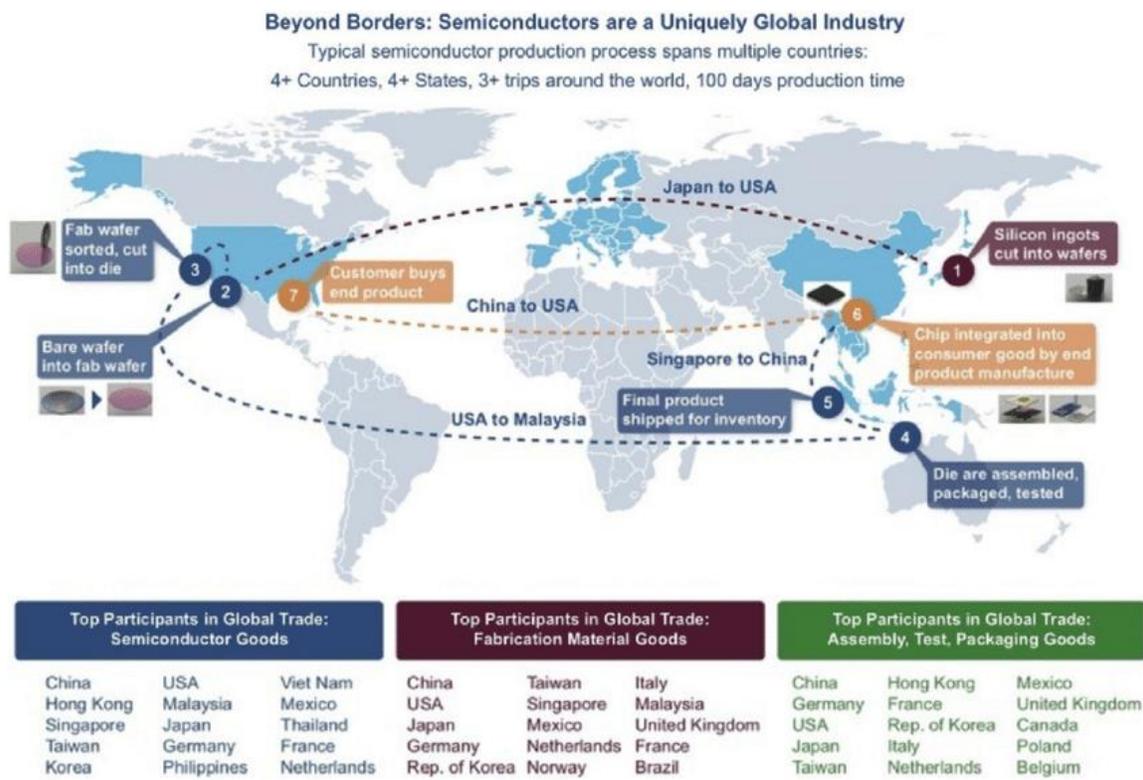
Going forward, to make the data more reliable, **regular and timely surveys should be undertaken**. A new Statistical Reforms Commission can be established to **address the systemic problems**. Issues like perceived lack of independence of the NSO, instances of government wanting to control the data narrative and the lack of financial and human resources should be addressed.

4. Semiconductor Manufacturing in India

News: Micron Technologies (US) has announced an investment of US\$ 825 million in India to set up chip testing and packaging facility in India. Foxconn has withdrawn from US\$ 19.5 billion chip-making joint venture with Vedanta. Both events have huge implications for developing semiconductor ecosystem in India.

What is the significance of semiconductor chips?

- Semiconductors are the **building blocks of modern technology**. They are used in wide ranging technologies and applications like Computers and laptops; Phones, mobile devices and other electronic gadgets; Automobiles; Aviation; Medical devices especially diagnostics; Military equipment among others.
- Semiconductors will **enable greatest technological breakthroughs in future**. **Advent of AI will have lasting impacts on semiconductor design and production** as the amount of data stored and processed by AI applications is massive. Access to advanced chip technology will drive AI-revolution.
- Demand for semi-conductors will rise multi-fold in the digital economy driven by **Internet of Things**.



Source: semiconductors.org. According to a study by Global Semiconductor Alliance, each segment of semiconductor manufacturing involves roughly 25 countries in the direct supply chain, and 23 countries in allied functions.

What is the current structure of global semiconductor manufacturing Industry?

- Semiconductor manufacturing has a **very complex value chain**. It involves:
 - Design of chips for generic or specific end use.

- Manufacturing (Creation of wafers in foundries (*front end*); assembly of chips to form components that can be mounted on circuit boards in Assembly and Testing labs (*back end*)).
- Integration, Assembly of chips onto end products like mobile phones by original equipment manufacturers (OEMs) like Apple.
- **No single company or nation has all the capabilities required for end-to-end semiconductor design and manufacturing.** However, the complete value chain is concentrated in handful of countries including the US, Taiwan, Japan, South Korea, China, and some EU nations.
- Semiconductor manufacturing is now dominated by **Taiwan Semiconductor Manufacturing Company (TSMC) in Taiwan** and **Samsung Electronics in South Korea**. Big brands like Apple and Qualcomm design their own chips but outsource manufacturing to companies like TSMC. US Companies like Intel are also a key player in chip manufacturing.

How has India performed in the Semiconductor sector?

- India has done well in design and testing stages. Most global semiconductor companies having an R&D footprint in India. However, **100% of India’s chips, memory and display units are imported.** In 2020, India spent US\$ 15 billion on electronic imports, with 37% coming from China.
- **India’s electronic exports have risen rapidly in recent years.** However, the exports are driven by assembly of mobile phones (last stage) and not semiconductor manufacturing. (*Refer EPIC April 2023 (click) for Growth in Electronics Exports*).
- India has two fabs: SITAR, a unit of the Defence Research and Development Organisation (DRDO) in Bengaluru and a semiconductor laboratory in Chandigarh. These build silicon chips for strategic purposes like defence and space and not for commercial use.
- The Government wants to reduce external dependence on semiconductor manufacturing to ensure:
 - Insulate against future **supply chain disruptions** as happened during COVID-19 pandemic.
 - **Reduce dependence on China**, in the backdrop of tensions along the border and strained relationship. Other nations are also taking steps to diversify semiconductor supply chains away from China, e.g., the **US had passed CHIPS Act** in 2022 to strengthen domestic semiconductor manufacturing, design and research and reinforce America's chip supply chains.
 - Use of electronic hardware for **espionage activities** by China, making domestic telecommunication and defence forces’ security systems vulnerable to Chinese attacks. Malware embedded in systems are difficult to identify and pose threat to the national security.
 - Enhance domestic manufacturing ecosystem and create large number of employment opportunities.



What are the challenges in establishing domestic manufacturing ecosystem?

- **High Cost:** Government estimates the cost of setting-up a new fabrication unit ~US\$ 5-7 billion.
- **Gestation Period:** Setting up a fabrication unit has **long gestation and payback periods.**

The unique features of semiconductor industry pose complex challenges in establishing domestic manufacturing ecosystem.

The sector undergoes **frequent changes with rapid advancements in technology**. Huge scale is required for manufacturing units to be cost effective. These factors make investments very risky.

- **Approval Process:** Complex approval requirements involving multiple departments delay the process, discouraging foreign investment.
- **Utilities:** Production of semiconductor chips involves high-end technologies that require uninterrupted power supply and continuous access to large amount of clean water (through advanced water purification facilities). Limited places within India can fulfil these requirements.
- **Technology:** India lacks access to modern technologies for semiconductor manufacturing. These technologies are licensed from patent holders at a very high price. **Dual-use of chip technology** (for civilian and military purposes) makes countries wary of sharing technology.
- **Other Constraints:** Uncertainties related to tax regime, availability of skilled labour etc. limit the setting up of manufacturing units.

What should be done going ahead?

- Establishing semiconductor manufacturing ecosystem is a long process. The Government should continue to **provide support and facilitate favourable environment** for semiconductor manufacturing. India should focus on **back-end of manufacturing** such as assembly, packaging and testing. Once it stabilises and an ecosystem develops, front-end of manufacturing will follow.
- The Government should **plug domestic gaps** in access to **utilities, transportation infrastructure** and quicker **regulatory approvals**.
- Foreign manufacturers are hesitant to share intellectual property rights. Government should provide appropriate **incentives to enable technology transfer**.
- **Domestic investment must be enhanced in R&D** to augment potential of technical institutions e.g., IIT Madras has developed a microprocessor named 'Moushik' (for IoT devices) with funding support from the Ministry of Electronics and Information Technology. **Supporting research-based start-ups** can produce large payoffs.
- The Government can also explore the option of **acquisition of semiconductor manufacturing units in other countries**. This is easier than setting up a domestic facility.

Government's Initiatives for Semiconductor Industry

- > **Semicon India Programme:** India Semiconductor Mission was launched in 2021 with outlay of INR 76,000 crore for the development of semiconductor manufacturing ecosystem. Incentives introduced under the Programme include fiscal support of 50% of the project cost for setting up fabrication, assembly, testing and packaging facilities; and fiscal incentives for development of semiconductor design.
- > **Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme:** The Government provides support for the setting up of Electronics Manufacturing Clusters (EMCs) and Common Facility Centres (CFCs).
- > **Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS):** The Government provides a financial incentive of 25% on capital expenditure for a list of products that constitute the supply chain of electronic products.
- > **National Policy on Electronics 2019:** It envisions positioning India as a global hub for Electronics System Design and Manufacturing (ESDM) sector. It aims to encourage the development of core components (including chipsets) and create an enabling environment for the industry to compete globally.

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5. Internationalization of Indian Rupee

News: An Inter-Departmental Group on Internationalization of Indian Rupee has released its report. It was established by the RBI to review current position of Rupee as international currency and frame a roadmap for its internationalization.

What is an International Currency?

- An international currency is used and held beyond the borders of the issuing country. It is used by non-residents for transactions.

- An international currency performs all 3 functions of money:
 - **Unit of Account:** Invoicing (Billing) of foreign trade transactions, denominate international financial instruments (like Bonds).
 - **Medium of Exchange:** Settlement of international economic transactions, Interventions by Governments for exchange market interventions (like buying and selling of currency).
 - **Store of Value:** Act as reserve currency, holding of capital assets (like real estate) by private individuals.
- At present, the **US Dollar (\$), Euro (€), British Pound (£) and Japanese Yen (¥)** are the **leading reserve currencies**. China's efforts to internationalize Renminbi has met with limited success so far.
- Internationalisation of the rupee involves promoting the rupee for **import and export trade** and then other **current account transactions** followed by its use in **capital account transactions**. (Refer EPIC June 2023 (click) for Reserve Currency).

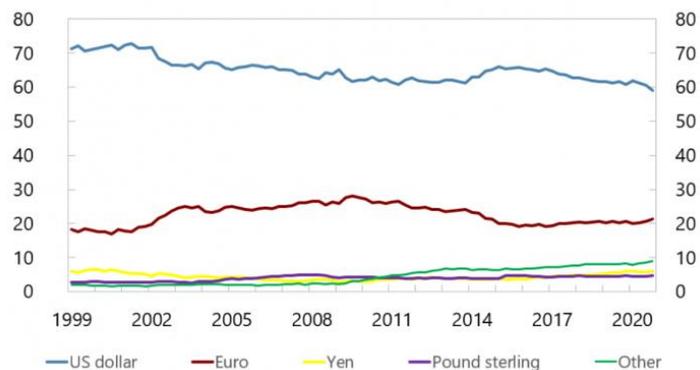
What is the rationale for internationalisation of Rupee?

- **International Linkages:** India's integration with global economy has increased. India's foreign exchange reserves have risen from US\$ 290 billion in August 2012 to US\$ 609 billion in July 2023. Similarly imports have crossed US\$ 610 billion and exports have reached US\$ 420 billion. Thus Rupee has the potential to become international currency.
- **Share of Dollar:** The share of Dollar as a reserve currency and for trade invoicing and settlement is declining gradually. Share of other currencies is rising as various bilateral and regional economic cooperation agreements emerge.
- **Geopolitical:** Imposition of sanctions on Russia have shown the impact of weaponization of dollar by the US. Many countries are now looking to reduce dependence on US\$ to insulate their economies. (Refer EPIC November 2022 (click) for Trade Settlement in Rupee).

Demand for dollars by central banks

The US dollar's share in global foreign exchange reserves fell to its lowest level in 25 years in the fourth quarter of 2020, driven by exchange rates in the short term and central bank actions in the long term.

(currency composition of global foreign exchange reserves, percent)



Source: IMF. The share of US\$ in forex reserves has declined from > 70% in 1999 to ~60% in 2020. Euro's share has hovered ~20%.

What are the recommendations of RBI panel?

Short term recommendations

- Design and adopt a **standardised approach** for examining the proposals on **bilateral and multilateral trade arrangements** for **invoicing, settlement and payment in the rupee and local currencies**.
- Make efforts to enable rupee as an additional settlement currency in existing multilateral mechanisms such as the ACU.
- Encouraging opening of rupee accounts for non-residents both in India and outside India.
- **Integrating Indian payment systems** with other countries for cross-border transactions.

Asian Clearing Union (ACU)

It is a payment arrangement between Central Banks of **India, Bhutan, Bangladesh, Iran, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka** to settle payments mainly related to trade transactions **on a net basis**. This reduces the use of foreign exchange reserves and transfer costs. Settlements are done in Dollar, Euro, and Yen.

- **Recalibrating the foreign portfolio investor (FPI)** regime and rationalizing/harmonizing the extant Know Your Customer (KYC) guidelines.

Medium term recommendations

- A review of taxes on **Masala bonds**.
- International use of Real Time Gross Settlement (RTGS) for **cross border trade transactions** and inclusion of rupee as a direct settlement currency in the Continuous Linked Settlement (CLS) system.
- Examination of **taxation issues** in financial markets to harmonise tax regimes of India and other financial centres.

Long term recommendation

- Efforts should be made for **inclusion of the rupee in IMF's SDR** (special drawing rights) basket.

What are the benefits of Internationalization?

- **Exchange Rate Risk:** Internationalization limits (reduces) the exchange rate risk for local exporters and importers as the invoicing and settlement is done in their local currency. The **currency exchange risk shifts to foreign exporters and importers**.
- **Access International Capital:** Domestic firms can raise capital from foreign investors in local currency as foreign investors invest in instruments denominated in local currencies (e.g., a US investor buying a Rupee-denominated bond).
- **Domestic Financial Institutions:** Domestic Banks will attract customers globally and benefit in terms of greater revenue, profits etc. It will boost domestic financial markets.
- **Government Finance:** Government can finance budget deficit by issuing domestic currency debt in international markets rather than issuing foreign currency instruments. This **eliminates currency exchange risk** on foreign currency denominated debt.
- **CAD:** The Current Account Deficit can be financed by private capital flows from abroad, especially from the banking system, without having to spend official forex reserves.
- **Forex Reserves:** Internationalization of currency reduces the requirement of maintaining large forex reserves to manage balance of payments.
- **Capital Flows:** It reduces the vulnerability of domestic economy to fluctuations in foreign capital flows.

What are the macroeconomic risks?

- Internationalisation of a currency may result in a **potential increase in volatility of exchange rate** in the earlier stages.
- The country also faces **Triffin's Dilemma**, as the obligation to supply currency to meet global demand **comes in conflict with domestic monetary policy**.
- The country becomes **vulnerable to external shocks** due to free flow of funds.

Triffin's Dilemma

A country with international currency has to **ensure adequate supply of the currency** to meet the global demand. However, **issuing too much currency leads to domestic inflation**. The more popular the reserve currency is relative to other currencies, the **higher its exchange rate** and the **less competitive domestic exporting industries become**. This **causes a trade deficit** for the currency-issuing country. The US had a Current Account Surplus only once (in 1991) since 1981.

What are the challenges to internationalization of Rupee?

- The daily average share for the rupee in the global foreign exchange market is ~1.6%. India's share of global exports of goods is just about 2%. This reduces the necessity for other countries to hold rupees.
- Rupee is **not fully convertible in the capital account**. Capital account convertibility is necessary to ensure free flow of currency and its internationalization.

What should be the future course of action?

- The RBI should pursue a **deeper and more liquid rupee bond market** to enable foreign investors and Indian trade partners to have more investment options in Rupees.
- Indian exporters and importers should be **encouraged to invoice their transactions in rupee**. The trade settlement formalities for rupee import and export transactions should be optimised.
- Additional **currency swap agreements** (as with Sri Lanka) would further allow India to settle trade and investment transactions in rupees.
- **Tax incentives** must be given to foreign businesses to utilise the rupee in operations in India.
- The **Tarapore Committee's** (in 1997 and 2006) recommendations must be pursued including a push to reduce fiscal deficits lower than 3.5%, a reduction in gross inflation rate to 3%-5%, and a reduction in gross banking non-performing assets to less than 5%. Gradually, the rupee must be made **more freely convertible**. This would allow foreign investors to easily buy and sell rupee, enhancing liquidity and making it more attractive.

Initiatives for Improving Use of Rupee

- **Indo-Nepal Remittance Facility Scheme:** It was launched by RBI in May 2008 as an option for cross-border remittances from India to Nepal. The Scheme leverages the **NEFT ecosystem**.
- **Bilateral Swap Arrangements (BSA):** India has a BSA with Japan as a line of support in case of any balance of payments issue. Under the **SAARC swap agreement**, the requesting central bank can make withdrawals in Dollars, Euros and in Rupees.
- **GIFT City:** Gujarat International Finance Tec-City (GIFT City) has been set up as India's first **International Financial Service Centre (IFSC)**. It has the potential to develop as an **international financial centre for Rupee products**.
- **Indo-Iran Agreement:** An agreement has been signed between India and Iran for undertaking eligible **trade transactions using Rupee**.
- **Rupee as a Designated Foreign Currency in Sri Lanka:** This has paved the way for rupee-based bilateral trade between Sri Lanka and India.
- **Use of Indian Payment Infrastructure:** RBI is making efforts to increase the **global outreach of the UPI system to facilitate cross-border transactions**. Initiatives have also been undertaken to facilitate cross-border payments and personal remittances like the **Money Transfer Service Scheme**.
- **Other initiatives:** RBI has enabled **external commercial borrowings in Rupees**.
 - The Foreign Trade Policy (FTP) 2023, has proposed invoicing, and settlement of trade in Rupees.
 - RBI has permitted rupee settlement of external trade through **Special Rupee Vostro Accounts**. A total of 18 countries have been allowed to open SRVAs.

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6. Improving India's Pharmaceutical Manufacturing Competitiveness

News: India's Pharmaceutical Sector is 3rd largest in the world in terms of volume, but only 14th largest by value. Addressing the challenges faced by the sector can enhance its competitiveness globally.

What is the current status of India's Pharmaceutical manufacturing industry?

- At present, Indian Pharma **ranks 3rd in pharmaceutical production by volume**. Indian drugs are exported to ~200 countries in the world. The India pharma market is expected to reach US\$ 65 billion by 2024 and US\$ 130 billion by 2030.
- The sector **contributes 1.7% to India's GDP**.
- India is **3rd largest market for APIs globally with 8% share in the Global API Industry**. 500+ different APIs are manufactured in India.
- However, India pharma is only **14th largest by value**. Indian pharmaceutical industry is known for its **generic and low-cost medicines** globally. This indicates that **India's share in new drug development is very low**.
- This is attributed to **lower allocation of resources to R&D** and new drug development.

TOP FIVE PHARMACEUTICAL FIRM SPENDING ON R&D AND AVERAGES FOR SELECT COUNTRIES (2021)

	Average R & D spending (\$ Mn)	Average sales turnover (\$ Mn)	Average R & D intensity (%)
USA	10,800	59,600	18
Switzerland	5,070	24,500	21
Germany	3,000	25,100	12
UK	2,950	17,400	17
Japan	2,490	14,300	17
China	790	7,030	11
India	150	1,500	10
South Korea	130	1,200	11

Source: Business Standard. Pharma Companies in the US and Switzerland allocate much greater resources to R&D compared to India.

What are the challenges to pharma manufacturing in India?

- It is estimated that **~80% of the Indian Pharma Market APIs requirement is fulfilled by China**.

- The API manufacturing in India hasn't picked up despite the PLI scheme by the Government. Industry experts say that **manufacturing costs of APIs in India are ~20% higher than China** because of **higher costs of raw materials** (25-30% higher than China), **electricity** (20% expensive) and **financing, transportation, logistics** etc. (~30% more expensive).
- Experts have argued that **India's patent regime, long drug approval process, lack of clarity regarding rules for clinical trials** etc. have **hampered foreign investments** in the sector. (Refer EPIC June 2023 for Issues with the Drug Regulatory System in India).

What can be done to make Indian Pharma Sector more competitive?

- **Incentivise R&D:** The Government must provide incentives to pharma companies to increase spending on R&D and new drug development. This can be facilitated by initiatives such as **providing full tax credit** against income tax for **increases in R&D spending**, etc.

- **Regulatory Reforms:** Cumbersome norms have forced some Indian

Pharma companies to conduct trials in Australia. In Australia, trials are expensive but the process is simple, systematic and transparent. The process must be reformed to provide competitive advantage in drug discovery.

- **Public Research:** India invests only around 0.4% of GDP in **publicly funded R&D**. Government spending on healthcare research is only 6% of total Government spending on R&D. It comes 6th after Defence, Space, Atomic Energy, Agriculture etc. In the US, healthcare R&D (27% of total) comes 2nd after Defence. Government must raise the share of healthcare R&D and spur investments.
- **Human Resource:** Indian Pharma companies **struggle to hire researchers with advanced degrees**. In the US, the Universities are vital components in R&D; whereas in India, most research is undertaken in autonomous laboratories. **Integrating Universities in the research ecosystem** will increase availability of human resource for advanced research.
- **Learnings from China:** China has gotten ahead of India in pharma manufacturing. China undertook several regulatory reforms that **facilitated easier clinical trials, incentivized R&D** etc. The **Thousand Talents Programme** attracted experienced scientists to China. India should follow a similar approach.

Government's Initiatives for Pharma Industry

- > **Strengthening of Pharmaceutical Industry (SPI):** It has a total financial outlay of INR 500 crore and extends support required to pharma clusters and MSMEs to improve their productivity and quality.
- > **Umbrella Scheme for Development of Pharma Industry:** It includes sub-schemes for the development of Bulk Drugs, Medical Devices, Pharmaceuticals Industries along with Pharmaceutical Promotion and Development Scheme and Pharmaceutical Technology Upgradation Assistance Scheme.
- > **Promotion of Medical Devices Park Scheme:** Its objective is to create world class infrastructure facilities in order to make Indian medical device industry a global leader. It will facilitate easy access to standard testing and infrastructure facilities reducing cost of production leading to better availability and affordability of medical devices.
- > **PLI Scheme:** It has been launched to promote domestic manufacturing by setting up greenfield plants with minimum domestic value addition in multiple 'Target Segments' with INR 6,940 crore. In June 2021, the outlay was increased by INR 197,000 crore in 13 key sectors including APIs, Key Starting Materials (KSMs) etc.

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7. The Need for Reforms in the WTO

News: India and the US have resolved 6 long-standing disputes at the WTO during the PM's visit to the US. This is welcome, but it has brought attention towards the stalled WTO Dispute Settlement process.

What are the challenges facing the WTO?

- **Rise in Protectionism:** Slowdown in the global economy has given rise to protectionist policies like increasing tariffs on imports, ban on imports of certain goods from certain countries (e.g., the US-China

trade war), non-tariff barriers etc. Nations that championed free trade are indulging in similar policies like the US and the UK. Such policies go against the principles of the WTO.

- **Violation of Rules:** Economic policies of countries like subsidies, or local content requirements violate WTO Rules leading to frequent disputes. WTO member countries are obligated to **notify all trade-affecting laws and regulations**, but **compliance is poor**.
- **Dispute Resolution:** The Dispute Settlement System (DSS) has been rendered non-functional since 2019. In fact, it was considered 'crown jewel' of the WTO system due to its effectiveness since 1995. It has been non-functional due to lack of quorum of adjudicators to hear appeals (*Read more about Dispute Settlement System*).
- **Lack of Consensus:** Negotiations on a majority of critical issues remain stalled due to lack of consensus between the developed (US, EU, Canada, Australia, Japan etc.) and developing nations (India along with Global South). This includes issues like **Agriculture** (Level of subsidies, **Peace Clause** and Food security in developing countries), **Access to patented medicines**, **Special and Differential Treatment**, **Special Safeguard Mechanism** (SSM) etc. The negotiations have been stalled for long, with no consensus in the foreseeable future.
- **Plurilateral Agreements:** Lack of progress at WTO has led to plurilateral agreements like RCEP, Comprehensive Progressive Trans-Pacific Partnership (CPTPP). **Such agreements favour developed countries** as they have greater negotiating power at such platforms unlike WTO where all decisions are taken via consensus of all parties.
- **New Agenda:** Developed countries led by the US and the EU are pushing for inclusion of issues like **environment, labour laws, e-commerce** etc. in trade negotiations. Developing countries insist on resolution of basic issues like agriculture before including new items on the agenda.
- **Implementation Issues:** Developing countries maintain that they have had problems with the implementation of the agreements reached in the earlier Uruguay Round because of **limited capacity** or **lack of technical assistance**. They have not been able to realize certain expected benefits that they expected from the Round, such as increased access for their textiles and apparel in developed-country markets. They seek a clarification of language relating to their interests in existing agreements.

Special and Differential Treatment

It provides **special rights to developing countries** like **longer time periods for implementing Agreements**, safeguarding trade interests of developing nations, support to help developing countries build the capacity to carry out WTO work, handle disputes, and **implement technical standards** etc.

Special Safeguard Mechanism

It is a mechanism that allows developing countries to **increase tariffs** when **imports of agriculture products surge** or **entry of unusually cheap imports**. There is lack of consensus on the threshold levels for invoking SSM and its mechanism.

Peace Clause

It is an **interim measure** agreed in 2013 to address the issue of food subsidy and **food security**. It protects the developing countries from being challenged at the WTO if their **domestic trade-distorting food subsidies (stockholding programmes) breach the 10% limit** (of total value of production).

What should be done?

- India has been pitching for reforms in the global governance bodies including the WTO. It can utilize platforms like G20 to push for reforms in the WTO.
- The fault lines within the WTO are along the Developing-Developed nations divide. **Developed countries have to recognize the genuine concerns of the developing countries** like food security and safeguarding of domestic industries. The body should focus on resolving the critical issues like agriculture. Issues like labour laws and e-commerce should be taken up later.

- The **WTO Dispute Settlement System should be restored immediately** with the appointment of the arbitrators.
- WTO trade rules need to be modernised to reflect **shifts in global economic power and technological transformations**. Moreover, new rules are needed because trade barriers are no longer primarily about tariffs but increasingly concern **regulations and standards**.

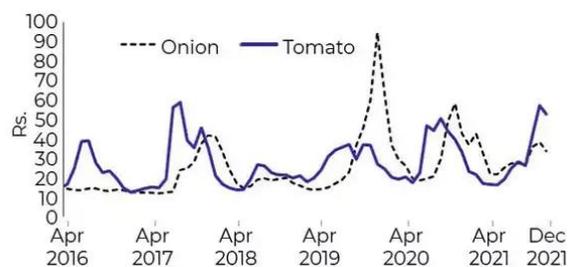
8. Volatility in Farm Prices of Perishables (Tomato, Onion, Potato (TOP))

News: The prices of tomatoes have skyrocketed, crossing INR 200/kg in some States. Large volatility in prices of perishable agri-commodities like onions and tomatoes is a regular phenomenon in India.

What are the reasons for price volatility?

- **Seasonality:** The prices of certain commodities tend to fall down drastically after the harvest season, and rise abnormally in the off-season e.g., onion prices fall in April-May and rise in September-October.
- **Regional Concentration:** The production of TOP is concentrated in a few States e.g., Onions are mainly sourced from Maharashtra, Madhya Pradesh and Karnataka. Regional concentration increases vulnerability of disruption in supply chains in case of external shocks.
- **Production Uncertainty:** TOP crop production face uncertainties due to unseasonal rainfall, pest attacks or diseases. Drop in crop yields reduces production, causing spike in prices.
- **Perishability:** Perishable nature of crops (particularly tomatoes) contribute to price volatility. Limited storage capacity and inadequate infrastructure (like cold storage), add to damage of harvested crops, raising prices.
- **Inelastic Demand:** Demand for onions and potatoes is largely inelastic as they are staple ingredient of Indian food palate. Their demand does not fluctuate much with price.

Retail prices of tomato and onion



Source: Indiatimes. Spike in prices of onion and tomatoes seems to be an annual phenomenon.

What are the effects of volatility in TOP prices?

- **Uncertainty in Income:** High volatility in prices lead to uncertainty in farm incomes. Farmers often sell their crops at unremunerative levels when prices tank. On multiple occasions, farmers are forced to dump their produce on roads when throwaway prices are offered to them (e.g., INR 1/kg for onion).
- **Benefit to Commission Agents/Middlemen:** A study in Economic and Political Weekly (EPW) had shown that while the farmers bear the brunt when prices fall, the benefits of exorbitant prices accrue to middlemen (and not to the farmers). Farmers are, thus, doubly hurt.
- **Supply Uncertainty:** Large volatility discourages farmers from growing the crop. As a result, there is uncertainty in the production and supply in the subsequent seasons. This further adds to the volatility.
- **Farm Distress:** All these factors ultimately add to farm distress and cause farm suicides.
- **Loss to Consumers:** Price volatility in TOP crops impact the poor and low income households the most, as spending on food forms a major chunk of their expenditure.
- **Global Impact:** India exported a record 25.25 lakh tonnes of onion in 2022-23. During shortage in India, the global prices tend to rise.

What should be done to address price volatility?

- **Infrastructure:** Government should invest more in creation of storage infrastructure especially in cold storage.

- Cold storage infrastructure can prolong shelf life of perishable crops and help mitigate spike in prices during lean season.
- **Stocking Limits:** Frequent government imposition of stocking limits on traders under the Essential Commodities Act may discourage private investment in cold storages. Government restraint on imposition of stocking limits can enable traders to maintain buffer stocks without the fear of frequent regulatory shifts.
- **Processing:** Processing of perishable crops like tomatoes into easily storable forms like purees, powders or dehydrated pieces can prolong usable life and help check price volatility.
- **Contract Farming:** Government can promote direct buying by organized retailers from Farmer Producer Organizations (FPOs) through contract farming. This can help increase the share of the consumer's rupee going to the farmers.
- **APMC Reforms:** There is a need for significant reform in the APMC mandis in terms of procedures and infrastructure. Government can undertake these reforms in a public-private partnership model, reducing commissions, and setting up private mandis for better efficiency.

Government Initiatives for Price Control of TOP

- > **Operation Greens (OG):** The Ministry of Food Processing Industries provides a transportation and storage subsidy of 50% for notified fruits and vegetables (including TOP crops) during periods of excess supply in the harvest season. This scheme helps reduce waste, manage supply, and stabilize prices.
- > **Market Intelligence and Early Warning System (MIEWS):** Through the MIEWS portal, the government tracks and monitors the price movements of TOP commodities. It enables the government to take quick actions in response to potential market disruptions.
- > **National Agriculture Cooperative Marketing Federation of India (NAFED):** NAFED assists in controlling price volatility by gathering, analyzing, and circulating information about the supply, demand, and pricing of agricultural produce.

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9. Chandrayaan-3 Mission: Salient Features and Significance

News: India's 3rd Mission to Moon, *Chandrayaan-3* has been successfully launched. The lander aboard the Mission is expected to land on the lunar surface later in August 2023.

What is Chandrayaan-3 Mission?

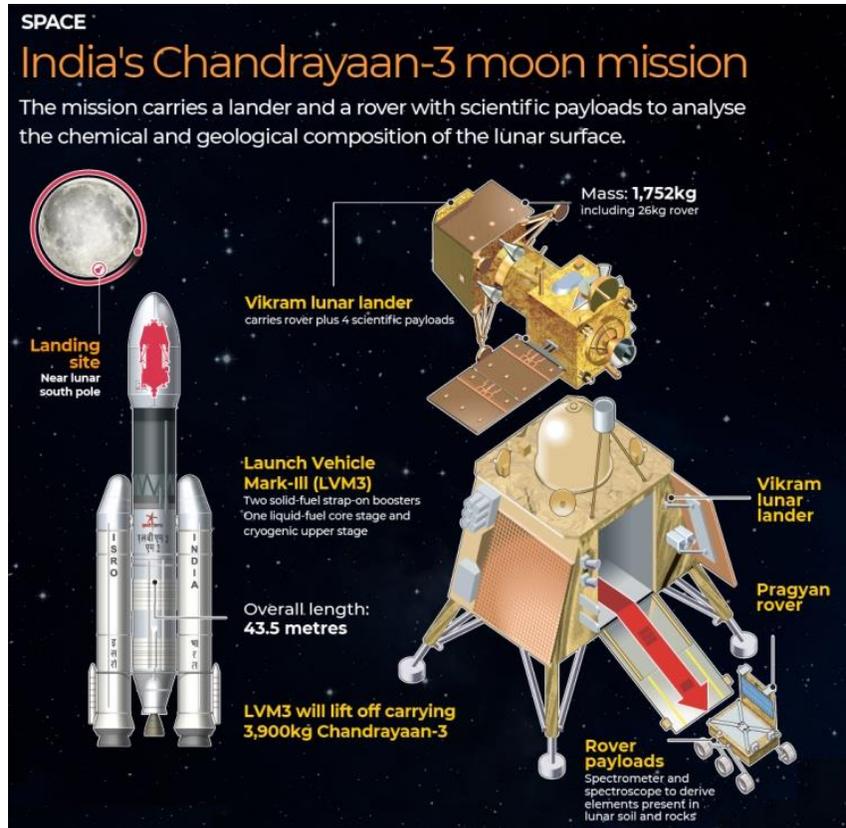
- It is follow-up to the *Chandrayan-2* mission. It has same 3 main objectives:
 - Demonstrating a **safe and soft landing** on the lunar surface.
 - Demonstrating the rover's capabilities on the moon.
 - Performing **in-situ scientific observations**.
- It has been be launched by Launch Vehicle Mark-3 (LVM-3) from Satish Dhawan Space Centre (SDSC), Sriharikota.
- It has 3 major modules: **Propulsion, Lander** and **Rover** Modules.
 - The **Propulsion module** will **carry the Lander and Rover** configuration till 100 km lunar orbit. A payload in the module will study the spectral and polarimetric measurements of Earth from lunar orbit.
 - The **Lander payloads** will measure thermal conductivity and temperature (ChaSTE) of lunar surface, seismicity around landing site (ILSA) and plasma density (Langmuir Probe) near the surface etc.
 - The Rover payload has an **Alpha Particle X-ray Spectrometer (APXS)** and **Laser Induced Breakdown Spectroscopy (LIBS)** for deriving the **elemental composition** in the vicinity of the landing site.

How is the mission different from Chandrayaan-2?

- Unlike *Chandrayaan-2* (lander, rover, and orbiter), *Chandrayaan-3* has only **lander and a rover**. Existing orbiter from *Chandrayaan-2* will be used for communication and terrain mapping purposes.
- ISRO adopted a '**failure-based design**' for *Chandrayaan-3* instead of a 'success-based design' of *Chandrayaan-2*. It means that ISRO's focus during the *Chandrayaan-3* mission was on identifying potential failure points and implementing safeguards to ensure a successful landing.

- Learning from Chandrayaan-2's failure, ISRO has **implemented several improvements:**

- **Landing Area:** The landing area has been expanded from 500m x 500m patch (Chandrayaan-2) to land anywhere between 4km x 2.4km area.
- **Strengthened Legs:** The legs of Chandrayaan-3 Lander have been strengthened to ensure safe landing and stability even at the speed of 108 km/hour.
- **More Fuel:** Chandrayaan-3 Lander is carrying more fuel to enhance the Lander's capability to make a last-minute change in its landing site, if the need arises.
- **Solar Panels:** The Chandrayaan-3 Lander has



- solar panels on 4 sides, instead of only 2 in Chandrayaan-2. It will enable the lander to continue harnessing solar power even if it lands in an incorrect orientation or experiences tumbling.
- **More Instruments:** Chandrayaan-3 incorporates additional navigational and guidance instruments to continuously monitor the speed of the lander and making any required corrections.
- **Updated Software:** Significant upgrades have been made to the **hazard detection** and avoidance camera, processing algorithm, and navigation and guidance software of Chandrayaan-3. Multiple layers of redundancies have been implemented to guarantee that **alternative systems are available in case of any failure or malfunction.**
- **Multiple Stress Tests:** The Lander has been subjected to multiple stress tests and experiments. ISRO created several kinds of test beds at one of its facilities to simulate lunar landing conditions.

What are the reasons for landing near South Pole?

- **Unexplored Region:** The polar regions have remain unexplored due to challenging terrain and environment. Chandrayaan-1 mission (2008) had indicated presence of ice molecules in the deep craters of the region.
- **Insights about Solar System:** The extreme cold temperatures in the polar regions of the moon preserves objects as they remain frozen and undergo minimal change over time. The rocks and soil in the Moon's south pole have the potential to **offer valuable insights into the early stages of the Solar System.**

Landing Near Lunar South Pole
Chandrayaan-3 will land near South Pole. All **earlier missions landed near equatorial region** which has smoother surface with less craters. Abundant sunlight ensures regular supply to solar-powered instruments. **Polar regions have numerous craters, with lack of sunlight and extremely low temperatures (-230°C).** This makes the operation more challenging.

- **Presence of Water:** The Moon's minimal axial tilt of 1.5° results in certain craters near the poles never receiving direct sunlight. These specific areas are referred to as **Permanently Shadowed Regions (PSRs)**. According to a 2019 NASA report, water can potentially exist for extended durations in PSRs, as **certain areas maintain sufficiently low temperatures to keep water stable at the surface**.

What is the significance of the Chandrayaan-3 Mission?

- **Gaganyaan:** The upcoming Gaganyaan mission will use a **human-rated** (thorough process to safely design, build and launch a crewed spacecraft) Launch Vehicle Mark (LVM). LVM-3's successful launch has demonstrated the reliability of the launch vehicle.
- **Shift in India's Space Programme:** The Chandrayaan and Mangalyaan signal a **shift in strategy**. Earlier, ISRO seemed focussed on **utilitarian objectives** like enabling telecommunications, telemedicine and tele-education, broadcasting, or setting up remote sensing satellites. Space and planetary exploration are gaining salience now.
- **Future Space Exploration:** The ability to make a **soft landing** on a planetary body is a crucial technology which can impact ISRO's ability to carry out other scientific missions to the moon. The US **Artemis programme** significantly expands the scale of future exploration including construction of permanent structures on the Moon. India aspires to become a significant partner in these endeavours.
- **Space-tech Ecosystem:** The successful launch of Chandrayaan-3 will bolster investor confidence and **attract more private investment** in space technology. This will expand Space economy in India. (Refer EPIC May 2023 (click) for India's Space Policy, 2023 and EPIC August 2022 (click) for Space Economy in India).

10. Climate Justice: Meaning and Challenges

News: The UN General Assembly (UNGA) recently passed a resolution asking the International Court of Justice (ICJ) to evaluate options under international law for suing countries failing to meet their climate obligations. Climate Activists are calling the passage of resolution as the first step to ensure climate justice.

What resolution has been passed by the UNGA?

- The resolution was sponsored by the small Pacific island nation, Vanuatu. The resolution seeks **ICJ's advisory opinion on legal consequences for States that are responsible for climate change**, that has particularly affected Small Island Developing States (SIDS).
- The resolution will make it easier to hold **polluting countries legally accountable for failing to tackle the climate emergency**.
- According to UNGA, the resolution will **provide clarity to states on their obligations** under international law to protect their people from impacts of climate change.
- The resolution has focused on the missing **historical responsibility** of countries, which are primarily responsible for the accumulation of greenhouse gases in the earth's atmosphere.

What is the significance of the Resolution?

- The **advisory opinion of the ICJ is not legally binding on countries**, but it will carry a **moral weight**.
- The resolution reflects frustration of international community especially SIDS with the current status of climate negotiations and action.
- The advisory could push countries to adopt climate justice in their legal frameworks similar to the UN Declaration of Human Rights.
- In future, opinion of ICJ may also be used for **putting blame on India** as India's emissions will inevitably rise in future, despite vigorous efforts to cut down the emissions. India should proactively present its

views before the ICJ and highlight the lack of climate finance and technology transfer by the developed nations.

What is the meaning of Climate Justice?

- Climate justice is a term used for **framing climate change as an ethical and political issue**, rather than only as an environmental or physical phenomenon.
- ‘Climate Justice’ acknowledges climate change can have differing social, economic, public health, and other adverse impacts on underprivileged and marginalized populations. The **impacts of climate change are not borne equally or fairly**, between rich and poor, women and men, and older and younger generations.
- Pursuing climate justice means **addressing social, gender, economic, intergenerational and environmental injustice**. All these dimensions are closely inter-related and need to be addressed holistically.
- Advocates for climate justice are striving to have these inequities addressed through long-term mitigation and adaptation strategies.

Summarising Climate Justice Under 4 Types of Justice

Procedural	<ul style="list-style-type: none"> • Fair, accountable, and clear ways to make decisions about the effects of climate change. • This can be ensured by due process, public participation, and representative justice.
Distributive	<ul style="list-style-type: none"> • How costs and benefits of climate change are shared. • Its main aspects are identifying goods to be distributed, identifying stakeholders among whom to be distributed and identifying the mode of distribution.
Recognition	<ul style="list-style-type: none"> • Identifying vulnerable sections who may be worse-off with transition to low-carbon economies. • It emphasises understanding differences alongside protecting equal rights for all, especially given uneven capacity to defend rights.
Inter-Generational	<ul style="list-style-type: none"> • Recognized in the Brundtland Report 'Our Common Future' • Conceived of sustainable development as being about the ability of current generations to meet their needs without compromising the ability of future generations to meet their own needs.

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What are the pillars of Climate Justice?

The Center for Climate Justice (University of California) has identified **6 Pillars of Climate Justice**:

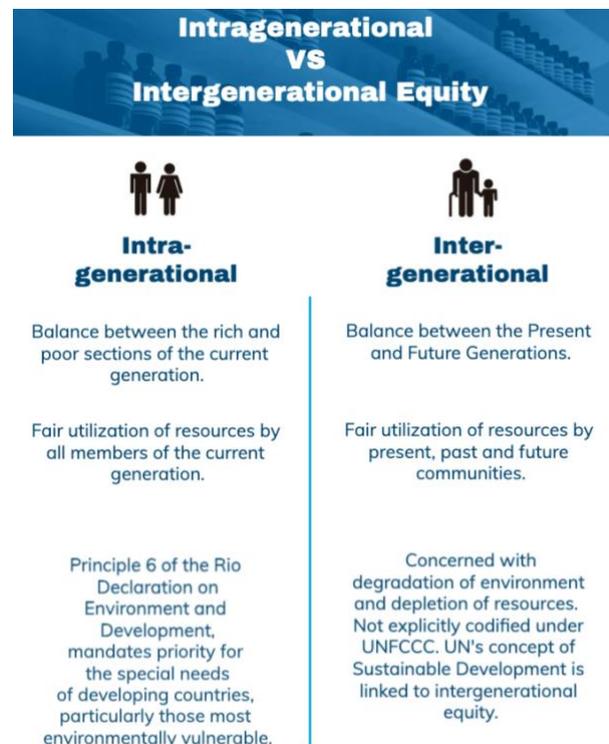
- **Just Transition**: A just transition represents the transition from fossil fuel-based economies to **equitable, regenerative, renewable energy-based systems**.
- **Social Racial and Environmental Justice**: It recognizes the disproportionate impacts of climate change on low-income and poor communities around the world, the people and places that are least responsible for the problem.
- **Indigenous Climate Action**: Indigenous communities are deeply reliant on their surrounding ecosystems for their lives and livelihoods. Indigenous Peoples are leading efforts in climate change mitigation and adaptation across the globe **Climate Action should acknowledge their knowledge and role**.
- **Community Resilience and Adaptation**: Community resilience and adaptation must be viewed from a perspective of social justice and equity. This would inspire models such as **food sovereignty, common property forest management, and energy democracy**. It would support local communities in **developing their own solutions** and allow them to benefit directly from local climate action.
- **Natural Climate Solutions**: Natural climate solutions take a systems approach and include regenerative farming, agroforestry, permaculture, urban gardens, and forest restoration. They are more effective and economical in addressing climate change.
- **Climate Education**: Climate education and engagement is fundamental to addressing the root causes of climate change. A populace better educated about climate justice will fully understand why viewing climate change from a social justice and equity perspective is the best hope for solving the climate crisis.

What are the challenges in ensuring Climate Justice?

- **Gradual Dilution of Common but Differentiated Responsibilities (CBDR):** Article 3 of the UNFCCC recognizes the principle of CBDR. It is based on differences between developed and developing countries in terms of their **current circumstances and historical contributions**. However, developed countries keep on pushing for higher commitments by developing countries e.g., Western nations pushed for 'phase-out' of coal at Glasgow 2021 (before agreeing for 'phase-down'). Coal is a cheap source and phasing-out of coal imposes big costs on developing countries.
- **Avoidance of Binding Targets:** The Nationally Determined Contributions (NDCs) under the Paris Agreement are **not binding and legally enforceable**. Kyoto Protocol had binding targets for developed countries but it has been non-functional. Developed countries by avoiding binding targets have reneged on their responsibility owing to historical contributions.
- **Shortfall in Climate Finance:** Despite their pledge, the developed countries have failed to provide US\$ 100 billion per year for Climate Finance. IPCC estimates that US\$ 1.6–3.8 trillion are required annually to avoid warming exceeding 1.5°C.
- **Lack of Capacity:** Poor and vulnerable sections **aren't aware of their rights, lack capacity to mobilize** as a pressure group, and **lack resources and political capital to induce policies** in their favour. Similarly, SIDS and Least Developed Countries (LDCs) lack strength (economic and military strength) at international level to get their concerns addressed.

How can Climate Justice be ensured?

- The intragenerational equity can be addressed through a **predictable and assured Climate Finance**. There should be **binding targets for developed countries** to provide funding to vulnerable countries, commensurate with their historical contributions.
- The Climate Finance can be **augmented by technology transfer** to the developing nations and accelerating their transition to low-carbon economies.
- 'Climate-induced Disasters' are becoming the 'new normal'. **Climate Justice concerns should be mainstreamed into disaster relief efforts**. Loss and Damage Fund should recognize principles of Climate Justice and **should provide relief without any conditions**.
- Developed countries, recognizing their historical responsibility, should take **binding targets in reducing their emissions**. This may require reforming the UNFCCC to make it **equity-sensitive and justice-oriented**.
- Developing countries should also focus on **ensuring intra-generational equity within their own societies**. They should take steps for climate education and engagement. Vulnerability of the poor sections to climate disasters should be reduced.



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Factly

Polity

1. Power of a Governor to Dismiss a Minister

News: The Governor of Tamil Nadu had dismissed a Minister in the Council of Ministers without a recommendation by the Chief Minister. The decision was retracted later.

About the Power of the Governor to Dismiss a Minister

- Under **Article 164**, the Chief Minister is appointed by the Governor, without any advice. The Council of Ministers (CoM) is appointed by the Governor on the **advice of the Chief Minister**.

Article 164(1)

The Chief Minister shall be appointed by the Governor and the **other Ministers shall be appointed by the Governor on the advice of the Chief Minister**, and the Ministers shall hold office **during the pleasure of the Governor**.

- The Ministers hold the office at the **pleasure of the Governor**. However, in the constitutional arrangement, the **Governor is a Constitutional Head and acts only on the aid and advice of CoM**.
- This arrangement is different from the colonial system under the **Government of India Act, 1935 where the Governor had absolute discretion**. During the Constitutional Assembly debates, some members have argued to extend the same provisions in the Constitution. **Dr. Ambedkar had clarified that the governor under the Constitution has no executive function to perform independently and should always act on the aid and advice of the Council of Ministers**. The pleasure of the Governor in independent India is not the same as that of the Colonial Governor.
- So, the Governor can dismiss a Minister only on the advice of the Chief Minister.
- In **Shamsher Singh and Anr vs State Of Punjab (1974)**, the SC held that the President and Governor are **custodians of all executive and other powers** under various Articles. They shall exercise their **formal constitutional powers** in accordance with the **advice of their Ministers** except in under few circumstances mentioned in the constitution.
- In **Nabam Rebia vs Deputy Speaker (2016)**, a Constitution Bench of 5 judges 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)**. (Refer EPIC January 2023 (click) for Issues Related to the Office of Governor).

Article 163(1)

There shall be a Council of Ministers with the Chief Minister at the head to **aid and advise the Governor in the exercise of his functions**, except in so far as he is by or under this Constitution required to **exercise his functions or any of them in his discretion**.

2. Transparency in Judicial Appointments

News: The Supreme Court has made public the criteria for selection of Judges to the higher Judiciary.

Criteria Considered by the SC Collegium

- **Seniority:** The Collegium considers the seniority of Chief Justices and senior puisne Judges in their respective parent High Courts as well as overall seniority of the High Court Judges. The criteria of seniority is subject to **merit and integrity**.
- **Merit and Quality of Judgments:** It is the primary concern of the Collegium. The past judgments by Judges under consideration are circulated among the members of the Collegium. The **Centre for Research & Planning of the Supreme Court** prepares a compilation of relevant background material to

assist the Collegium. A **Judgment Evaluation Committee** goes through the judicial work of the candidates. The judgments are graded, with the very best receiving an 'outstanding' grade. The merit

- **Diversity and Inclusion:** It includes:
 - Representation of High Courts, which are not represented or inadequately represented, in the SC.
 - Gender diversity.
 - Appointment of persons from marginalised and backward segments of society;
 - Representation of minorities. (Refer EPIC June 2022 (click) for Judicial Accountability in India).

3. Guidelines for Designation of Senior Advocates in the SC

News: The Supreme Court has issued new guidelines on designating lawyers as 'Senior Advocates' in the SC.

About the New Guidelines

Committee for Designation of Senior Advocates

- All matters relating to the designation of Senior Advocates in the SC shall be dealt with by a **Permanent Committee**. It will be composed of:
 - Chief Justice of India as Chairperson.
 - Two senior-most Judges of the Supreme Court of India.
 - Attorney General for India.
 - A member of the Bar, nominated by the Chairperson and Members.
- The committee will meet twice a year. The Committee shall have a permanent Secretariat.
- The composition of the Secretariat will be decided by the Chief Justice of India in consultation with the members of the Committee.

Senior Advocate

Section 16 (2) of the **Advocates Act, 1961** allows an advocate to be designated as a Senior Advocate if (s)he consents to it and if the Supreme Court or a High Court is of opinion that by virtue of his ability, (s)he is deserving of such distinction.

Eligibility

- The candidates need to be **at least 10 years standing as an Advocate or 10 years combined standing as an Advocate and as a District and Sessions Judge** or as a Judicial Member of any Tribunal in India to be designated as Senior Advocates at the SC.
- They must practice mainly in the Supreme Court but advocates with domain expertise of practising before specialized Tribunals may be given concession.
- The age limit for applying for the designation of Senior Advocate is **45 years** unless the age limit is relaxed. The age limit can be relaxed by the Committee.

Role of Secretariat

- The Secretariat of the Committee shall initiate the process for designation of Senior Advocate **at least once every year** by inviting applications from Advocates-on-Record/Advocates.
- The Committee will examine each application on the basis of the data provided by the Secretariat and make its overall assessment on the basis of a **point-based format**. The points will be given to the advocate based on **years of practice, pro-bono work undertaken, judgements, publications** and a **personality test**.
- The Committee may short-list the number of candidates to be selected for **interview by the Full Court comprising all judges**.

Indira Jaising vs Supreme Court of India (2017)

Indira Jaising, India's 1st woman Senior Advocate, had filed a petition calling for greater transparency in the designation process. She had challenged the then existing process as 'opaque', 'arbitrary' and 'fraught with nepotism'. The SC had released the guidelines in 2018 that included creation of the permanent Committee and permanent Secretariat.

4. Madras High Court Judgment Regarding Article 355

News: The Madras High Court has held that the High Courts do not have power under Article 226 to issue a direction to the Union Government to invoke Article 355.

About the Case

- A petition was filed in the Madras High Court seeking orders to invoke Article 355 in Tamil Nadu in the wake of alleged failure to maintain public peace during the search and arrest of a Minister.
- The petitioner sought an order from the High Court to the secretary to the Governor to forward a representation to the President's office to invoke Article 355 so that the Centre could intervene in the affairs of the State Government.

Article 355

It shall be the duty of the Union to protect every State **against external aggression** and **internal disturbance** and to ensure that the **government of every State is carried on in accordance with the provisions of this Constitution.**

About Madras HC Judgment

- The High Court dismissed the petition. The HC said that the **High Courts do not have the power to issue directions to the Centre** to invoke Article 355 of the Constitution as it is **part of the policy decision** on the part of the Executive. Any direction would be in **violation of separation of powers**.
- The Court noted that the Article 355 appeared to have been inspired both by the **Constitutions of the US and Australia** which empower the federal government to “maintain” the Constitution. The underlying principle was to ensure that the Centre would interfere in the administration of provincial affairs by and under a Constitutional obligation.
- The Court held that the incident of Income Tax officials being mobbed would not qualify as an internal disturbance under the purview of Article 355.
- The HC Bench said that the expression internal disturbance could only refer to a sense of **domestic chaos**, and that it would require **a case of large scale public disorder** which ‘**throws the administration out of gear**’ and endangers the security of the State.

5. Karnataka High Court Judgment in Twitter Case

News: The Karnataka High Court has delivered its judgment in *X Corp. v. Union of India*.

About the High Court Judgment

- Twitter Inc. (now X Corp.) had challenged the validity of orders requiring blocking of accounts on Twitter, issued by the Union Government.
- The HC ruled that Twitter, as a **foreign entity, could not invoke the constitutional guarantee of free speech and expression on behalf of its users**.
- It imposed a fine of INR 50 lakh on Twitter for indulging in ‘**speculative litigation**’ despite not complying with the blocking orders for a long period.
- **Section 69A of the Information Technology Act, 2000**, empowers the Government to issue blocking orders in cases of emergency on the grounds like sovereignty and integrity of India, public order, friendly relations with foreign States among others. The IT Rules, 2009 lay down the procedure.
 - The provisions were challenged in the SC in **Shreya Singhal vs Union of India (2015)**. The SC had upheld the Section 69A and the Rules observing that **sufficient procedural safeguards were embedded**, such as provision of recording a reasoned order, and providing notice to the intermediary and the originator whose content was sought to be blocked.

- The Karnataka High Court has held that observations in *Shreya Singhal* **cannot be construed to mean providing notice to the users of the content**, and that even if reasons are recorded in writing, they may not be conveyed to the user.
- The HC held that claims of users whose tweets or accounts were blocked could not be espoused by Twitter and that none of the affected users had approached the High Court.

Issues with the Judgment

- The HC's decision will potentially **encourage account-level blocking rather than the removal of specific tweets, links, or URLs deemed harmful** to public order or national security.
- It will have implications for freedom of speech and expression in the context of social media platforms.
- It also raises questions about the **rights and obligations of large media companies in relation to user-generated content**. A definitive verdict from the Supreme Court may be needed to clarify these issues.
- The Karnataka HC's judgment **erodes the principles of natural justice** which dictate for the affected party should be allowed to present their case to the best of their abilities.

6. ADR Report on Donation to Political Parties

News: Association of Democratic Reforms (ADR) has released a report titled 'Analysis of Donations to Registered Political Parties from 2016-17 to 2021-22.'

Key Findings of the Report

- The report analyses donations from anonymous **Electoral Bonds**, direct donations from corporate houses and other donations from sources such as from MPs/MLAs, contributions from meetings and contributions from *morchas* and collection by party units.
- The total donations received by the 31 political parties (7 National, 24 Regional) analysed during the 6-year period was **INR 16,437.635 crore** out of which **55.90% was from Electoral Bonds**, **28.07%** was received from the **corporate sector** and 16.03% from other sources. Electoral Bonds remain the most common mode for making contributions followed by corporate donations.
- The total donations declared by the **7 National Parties** from Electoral Bonds, corporate sector and other donations between 2016-17 and 2021-22 were **Rs 13,190 crores** (80.247% of INR 16,437 Cr.). For National parties, there was a **743% increase in donations from electoral bonds** between 2017-18 and 2021-22 and ~48% for corporate donations.
- The **Electoral Bond Scheme 2018** was introduced for the purpose of electoral funding. The Finance Act 2017 removed the previous limit of 7.5 % of the company's average 3-year net profit for political donations. (Refer EPIC September 2022 (click) for Issues in Electoral Funding in India).

Politics and money

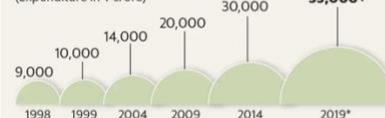
In 2018, the NDA government introduced a new mode of political funding, the electoral bonds, which was tipped by it as a key reform for 'cleaning up'. But the new system has met with criticism from opposition parties as well as transparency activists.

₹6,129 cr Total funds raised through electoral bonds for political parties so far since its introduction (12 tranches)

According to a report by Centre of Media Studies titled *Poll Expenditure, The 2019 Elections*, the last general elections were the 'most expensive ever, anywhere'. A look at its key findings:

Estimates of poll spending between 1998-2019

(Expenditure in ₹ crore)



10-12% voters acknowledged getting cash directly

TWO-THIRDS of them said they are aware other voters also received cash

NEARLY ₹100 crore spent per Lok Sabha constituency

₹700 spent per vote by political parties and independents

Estimates of expenditure in 2019 (in ₹ cr)



*Estimate includes expenditure on assembly elections held in 2019. Source: Centre for Media Studies report 'Poll Expenditure, The 2019 Elections'

Source: Mint. Data related to the 2019 General Elections. INR 55,000 crore were spent by political parties. ~50-60% spending is done directly on voters or on campaigning and publicity.

7. Delimitation in Assam

News: Election Commission of India (ECI) has released a draft delimitation document for Assam, proposing a change in boundaries of several Lok Sabha and Assembly Constituencies.

About Delimitation in Assam

- The slated delimitation process was done in the rest of the country in 2008. But it was deferred in Assam (as well as some other North-eastern states) citing security concerns.
- A 2020 notification from the Law Ministry officially revived the exercise in Assam. Following that, in December 2022 the EC announced that it would initiate the Delimitation exercise.
- The number of seats (126 Assembly and 14 Lok Sabha) have been retained. But the EC has proposed changes in several other areas, such as:
 - Assembly seats reserved for SCs have been increased from 8 to 9, and STs from 16 to 19.
 - Districts with autonomous councils (administered under the Sixth Schedule of the Constitution) get more seats: 1 assembly seat increased in West Karbi Anglong District; 3 assembly seats increased in the Bodo Territorial Region.
 - Kaliabor Lok Sabha constituency has been renamed to 'Kaziranga'.

Delimitation in the Constitution

- **Article 82** of the Constitution requires re-adjustment of allocation of seats to the States and the division of each State into territorial constituencies **after every Census**.
- The Parliament is empowered to enact a law in this regard.
- The **Delimitation Commissions** have been constituted 4 times
 - 1952 (Delimitation Commission Act, 1952)
 - 1963 (Delimitation Commission Act, 1962)
 - 1973 (Delimitation Act, 1972)
 - 2002 (Delimitation Act, 2002)
- In 1976, the 42nd Constitutional Amendment **froze the delimitation process until 2001**. This freeze was **extended till the first census after 2026** (i.e., Census 2031) by the 84th Amendment Act in 2002.
- The number of seats were frozen as a **measure to boost family planning norms** and to enable the State Governments to **pursue the agenda of population stabilisation**.
- In 2002, Delimitation Commission was set up (based on the 2001 Census) to readjust the boundaries of existing Lok Sabha and Assembly seats and rework the number of reserved seats. There was **no change in the number of seats**.

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Criticism of the Delimitation Exercise

- The Bengali-origin Muslim community of the State has opposed the draft, alleging that it deprives them politically.
- The opposition parties had raised concerns about the use of 2001 Census data instead of the more recent 2011 Census records for delimitation. (Refer EPIC March 2023 (click) for Supreme Court Upholds the Constitution of the J&K Delimitation Commission).

8. Supreme Court's Judgment Regarding Tenure of Enforcement Directorate Chief

News: The SC has ruled that the 3rd extension to the ED Chief was illegal and in violation of its 2021 judgment.

About the SC Judgment

- The present ED Director was appointed in 2018 for a 2-year term. However, his tenure has been extended 3 times, in 2020, 2021 and 2022.
- The Parliament had passed **The Central Vigilance Commission (Amendment) Bill, 2021** and **Delhi Special Police Establishment (Amendment) Bill, 2021** that provide that the tenure of ED and CBI chiefs could be extended by up to 3 years after the mandated term of 2 years.
- The Supreme Court has said that the consecutive service extensions granted to the ED Chief in 2021 and 2022 as illegal. The SC ordered the present ED Chief to resign.
- The Supreme Court **upheld as constitutional the amendments** made to the **Central Vigilance Commission Act, 2003** and **The Delhi Special Police Establishment Act, 1946**. The Parliament has the

right to modify laws to extend the tenure of positions like the ED and CBI chief. While, the Parliament has the authority to change the laws, it should not be done randomly or without good reason.

- The Court referred to the need to exercise self-imposed limits while undertaking judicial review of legislative or executive actions. It said that the legislative enactment can be struck down only on 2 grounds:
 - The appropriate legislature does not have the **competence to make the law**.
 - It **takes away or abridges any of the Fundamental Rights** enumerated in Part III of the Constitution or any other Constitutional provisions. (Refer EPIC August 2022 (click) for Supreme Court's Judgment on Prevention of Money Laundering Act (PMLA)).

9. Singing of National Anthem: SC Judgments

News: 11 persons in J&K were detained for not rising for the National Anthem at an event.

SC Judgments Related to Singing of National Anthem

Bijoe Emmanuel & Ors vs State Of Kerala & Ors. (1986)

- The case involved the 3 children from the **religious group Jehovah's Witnesses**.
- They had refused to participate in singing the National Anthem at their school and were expelled.
- The SC held that **forcing them to sing the Anthem violated their fundamental right to religion under Article 25 of the Constitution**.

Prevention of Insults to National Honour Act, 1971

Section 3 of the Act prescribes **jail up to 3 years** and/or a fine for intentionally preventing the singing of the National Anthem or causing disturbance to any assembly engaged in such singing.

- The SC stated that Article 25 was incorporated in recognition of the principle that the *“real test of a true democracy is the ability of even an insignificant minority to find its identity under the country's Constitution”*.
- The SC held that standing up respectfully for the National Anthem but not singing it does not constitute an offence **under the Prevention of Insults to National Honour Act, 1971**.

Shyam Narayan Chouksey vs Union of India (2018)

- The SC initially passed an interim order in 2016 that “all the cinema halls in India shall play the National Anthem before the feature film starts and all present in the hall are obliged to stand up to show respect to the National Anthem”.
- However, in its final judgment in 2018, the Court modified its interim order. The SC held that the extent that **playing of the National Anthem** prior to the screening of feature films in cinema halls is **not mandatory, but optional or directory**.

10. High Courts' Observations Regarding POCSO Act and Age of Consent

News: High Courts of Madras and Bombay have made several observations regarding the POCSO Act and rising cases against consensual sex by adolescents.

Observations by the High Courts

- Madras High Court remarked that the **cases involving consensual sex between adolescents should be distinguished from cases of actual abuse**. Cases against consensual sex must be quashed if proceedings are found to be **against adolescents' interest**. The Protection of Children from Sexual Offences (POCSO) Act and the Juvenile Justice Act, should be reviewed.

- The Bombay High Court also expressed concern regarding rising cases under the POCSO Act. The Court said that the **age of consent, at 18 years, in India is probably one of the highest ages globally**, as majority of countries have set the age of consent between 14 and 16 years.
- The Bombay HC said that, **“Sexual Autonomy encompasses both, the right to engage in wanted sexual activity and right to be protected from unwanted sexual aggression. Only when both aspects of adolescent’s rights are recognized, human sexual dignity can be considered to be fully respected”**.
- **“Age of consent has to be necessarily distinguished from age of marriage as sexual acts do not happen only in the confines of marriage; and not only the society, but the judicial system must take note of this important aspect”**.

‘Age of Child’: Varying Ages under Different Acts

United Nations Convention on the Rights of the Child, 1989: 18 Years (India is a signatory).

POCSO Act, 2012: 18 years.

Child Labour (Prohibition and Regulation) Act, 1986: 14 years.

Plantation Labour Act (1951): Child 14 years, Adolescent 14-18 years, Adult > 18 years.

Motor Transport Workers Act, 1961: 14 years.

Beedi and Cigar Workers Act, 1966: 14 years.

Prohibition of Child Marriage Act, 2006: Male 21 years, Female 18 years.

Delhi High Court Judgment: Age of puberty for Muslim girls.

Issues involved with criminalization of consensual sex

- It negatively impacts family relationships. According to data from the National Crime Records Bureau (NCRB), “family problems” and “love affairs” are the **main causes of suicides among individuals under 18**.
- The Chief Justice of India has recently urged the **Parliament to reconsider the age of consent**. He highlighted the importance of adolescent health care, stating that teenagers should not be overly burdened by the law. It results into humiliation of both the accused and the survivor during investigations.

11. Nari Adalats

News: The Union Government will soon set up women-only courts called *Nari Adalats*.

About Nari Adalats

- *Nari Adalats* will be set up at the village level as an **alternate dispute resolution** forum for resolving issues like domestic violence, property rights and countering the patriarchal system.
- It will also **raise awareness about social schemes** under the Government and collect feedback to **enhance the effectiveness of these initiatives**.
- It will be launched on a pilot basis in 50 villages each in Assam and J&K and would be extended to the rest of the country over the next 6 months.
- The initiative is being implemented by the **Ministry of Women and Child Development** under the **Sambal** sub-scheme of **Mission Shakti**. The implementation will be done in collaboration with the **Ministry of Panchayati Raj**, the **Ministry of Rural Development** and **Common Service Centers** operated by the Ministry of Electronics & Information Technology (MeitY).
- The scheme takes inspiration from the **Parivarik Mahila Lok Adalats** which were run by the **National Commission for Women (NCW) till 2014-15**.
- The *Nari Adalat* of each village would have 7-9 members/*Nyaya Sakhis* [legal friends]. Half of the members would be the elected members of the gram panchayat. The other half would be women with social standing like teachers, doctors and social workers, nominated by the villagers.
- The head of *Nari Adalat* called the *Mukhya Nyaya Sakhi* [chief legal friend] will be chosen among the *Nyaya Sakhis*, generally for a 6-month term.

- The **Nari Adalat will not hold any legal status** as its primary focus will be on **reconciliation, grievance redressal** and **creating awareness of rights and entitlements**.

12. Accreditation of the NHRC

News: The Accreditation of the National Human Rights Commission has been deferred for a year.

About the Deferment of NHRC Accreditation

- The **Global Alliance for National Human Rights Institutions (GANHRI)** is responsible for reviewing and accrediting National Human Rights Institutions in compliance with the **Paris Principles** every 5 years.
- The NHRC had got 'A' status of accreditation for the first time in 1999. Later it was retained in 2006 and 2011. It again got A status in 2017 after the accreditation was deferred in 2016.
- The latest review was due in March 2023, but has been deferred for a year.
- The subcommittee has recommended advocating with the Government and Parliamentarians for certain legislative amendments to **improve compliance with the Paris Principles**. In 2016, the GANHRI cited the appointment of political representatives and failure in ensuring gender balance and pluralism in NHRC staff among its reasons for the deferment.
- Without the accreditation, the **NHRC will be unable to represent India at the UN Human Rights Council**. However, the GANHRI has only deferred the process for a year. It is not a final decision for 5 years.

Paris Principles, 1991

The Paris Principles are related to the development of standards for **national human rights institutions across the world**. The 6 principles require a country's human rights agency to be **independent of the government** in its structure, composition, decision-making and method of operation.

Policy

1. Performance Grading Index (PGI) 2.0

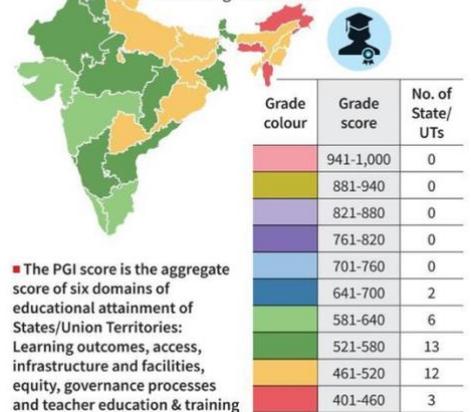
News: The Union Ministry of Education has released a report on Performance Grading Index 2.0 for States and UTs for 2021-22.

About Performance Grading Index

- The Performance Grading Index is prepared by the Department of School Education & Literacy, Ministry of Education. It was first released for the year 2017-18.
- It assesses the **performance of the school education system** at the State/UT level. The Index comprises total weightage of 1000 points across **73 indicators**, grouped under **2 Categories: Outcomes** and **Governance & Management**. These categories are further divided into **6 domains: Learning Outcomes (LO), Access (A), Infrastructure & Facilities (IF), Equity (E), Governance Processes (GP) and Teacher Education & Training (TET)**.
- The Index score is classified into **10 grades**. The highest achievable Grade is **Daksh**, for State/UT scoring more than 940 points (total 1000 points). The lowest grade is **Akanshi-3** which is for a score up to 460. The other grades are **Utkarsh, Ati-uttam, Uttam, Prachesta - 1, 2 and 3, Akanshi - 1, 2 and 3**.

Grading education

None of the States/Union Territories attained the highest grade (941-1,000) in the Performance Grading Index. The top-most grade was achieved by only two States/Union Territories, Punjab and Chandigarh, in the range of 641-700



Key Findings of Performance Grading Index 2.0

- None of the States/UTs has attained the highest Grade (*Daksh*).
- Only Punjab and Chandigarh have attained Grade *Prachesta-2* (score 641-700).
- The 3 poorest performing States/UTs *Akanshi-3* are Arunachal Pradesh, Meghalaya and Mizoram.
- 121 districts were graded as *Ati-Uttam* for 2020-21. This number fell by more than half in 2021-22 with just 51 districts making the grade.
- Among the best-performing districts in 2020-21, the maximum are from Rajasthan (26) followed by Gujarat (22) and Punjab (19).
- In the digital learning domain during 2021-22, the majority of districts are still in the bottom 3 grades indicating the need for boosting the digital learning aspect.

2. Using NIRF Rankings to Improve Higher Education Institutions (HEIs)

News: The NIRF Rankings 2023 were released in June 2023. Same set of institutions continue to top the rankings. The findings of the rankings can be used to improve the performance of other HEIs.

Findings of NIRF Rankings

- The rankings highlight a **disparity in the research and academic output** across HEIs. A small number of top-ranked HEIs produce a significant proportion (~60-70%) of highly cited publications (HCPs).
- The surveyed institutions represent only a fraction of the Indian HEI ecosystem, with over 35,000 institutions (~90%) remaining unexplored. This indicates that a **vast majority of HEIs may not be contributing significantly to knowledge or skills development**.
- Most Indian HEI graduates **lack employability skills** and require extensive retraining to become employable.
- With the exception of a few prominent HEIs, the majority of top-tier institutions in the country have **little international standing**. (Refer EPIC June 2022 ([click](#)) for *Issues in India's Higher Education Institutions and Universities*).

Improving HEIs

- **Recruitment:** The current system of faculty recruitment is opaque and alleged to be biased and slow. It should be replaced with a more **objective and transparent evaluation method**. Additionally, HEIs should establish a system of **incentives and disincentives** to encourage excellence in faculty performance.
- **Accountability:** The regulators and funders need to **enforce strict accountability by linking funding to performance**. Leading universities should be **subjected to higher standards of accountability**.
- **Other Policy Measures:** It is necessary to implement an exit or consolidation policy for HEIs, allow the entry of for-profit HEIs, including foreign universities, and grant colleges the flexibility to affiliate with any university without geographical constraints. (Refer EPIC January 2023 ([click](#)) for *Establishing Campuses of Foreign Universities in India: Benefits and Challenges*).
- According to a World Economic Forum report, **65% of children entering primary school today will ultimately work in completely new job types** that do not even exist today. Therefore, **knowledge creation and dissemination should be participatory and forward-looking**. To promote innovation in teaching practices and flexibility in learning, it is essential to **encourage lateral entry** of practitioners and other experts to HEIs.

3. Vacancies of Teachers in Universities

News: According to an RTI reply, ~30% of teaching positions are lying vacant in 45 Central Universities.

About Vacancies in Universities

- Over **30% of teaching positions are lying vacant** in 45 Central Universities across India.

- Highest vacancies are in Odisha's Central Universities: ~88%. Mizoram and Kerala had the least share of vacancies, ~15% or less.
- Central University of Andhra Pradesh had a 100% vacancy, with none of the sanctioned teaching positions filled.
- Only 20% of teacher positions sanctioned under the General Category were vacant compared to 44% among OBC positions, 38% among SC positions and 45% among ST positions. 71% of posts sanctioned under the EWS quota and 58% under the Persons with Disabilities were also vacant.

Reasons for Vacancies

- **Distance:** Vacancies can arise in some universities which are **located in remote rural areas** e.g., the Central University of Odisha located in Sunabeda town (Koraput district) is 486 km away from Bhubaneswar.
- **Age:** Central University of Andhra Pradesh was founded in 2018. It usually takes 3-5 years for a Central University to have a fully functional campus. It will take some time to complete full recruitment.

Steps Taken

- **CU-Chayan portal** has been launched by University Grants Commission (UGC). It is a unified recruitment portal designed and developed specifically for faculty recruitment in Central Universities.
- The portal provides a common platform for listing vacancies/advertisements/ faculty positions across all Universities. The Portal makes the recruitment process entirely online, from application to screening with alerts to all the portal users.

4. Status of Nursing Services in India

News: The Government has approved 157 new nursing colleges in 24 States and 3 UTs.

Present Status of Nursing College

- India currently has close to 35 lakh nurses.
- The nurse-to-population ratio is only 2.06:1000 against a global benchmark of 3:1000.
- There has been a 36% growth in the number of institutions offering undergraduate nursing education since 2014-15 resulting in a 40% growth in nursing seats.
- However, the distribution is skewed. About **64% of the nursing workforce is currently trained in just 8 States**. Only 2% of nursing colleges are in the North-eastern States.
 - There are **no nursing colleges in 40% of districts across India**. The growth of nursing colleges also lags far behind the 81% growth rate of medical colleges.
- The new approved nursing colleges will be set up in **co-location with the existing medical colleges** in India. The new colleges will add about 15,700 nursing graduates every year.
- According to the WHO, there is a global shortage of health workers, in particular nurses and midwives, who represent more than 50% of the current shortage in health workers. The largest shortages of nurses and midwives are in Southeast Asia and Africa.

5. National Sickle Cell Anaemia Elimination Mission

News: The Government has launched the National Sickle Cell Elimination Mission.

About the National Sickle Cell Anaemia Elimination Mission

- The Mission was announced in the Union Budget 2023. (*Refer EPIC February 2023 (click) for Union Budget 2023-24*).
- It aims to address the health challenges posed by sickle cell disease, particularly among the tribal population.

- It is being implemented in a mission mode as part of the **National Health Mission (NHM)**.
- The mission aims to **eliminate sickle cell disease as a public health problem by 2047**.
- It will be implemented in 278 districts of 17 States.
- The Government plans to eradicate sickle cell disease through two approaches.
 - The first approach focuses on **prevention**, ensuring no new cases.
 - The second approach involves managing the treatment and providing **adequate healthcare facilities** for individuals already affected by the disease
- The mission focuses on **awareness creation, universal screening** of ~7 crore people in the 0-40 years age group in affected tribal areas and **counselling through collaborative efforts** of Central Ministries and State Governments. (Refer EPIC February 2023 (click) for Eliminating Sickle Cell Anaemia).

Sickle Cell Anaemia (SCA)

- Sickle Cell Anaemia is an **inherited blood disorder**. It a condition in which there aren't enough **healthy Red Blood Cells (RBCs)** to carry adequate oxygen throughout the body.
- Normally, RBCs are flexible and round, moving easily through the blood vessels. In SCA, the **RBCs become rigid and sticky** and are **shaped like sickles** or crescent moons.
- Such cells don't survive long in the blood; 10 to 20 days, compared to the usual 120 days. Patients may be severely anaemic and prone to infections.
- At present, the only remedy for SCA is a dangerous and expensive **bone marrow transplant**.
- Scientists are researching on treating the disease through a **gene editing technique** and clinical trials have shown reduced signs of disease.
- In the new trials, immature blood cells i.e. stem cells are removed from the bone marrow. The stem cells are **genetically modified**, and then infused back into the patient's bloodstream. The goal is for the modified cells to take up residence in the bone marrow and form healthy RBCs.

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6. Combating Child Trafficking in Border Areas

News: The Union Government will build infrastructure in border areas to combat child trafficking.

About Trafficking in border areas of India:

- India is a **source as well as destination** for trafficking of persons. The source countries are Nepal, Bangladesh and Myanmar from where women and girls are trafficked under **false promises of providing a better life**, jobs and good living conditions in India.
- A majority of trafficked are **minor girls or young women** who are sold and forced into commercial sex work. These girls/women often reach major cities like Mumbai, Delhi, Hyderabad etc. from where they are taken out of the country mainly to the Middle East and South-east Asia.

Steps Taken

- The **Ministry of Women and Child Development** has been **providing financial assistance** to all States and UTs under the **Nirbhaya Fund** to set up and strengthen **Anti-Human Trafficking Units (AHTUs)** in every district of the country.
- Funding has also been provided for setting up of AHTU units in border guarding forces such as the **Border Security Force (BSF)** and **Sashastra Seema Bal (SSB)**.
- Now, the Government has decided to provide financial assistance to States/UTs in border areas to set up **protection and rehabilitation homes for the victims of trafficking**.
- These homes will provide services like **shelter, food, clothing, counselling, primary health facilities** and other daily requirements.
- The Government will also help build infrastructure to combat child trafficking in border areas.
- The victims of trafficking will also be produced before the **Child Welfare Committee** to declare fit facility for providing sponsorship as per the **Mission Vatsalya** Scheme guidelines. (Refer EPIC June 2023 (click) for Missing (Abducted) Girls in India).

Economy

1. Trend of Inflation in India

News: Since March 2023, the inflation level has remained below RBI's mandated upper limit of 6%, experts say several factors may push it above 6% in the coming months.

About the Trend in Inflation

- The Consumer Price Index (CPI) inflation **crossed the RBI's upper 6% limit in December 2019** and remained above the limit for most of 2020. This was due to **supply shocks caused by COVID-19** pandemic and the associated disruptions in the supply chains.
- The CPI again breached the 6% level in 2022 with the **onset of Russia-Ukraine war**.



Source: Trading Economics and MoSPI. Various phases of inflation trend over the last 1 decade.

- The **RBI has raised the Repo Rate from 4.4% (March 2020) to 6.5% (February 2023)** and has maintained the rate as of July 2023. The CPI inflation level has **trended below 6% since March 2023**.
- However, experts feel, that inflation may rise again due to certain external and internal factors.
- Items which have reported high inflation include food and beverages, milk products, spices, snacks and sweets etc. Items with low inflation rate include meat and fish, oils and fats and fruits.

Inflation Risks Ahead

- The possible **onset of El-Nino conditions** later in the monsoon season, and the consequent impact on rainfall in India may lead to lower production of kharif crops.
- As of mid-July 2023, **overall kharif sowing was 8.7% lower than the previous year**. This shortfall, especially a 24% drop in rice sowing and a 26% drop in pulses, could reduce crop availability, pushing prices and consequently inflation upwards.

Issues with Inflation Data

The Chairperson of the Economic Advisory Council to the PM has pointed out certain flaws:

- **Outdated Items:** The CPI still monitors a wide range of outdated items like torches, radios, tape recorders, CDs, DVDs, etc. These items are not part of current consumption pattern.
- **Over-reliance on Food Items:** The weightage of food in the CPI basket has decreased from 60.9 (in 1960) to 57.0 (in 1982) and to 46.2 (in 2001). It is still 45.86% (rural + urban combined). Developed countries have much lower weightage to food items because as people's incomes rise, they tend to allocate a larger proportion of their spending towards non-food items such as housing, education, healthcare, personal care, etc.
 - Within food, cereals are assigned excessively high weight of 9.67% in the CPI basket. With the rise in incomes, there is a gradual shift towards broader range of nutrient-rich options beyond cereals, reducing the relative expenditure on cereals. The PM Garib Kalyan Yojana has significantly decreased the cereal expenses for a large segment of population. Hence, adjustment is required in relative weights.

Component	Weight Rural	Weight Urban	Weight Combined
Food and Beverages	54.18	36.29	45.86
Pan, Tobacco, Intoxicants	3.26	1.36	2.38
Clothing and Footwear	7.36	5.57	6.53
Housing	--	21.67	10.07
Fuel and Light	7.94	5.58	6.84
Miscellaneous (Health, Transport, Education, Household Goods Services etc.).	27.26	29.53	28.32

- **Data Update:** The weights can be adjusted only after the Household Consumption Expenditure Survey is concluded and new data are available. However, the 2nd round of the Survey will be completed in July 2024. Hence the present weights have to be maintained till late 2024. New CPI based on fresh data may be completed several months after that (Mid-2025). (Refer EPIC May 2022 (click) for High Inflation in India: Causes, Effects and Remedies).

2. Greedflation

News: The persistence of inflation in many countries (especially the US) is accompanied by record rise in corporate profits. It has given rise to theory of Greedflation.

About Greedflation

- Rise in inflation is often contributed by **rise in costs of input materials** (cost-push inflation). The current inflation (at a global level) is contributed by cost factors (to an extent) caused by **supply chain disruptions** due to COVID-19 pandemic followed by the Russia-Ukraine war.
- Rise in costs is expected to lower profits of the corporates. However, in a contrary trend, the **corporate profits in the US have been at a historic high**.
- This has given rise to theory of 'Greedflation', which argues that current **inflation has been driven by corporate 'greed'**.
 - The corporations have allegedly **increased the prices of their goods by more than what was necessary** to compensate for higher input costs caused by supply-chain bottlenecks.
 - They have **concentrated market power** (i.e., no alternate product/service) **forcing the users to pay higher prices**.
 - Proponents of the theory argue for control of market power of private corporations and their ability to raise prices at will. A temporary 'Excess Profits Tax' can be levied for firms earning supranormal profits.
- However, critics of the Greedflation theory argue that **businesses cannot arbitrarily set prices**. Prices are set based on consumers' willingness to pay. They say the current inflation has been caused by the US Federal



Source: Indian Express. Profits of listed corporate entities in India have risen sharply since mid-2020s indicating possibility of Greedflation.

Reserve's expansionary monetary policy during the pandemic. It increased the money supply, raising purchasing power of users, contributing to demand pull inflation.

Situation in India

- An analysis of corporate data in India shows that the net profits of 4,293 listed companies reached INR 2.9 trillion in the March 2023 quarter (Average INR 0.83 trillion between December 2017 to December 2019). This is over **3.5 times the average quarterly profit** earned by listed companies till before the pandemic of 2020.
- Higher profits can be contributed by **higher sales** (with the same profits margins); **higher profit margins** (with the same level of sales) or a combination of higher sales and higher profit margins. According to CMIE, **60% of the growth in net profit can be attributed entirely to the increase in profit margin**. The increase in sales contributed an additional 36%. Hence, there is a possibility of Greedflation in India

3. National Multidimensional Poverty Index (MPI)

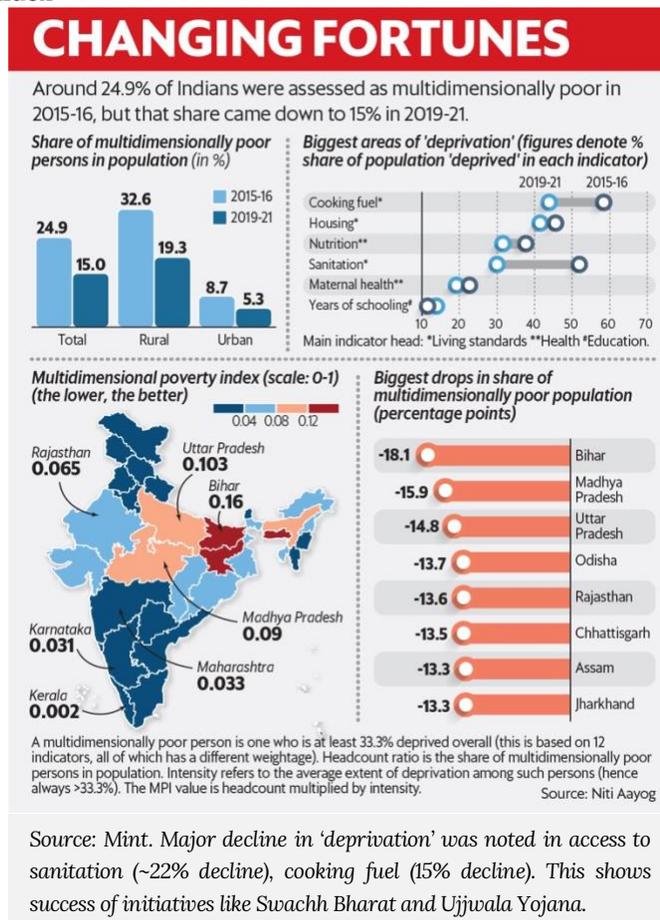
News: NITI Aayog has published the 2nd edition of National Multidimensional Poverty Index.

About the National Multidimensional Poverty Index

- It seeks to **measure poverty across its multiple dimensions**. It complements existing poverty statistics based on per capita consumption expenditure.
- The index uses the globally accepted methodology developed by the **Oxford Poverty and Human Development Initiative (OPHI)** and the **UN Development Programme (UNDP)** for **Global MPI**.
- The index is based on 3 equally weighted dimensions: **Health, Education and Standard of Living**. They are in turn represented by 12 indicators like nutrition, antenatal care, years of schooling, access to cooking fuel, electricity, drinking water, sanitation, housing, assets etc.
- It uses data from National Family Health Surveys. The latest index is based on NFHS-5 (2019-21).

Key Findings of the Index

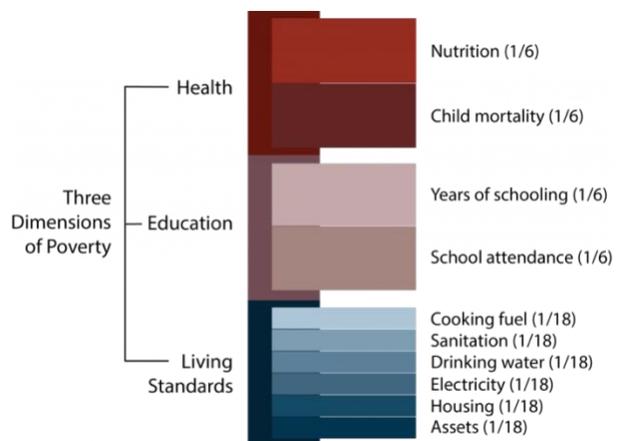
- About **135.5 million (13.5 crore) persons have exited poverty** between 2015-16 and 2019-21.
- Multidimensional poverty in India **dropped from 24.85% to 14.96%** between 2015-16 and 2019-21.
- **Rural areas saw a faster reduction in their MPI value**. The incidence of poverty fell from 32.59% to 19.28% in rural areas between 2015-16 and 2019-21, compared to a decline from 8.65% to 5.27% in urban areas. But the rural-urban divide still persists.



- **Uttar Pradesh** has registered the **largest decline in the number of poor** with 3.43 crore people escaping multidimensional poverty.
- The number of states with **less than 10% people living in multidimensional poverty doubled** from 7 to 14 in the 5 years between 2016 and 2021.
 - 7 States in NFHS-4: Mizoram, Himachal Pradesh, Punjab, Sikkim, Tamil Nadu, Goa, and Kerala.
 - 14 States in NFHS-5: Telangana, Andhra Pradesh, Haryana, Karnataka, Maharashtra, Manipur, and Uttarakhand in addition to the 7 listed above.
- Except Bihar, the share of multidimensional poor is below 33% in all States. **Bihar has made remarkable improvement with the share of multidimensional poor decreasing from 51.89% to 33.76%**. Madhya Pradesh witnessed decline from 36.6% to 20.6%, and UP from 37.7% to 22.9%.
- **Access to housing has improved marginally**, indicating challenges in the implementation of the PM Awas Yojana.

Findings of Global MPI

- The Global MPI, 2023 has been released by UNDP and OPHI. The **Global MPI advances SDG 1** (Ending poverty in all its forms everywhere). It also measures interconnected deprivations across indicators related to SDGs 1, 2, 3, 4, 6, 7 and 11.
- 25 countries including **India have successfully halved their global MPI values within 15 years**, indicating that substantial progress is attainable. Sub-Saharan Africa (534 million) and South Asia (389 million) are home to approximately five out of every six poor people.
- **~415 million people exited poverty between 2005 to 2021 in India.**
- The number of people in multidimensional poverty in India decreased from approximately 645 million in 2005-06 to about 370 million in 2015-16 and further to 230 million in 2019-21. The incidence of poverty fell from 55.1% to 16.4% during the period.
- Deprivation in all indicators declined in India. **The poorest states and disadvantaged groups, including children and individuals from marginalized castes, experienced the fastest progress in reducing poverty.**



4. Rules of Origin

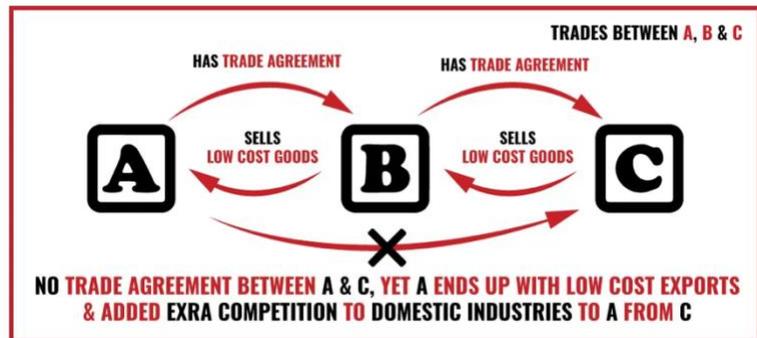
News: India and the EU have not been able to make progress on FTA negotiations due to differences over the Rules of Origin criteria.

About Rules of Origin

- In today's **globally integrated supply chains**, a final product may contain components manufactured in different nations e.g., a mobile phone manufactured in India may contain a motherboard manufactured in Taiwan. It is **necessary to determine the origin of the product in order to decide eligibility of the product for duty-free or reduced duty status under an FTA**. Rules of Origin help decide the eligibility.
- The rules determining country of origin can be very simple if a product is wholly grown or manufactured and assembled primarily in 1 country. **Rules can be complex for products manufactured and assembled across multiple nations**. Rules of origin can be very detailed and specific, and vary from agreement to agreement and from product to product.

- **Tariff level changes** and **Minimum value additions** are the two most commonly used criteria for a product to qualify for the rules of origin requirements.
 - **Value Content Method** requires that a certain minimum percentage of the good's value originates in a country for the good to be considered as originating.

Rules of Origin are very important to **prevent re-export of cheaper goods from non-FTA countries** e.g., Country A has an FTA with Country B, and B has an FTA with C. A and C do not have an FTA with each other. In the absence of clearly defined RoOs, products from C may enter A through B, posing additional competition to domestic firms of A. India's zinc industry suffered due to poor RoOs in FTA with South Korea. (Refer EPIC April 2022 (click) for India's Merchandise Exports: Challenges and Opportunities and the Case Study India-South Korea CEPA and Zinc Trade).



Source: rulesoforigin.org. In the absence of strong Rules of Origin, goods of 3rd country can benefit from low tariffs affecting the domestic market.

Use of RoOs

- Implement measures and instruments of commercial policy, such as anti-dumping duties and safeguard measures.
- Determine whether imported products shall receive most-favored-nation (MFN) or preferential treatment.
- For the purpose of trade statistics.
- For the application of labelling and marking requirements.
- For government procurement.

5. Coal India Ltd. vs Competition Commission of India: SC Judgment

News: The SC has ruled Coal India Ltd. (CIL), a PSU, cannot be exempted from the Competition Act. The SC was hearing CIL's appeal against the Competition Appellate Tribunal's order on CIL.

About the Case

- In 2017, Competition Commission of India (CCI) had imposed a penalty of INR 591 crore on CIL for **imposing unfair/discriminatory conditions** in Fuel Supply Agreements (FSAs) with the power producers. CIL was found to be **supplying lower quality of coal at higher prices** and **placing opaque conditions in the contract** about supply parameters and quality.
- The CCI contended that Coal India and its subsidiaries **operated independently of market forces** and enjoyed market dominance with respect to production and supply of non-coking coal in India.

Arguments made by CIL

- CIL operated based on the principles of **promoting the "common good"** and **ensuring equitable distribution of a vital natural resource**.
- Under the Coal Mines (Nationalization) Act, it was established as a "monopoly."
- To incentivize captive coal production, it may need to follow a pricing mechanism that varies based on circumstances. The purpose of differential pricing was to **ensure the sustainability of the broader operational ecosystem** and **pursue welfare objectives**.

- Coal supply also has implications for broader national policies, such as promoting growth in economically disadvantaged regions through increased allocation.

Arguments made by CCI

- The CCI cited the **Raghavan Committee (2020)** report which concluded that **state monopolies were not in the best interests of the nation** and should not be allowed to operate inefficiently without competition.
- Coal was **no longer classified as an “essential commodity”** after 2007, and the **Nationalization Act has been removed from the Ninth Schedule** (laws immune from court challenges) in 2017.
- Coal accounts for approximately 60-70% of the expenses incurred by power generation companies, which means that irregular prices and supply would **indirectly impact consumers significantly**.

Observations made by the Supreme Court

- The Supreme Court **dismissed the argument that the Competition Act does not apply to CIL** due to its governance under the Nationalization Act.
- The SC emphasized that the **essence of the Act would be undermined if State monopolies, Government companies, and PUSs were allowed to violate the competition law**.
- It stated that entities cannot act arbitrarily or discriminate against similar entities in an unfair manner.
- The judgement **reinforced the principle of “competitive neutrality”**; entailing that the **Competition Act equally applies to public and private sector enterprises**. (Read more about *Competition Commission of India: Provisions, Working and Challenges*).

6. Packages for Farmers

News: The Cabinet Committee on Economic Affairs has approved a package for farmers with total outlay of INR 3.7 Lakh Crore.

About the Package

- The schemes focus on the **overall well-being and economic betterment of farmers by promoting sustainable agriculture**. The initiatives will **boost farmers’ income, strengthen natural/organic farming, rejuvenate soil productivity, and ensure food security**.
- There are four components in this package:
 - Ensuring a **subsidy for urea** for the next 3 years. A sum of INR 368,676.7 crore has been committed for urea subsidy from 2022-23 to 2024-25. By 2025-26, **8 Nano urea plants will be commissioned**. The scheme will also revive 6 urea production units. These along with Nano Urea Plants will reduce India’s current import dependency in urea and **make India self-sufficient by 2025- 26**
 - Prime Minister’s Programme for Restoration, Awareness Generation, Nourishment, and Amelioration of Mother Earth (PM-PRANAM) scheme.
 - **Market Development Assistance (MDA)** of INR 1,500 per metric tonne to support marketing of organic fertilizers, produced as a by-product from bio-gas plants/compressed bio-gas (CBG) plants set up under GOBARdhan scheme.
 - Introduce **sulphur coated urea as Urea Gold**. This will address sulphur deficiency for the soil in the country and improve our crop productivity.
- The schemes will help in the **judicious use of chemical fertilizers, reduce input cost of cultivation** and improved farm incomes. It will **promote natural/organic farming**. It will **improve soil health, increase nutrient efficiency** and **safe environment** due to reduction in soil and water pollution.

7. Union Government's Decision Regarding Open Market Sale Scheme (OMSS)

News: The Government has reduced the quantity of foodgrains a bidder can purchase under the Open Market Sale Scheme (OMSS). This can impact food security programmes of State Governments.

About the Open Market Sale Scheme (OMSS)

- Under the Open Market Sale Scheme, the **Food Corporation of India (FCI) sells surplus stocks of wheat and rice** to traders, bulk consumers, retail chains at **pre-determined prices** through **e-auction in the open market**.
- States are also allowed to procure food grains through the OMSS without participating in the auctions for their needs beyond what they get from the central pool to distribute to NFSA (National Food Security Act) beneficiaries.
- The aim of OMSS is to **enhance the supply of food grains, during the lean season** and thereby **moderate the open market prices**, especially in the deficit regions.
- The Union Government has reduced the quantity a bidder can purchase in a single bid to the range of 10-100 metric tonnes from 3,000 metric tonnes per bid. The decision has been taken to **curb inflation** and to **accommodate more small and marginal buyers** and to **ensure wider reach of the scheme**. Smaller bids by marginal players will break monopolies of bulk buyers and allow more competitive bidding.
- The Union Government has also **stopped the sale of rice and wheat** from the Central pool under the OMSS to State Governments. It has also disallowed private bidders to sell their OMSS supplies to State Governments.

Implications for States

- Many States have their own welfare schemes to distribute subsidized or free grains to sections of the population. States are finding it hard to meet the obligations. They are trying to procure grains from Government agencies other than FCI.
- The development shows that the States should not rely solely on Union Government or its agencies for implementing food sector scheme. They must develop their own resources and factor in the costs and the budget accordingly.

8. Critical Minerals

News: The Union Government has released the list of '30 Critical Minerals for India'.

Objectives of the List

- The list has been designed to identify and prioritize minerals that are **essential for various industrial sectors** such as high-tech electronics, tele-communications, transport, energy and defence.
- The list will serve as a guiding framework for **policy formulation, strategic planning, and investment decisions** in the mining sector.
- The initiative aligns with the larger vision of achieving a 'Net Zero' target for India through the Government's commitment to creating a robust and resilient mineral sector.

Critical Minerals

- > Critical Minerals are defined based on two criteria: **Economic Importance** and **Supply Risk**.
- > Economic Importance refers to **essentiality** with respect to functioning of modern technologies, economy or national security. Supply risk refers to **vulnerability of supply chain to disruption**. Based on their individual needs and strategic considerations, different countries create their own list of critical minerals.
- > Critical minerals have applications in **wide range of sectors and technologies** like Aerospace, Communications, Defence industries, Renewable Energy, EVs, Advanced manufacturing and metallurgy etc.

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Challenges with respect to Critical Minerals

- **Foreign Dependence:** India lacks domestic reserves of most critical minerals. India's transition to clean mobility and energy (renewable) is thus dependent on foreign imports.
- **Tactics of China:** China is one of the largest producer of most critical minerals. It has used its mineral reserves as a tool of coercion e.g., in 2010, it cut mineral supplies to Japan due to Senkaku Island dispute. China may use similar tactics against India amidst the border dispute.

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	

Source: [Ministry of Mines](#). List of 30 Critical Minerals.

- **Russia-Ukraine War:** Russia is a significant producer of minerals like nickel, palladium, titanium and scandium. Ukraine is a major producer of titanium. The war has disrupted the supply chains.
- **Policy issues:** Many critical and strategic minerals constitute part of the list of atomic minerals in the Mines and Minerals (Development and Regulation) (MMDR) Act, 1957. The present policy regime **restricts the mining of these minerals only for public sector undertakings.**

Government's Decision on Mining

- The Union Cabinet has approved amendments to the Mines and Minerals (Development and Regulation) Act, 1957 to **allow the commercial mining of 6 critical minerals:** lithium, beryllium, niobium, tantalum, titanium and zirconium. As of now, only Government agencies are allowed in exploration and mining of these minerals.
- The amendment proposes to introduce **exploration license** which will be **granted through auction** for undertaking reconnaissance and prospecting operations.
- Companies will be allowed to suggest areas they are interested in exploring and mining. The general practice is that the Government specifies the areas for exploration.

Future Steps

- The Report by Ministry of Mines has called for establishing a **National Institute or Centre of Excellence on critical minerals** on the lines of Australia's CSIRO. A wing in the Ministry of Mines can be established as a Centre of Excellence for Critical Minerals.

CRITICAL MINERALS: INDIA'S NET IMPORT RELIANCE (2020)

Critical Mineral	%age	Major import sources
Lithium	100%	Chile, Russia, China, Ireland, Belgium
Cobalt	100%	China, Belgium, Netherlands, US, Japan
Nickel	100%	Sweden, China, Indonesia, Japan, Philippines
Vanadium	100%	Kuwait, Germany, South Africa, Brazil, Thailand
Niobium	100%	Brazil, Australia, Canada, South Africa, Indonesia
Germanium	100%	China, South Africa, Australia, France, US
Rhenium	100%	Russia, UK, Netherlands, South Africa, China
Beryllium	100%	Russia, UK, Netherlands, South Africa, China
Tantalum	100%	Australia, Indonesia, South Africa, Malaysia, US
Strontium	100%	China, US, Russia, Estonia, Slovenia
Zirconium (zircon)	80%	Australia, Indonesia, South Africa, Malaysia, US
Graphite (natural)	60%	China, Madagascar, Mozambique, Vietnam, Tanzania
Manganese	50%	South Africa, Gabon, Australia, Brazil, China
Chromium	2.5%	South Africa, Mozambique, Oman, Switzerland, Turkey
Silicon	<1%	China, Malaysia, Norway, Bhutan, Netherlands

Source: [Indian Express](#). Import dependence of critical minerals.

Uses of Minerals

Lithium: Batteries for EVs, Energy Storage solutions.

Beryllium: Aerospace, Defense, IT, Telecom.

Titanium: Mobile phones, prosthetics.

Niobium: Jet Engines, Rockets.

Tantalum: Electrolytic Capacitors.

Zirconium: Fabrication, Alloying Agent.

- India must actively engage in bilateral and plurilateral arrangements for building assured and resilient critical mineral supply chains.
- The assessment of critical minerals needs to be updated every 3 years to keep pace with changing domestic and global scenarios. (Refer EPIC July 2022 (click) for Rare Earth Elements: Strategic Importance and Reducing Import Dependence).

9. Steps Taken by SEBI to Improve Transparency and Corporate Governance

News: SEBI has set higher standards for transparency and governance for the listed companies by amending the Listing Obligations and Disclosure Requirements (LODR).

Changes Introduced by SEBI

- **Key Managerial Personnel:** The timeline for filling vacant positions of KMPs has been reduced to 3 months.
 - It was 6 months earlier. Interim appointments cannot be made to KMP.
 - The reappointment of directors must be cleared by shareholder vote at least once every 5 years.
- **New 'Majority of Minority' rule:** Minority shareholders will have a say (through vote) in the **sale or transfer of an undertaking by a listed company through slump sales**. The object and commercial rationale for such transaction must be disclosed to shareholders through special resolution at a general meeting.
- **"Material Impact":** SEBI has also introduced **quantitative thresholds** for determining the "materiality" of events and transactions.
- **Fraud and Default:** SEBI has clarified the definitions of fraud and default. It has also **enhanced disclosures for listed companies** on fraud, or defaults, by a director or senior management, and for **cybersecurity breaches**, or any regulatory action affecting KMP.
- **Information Sharing:** "Mainstream media" has been defined quite broadly to cover both registered newspapers and social-media platforms. SEBI has asked the top listed companies to confirm, deny, or clarify any rumour or information reported in such **media within 24 hours**.
 - This may be difficult to implement, because of presence of large number of smaller platforms and obscure influencers where false information may be propagating.

Slump Sale

When a firm sells a part or whole of its business to another entity for a **lump sum amount**, it is known as a slump sale. In a slump sale process, the ownership of assets, debts, intellectual property, contracts, staff, and debtors etc. are **not considered individually** (for sale valuation). They are all **transferred to buyer at the overall agreed price** (rather than individual item-wise negotiated price for assets, debts etc).

10. Effectiveness of Corporate Social Responsibility (CSR) Initiatives

News: The Ministry of Corporate Affairs has said that the impact of CSR initiatives has been limited despite an increase in spending in recent years.

Issues Related to CSR Spending in India

- CSR spending in FY2020-21 amounted to INR 26,210 crore representing an 80% growth since FY2015-16. However, its effectiveness has been limited by several factors.
- **10 States**, including Maharashtra, Gujarat, Karnataka, and Andhra Pradesh **accounted for over 44%** of the CSR funds. In contrast, the **8 North-eastern states received only 0.91% share**. The regions facing greater socio-economic challenges have received a lower share.
- Section 135(5) of the Companies Act 2013 says that companies should give preference to the areas around which they operate while allocating CSR funds. The rule is not mandatory.
- **Education, healthcare, and rural development** sectors received 37%, 30% and 10% of the funds respectively between 2014-15 and 2020-21 i.e., ~77% funds were allocated to 3 sectors alone.

- Most companies **do not have any core competence** in the areas of CSR activities. Internal staff deployed to oversee CSR activities often lack capabilities related to the activities. Companies look for easy way outs like transferring money to Government initiatives.

Future Steps

- Government can **earmark certain projects for CSR activities** where corporates can spend money.
- **Closer cooperation between corporates and NGOs** can make the initiatives more effective.
- Some experts have suggested greater allocation by the corporate sector towards CSR. A **centralized CSR fund** can be established and Government should allocate the funds for development, welfare activities based on its own assessment. (Read more about Corporate Social Responsibility in India: Provisions, Status and Challenges).

Initiatives included under CSR (Schedule VII, Companies Act, 2013)

- **Eradicating hunger**, poverty and malnutrition, promoting health care and sanitation.
- **Promoting education**, employment enhancing vocation skills and livelihood enhancement projects.
- Promoting **gender equality**, empowering women, setting up homes/hostels for women and orphans; setting up old age homes, measures for reducing inequalities faced by socially/economically backward groups.
- Ensuring **environmental sustainability**, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources including contribution to the Clean Ganga Fund.
- Protection of **national heritage, art and culture**; setting up public libraries; promotion and development of traditional art and handicrafts.
- Measures for the benefit of **Armed Forces**, CAPF veterans, their dependents and widows.
- Training to **promote sports** (rural, paralympic and olympic sports).
- Contribution to the **PM's National Relief Fund/PM CARES Fund** or any other fund set up by the Union Govt.
- Contribution to **incubators or R&D projects** in the field of **science, technology, engineering and medicine**, funded by the Union/State Governments or PSUs; Contributions to public funded Universities;
- **Rural development projects** and Slum area development.
- **Disaster management**, including relief, rehabilitation and reconstruction activities.

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11. National Energy Data 2021-22

News: The Union Ministry of Power has released a report Nation Energy Data 2021-22.

About the Report

- The Report has been prepared by **Bureau of Energy Efficiency** in collaboration with **NITI Aayog**.
- The report provides **granular information about energy supply and consumption patterns** across various sectors of the Indian economy. It also provides an overview of the **impact of various energy conservation policies** and their associated carbon dioxide emission reduction and monetary savings.
- In terms of energy consumption, **industry sector** (46% of the total) is at the top. It is followed by **household** (11%), **transportation** (7%), **agriculture** (4%) and **commercial** (2%) sectors. Miscellaneous uses account for 30%.
- In terms of energy supply, **coal is at the top** with 32% share in supply. It is followed by **electricity** (21%), **diesel** (15%), **petrol and other petroleum products** (14%), **LPG** (6%) and **Natural Gas** (5%) among others.
- India conserved 249 billion units (BUs) of electricity to save INR 1.60 lakh crore in bills in 2021-22.
- The total equivalent reduction in CO₂ emissions is around 280 Million Tonnes annually.

International Relations

1. Mineral Security Partnership

News: India has been inducted into the Mineral Security Partnership.

About the Mineral Security Partnership (MSP)

- It is a **US-led partnership** to secure **supply chains of critical minerals**, focused at **reducing dependency on China**. Its aim is to catalyse investments from Governments and the private sector to develop strategic opportunities.

- Its members include US, Australia, Canada, Finland, France, Germany, Japan, South Korea, Sweden, United Kingdom, and the European Commission. India is the latest member.
- The MSP will focus on the supply chains of minerals such as Cobalt, Nickel, Lithium, and the 17 '**rare earth**' minerals.
- The alliance is seen as primarily focused on **evolving as an alternative to China**. China has created processing infrastructure in rare earth minerals and has acquired mines in Africa for elements such as Cobalt.
- India and Australia are already strengthening their partnership in the field of projects and supply chains for critical minerals under the **Australia-India Critical Minerals Investment Partnership**. In March 2022, Australia confirmed that it would commit US\$ 5.8 million to the 3-year partnership.
- Under this partnership, India can take resources from Australia to meet the growing demand for critical minerals to help India's space and defence industries and the manufacture of electric vehicles.

2. PM's Visit to France

News: The Prime Minister of India visited France in July 2023.

Key Highlights from PM's Visit

- **Joint Statement:** India and France have issued a joint statement: "25th Anniversary of the Strategic Partnership between France and India: towards a Century of Indo-French Relations". This sets the course for the **France-India bilateral relationship in all areas till 2047**.
 - 2047 will mark: 100 years of India's Independence, **100 years of diplomatic relations between the two countries**, and 50th year of the Indo-French strategic partnership.
 - The roadmap for bilateral relations has 3 pillars: **Partnership for security and sovereignty; Partnership for the planet; Partnership for the people**.
- **Defence:** The two countries signed agreements on:
 - Acquisition of **26 Rafale-M (marine version)** fighters for the **Indian Navy**.
 - Co-production of 3 more **Scorpene class submarines** at the public sector Mazagon Dock Shipbuilders Ltd.
 - **Joint development of a combat aircraft engine**.
- **Indo-Pacific Roadmap:** India and France have released **India-France Indo-Pacific Roadmap**.
 - Under this roadmap, the two sides decided to work on finalizing an **Indo-French Development Fund for third countries**. This will enable joint financing of **sustainable development projects** in the Indo-Pacific region.
 - India and France will also work to set up the **Indo-French Health Campus for the Indo-Pacific**, with the aim of making it a regional magnet for research and academia.
 - In 2018, India and France had agreed on a 'Joint Strategic Vision of India-France Cooperation in the Indian Ocean Region'.
- **Eliminating Single-use plastic:** India and France made a joint commitment to **eliminate single-use plastic products pollution**, including a ban on single-use plastic products which have low utility and high littering potential. The two countries have decided to constructively engage other like-minded countries to strengthen the negotiations for an **international legally binding instrument to end plastic pollution**.
- The **Prime Minister of India was conferred with the highest honour of France**, the Grand Cross of the **Legion of Honour**, by the French President. (*Refer EPIC May 2022 (click) for India-France Relationship*).

3. SCO Summit

News: The 23rd Summit of Shanghai Cooperation Organization (SCO) was held virtually under India's Presidency.

Key Takeaways from the SCO Summit

- Iran has been inducted as the 9th member of the grouping.
- **New Delhi Declaration:** The declaration proposes **5 joint statements:** Fight against terrorism, de-radicalisation, sustainable lifestyle to tackle climate change, production of millets and digital transformation.
 - The declaration listed a number of **global challenges**, like new and emerging conflicts, turbulence in the markets, supply chain instability, climate change and the COVID-19 pandemic.
- **India on China's Belt and Road Initiative (BRI):** India has once again **refused to endorse China's Belt and Road Initiative (BRI)** scheme.
 - India is the only country in the SCO that has opposed the project.
 - India has also stayed out of a joint statement on **SCO Economic Development Strategy 2030**, indicating a lack of consensus in the grouping.
- **India on cross border terrorism:** Prime Minister has said that **some countries use cross-border terrorism as an instrument of their policies**. The PM said that SCO should not hesitate to criticize such nations because there can be **no place for double standards on such serious matters**.
 - China has been blocking the listing of Pakistan-based terrorists at the UN Security Council (UNSC). (Refer EPIC September 2022 (click) for Shanghai Cooperation Organization (SCO)).

Structure and Functioning of the SCO

- The SCO has political economic and security dimensions.
- The Organisation has **two permanent bodies:** the **Secretariat** in Beijing (China) and the **Regional Anti-Terrorist Structure (RATS)** in Tashkent (Uzbekistan).
- The **Heads of State Council (HSC)** is the highest decision-making body in the SCO. It meets once every year to take decisions and give instructions on all important issues regarding SCO activity.
- The **Heads of Government Council (HGC)** meets once per year to: **(a)** Discuss a strategy for multilateral cooperation and priority directions within the Organisation's framework; **(b)** Solve important and pressing cooperation issues in economic and other areas; **(c)** Adopt the Organisation's annual budget.
- There are also mechanisms of **meetings on the level of Secretaries** of Security Councils, Foreign Ministers, Ministers of Defence, Emergency Relief, Economy, Transportation, Culture, Education, Healthcare, Heads of Law Enforcement Agencies, Speakers of Parliament, Supreme Courts etc.
- **Russian and Chinese** are the **official and working languages** of the SCO. India is pushing for use of English as working language.

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Implications of Iran's Induction

- SCO's original goals focused more on **stability and security**. However, it is focusing on improving connectivity in the region. Iran's induction into SCO can **help India build its connectivity strategy through Iran's Chabahar port**. India operates a terminal in Chabahar. **International North South Transport Corridor** can help India **circumvent land-based trade through Pakistan**.
- Iran's induction enables **India to engage with the Central Asian region** without getting entangled in China's Belt and Road Initiative. (Refer EPIC August 2022 (click) for International North South Transport Corridor (INSTC)).
- **Iran's historical ties with India** and its **shared concerns about terrorism** from Pakistan and Afghanistan will enhance India's call for action against terror safe havens.
- However, **Iran's membership may deepen the perception of the SCO as an 'anti-West' forum**. Expected inclusion of Belarus in the SCO will further strengthen this image. Both Iran and Russia face severe sanctions. The US has also accused Iran of supplying weapons to Russia. It will make India's balancing act vis-à-vis QUAD more difficult.

China's View on India's Membership

- Strategy and Foreign Policy Experts in China have **opposed India's membership of the SCO**, comparing India's role similar to Turkey's role in the NATO. They have welcomed Iran's entry, arguing it will limit India's influence in the SCO.

- Chinese export cite **India’s refusal to endorse BRI, India’s membership of QUAD and growing proximity between India and the US**, amidst the Russia-Ukraine war.
- **Russia has supported India’s membership and role in the SCO**. Russia considers India as an alternative to prevent China’s dominance in the group. China agrees to Russia’s viewpoint that unit between India, Russia and China can collectively counter the west. China has demanded an ‘exit mechanism’ and ‘imposition of sanctions’ on SCO members.

4. India’s Engagement with Philippines and Stance on South China Sea Dispute

News: The 5th India-Philippines Joint Commission on Bilateral Cooperation meeting was held recently.

Key Highlights

- **Defence:** India has offered the Philippines a Line of Credit to help it meet its defence requirements including naval assets. India will also be opening a **resident Defence Attaché office in Manila**. Both countries agreed on expansion of training and joint exercises on maritime security and increased cooperation between coast guards.
- **Economy:** India and Philippines signed a bilateral MoU for the constitution of a Joint Working Group (JWG) on Fintech, which would provide the **institutional framework for cooperation on digitization of payments, direct benefit transfer using National ID and financial inclusion**.
- **Science and Technology:** Both countries discussed domains including **cyber security, artificial intelligence, and space cooperation**. A new issue that was discussed was cyber trafficking.

Defence Attaché

A defence attaché (DA) is a **member of the armed forces** who serves in an embassy as a representative of his/her country’s defence establishment abroad and in this capacity **enjoys diplomatic status and immunity**. The DA is usually responsible for all aspects of bilateral military and defence relations.

About PCA Award on South China Sea Dispute

- India restated its consistent stance of **adherence to international law** including the UNCLOS. It called for the **respect of Arbitral Award on the South China Sea (2016)** by the Permanent Court of Arbitration (PCA) in dispute between Philippines and China. Till now, India’s response was that it had ‘noted’ the award. **Now it has called for adherence**.
- The arbitration process considered various aspects like **maritime and historical rights, status of specific marine features**, and the **legality of certain Chinese actions** in South China Sea, deemed unlawful by Philippines.
 - The PCA had rejected China’s claim of historical rights in South China Sea.
 - Chinese claims regarding ‘Nine-Dash Line’ **were not grounded on a legal basis**.
 - China’s land reclamation activities violated commitments under the UNCLOS and



Source: Economist. Nine-Dash Line. The South China Sea is a crucial maritime passageway, connecting the Pacific and Indian Oceans. It has a vital role in global geopolitics and economy. Maintaining free, stable maritime routes is essential for global trade and economy.

- caused irreversible damage to the marine environment.
- China was guilty of violating Philippines sovereign rights in its **Exclusive Economic Zone (EEZ)**.
- According to UNCLOS Article 296(1), the decision of a Court/Tribunal, having jurisdiction, is final and shall be complied by all parties. However, China has not respected the decision.
- Leaders of the Association of Southeast Asian Nations (ASEAN) should pursue a political solution through ‘quiet diplomacy’. ASEAN nations should foster greater understanding and unity among themselves and pressurize China to abide by the law and respect the award.

5. Taiwan’s Office in India

News: Taiwan has announced its 3rd representative office in Mumbai.

About India-Taiwan Relationship

- India and Taiwan **do not maintain formal diplomatic ties**, as India adheres to the One-China policy. However, India hasn’t mentioned the ‘**One China**’ Policy in official communications/statements since 2010.
- In 1995, India and Taiwan established **India-Taipei Association (ITA)** in Taiwan and **Taipei Economic and Cultural Center (TECC)** in New Delhi as **de-facto Indian and Taiwanese embassies**.
- In 2012, Taiwan established a TECC in **Chennai** to conduct business. In the absence of an embassy, these offices represent Taiwan’s interests in India.
- The opening of these offices by Taiwan in India did not create much of a fallout on India-China relations, despite Chinese sensitivities on Taiwan. This is because India had conveyed to China that the offices would not be official and **there would be no government-to-government engagement**.
- However, India has become more open about India’s relationship with Taiwan as the relationship with China has strained due to border dispute. (Refer EPIC August 2022 (click) for China-Taiwan Crisis).

6. China’s Deal with Solomon Islands

News: China and Solomon Islands have jointly announced the official establishment of a comprehensive strategic partnership.

About Solomon Islands

- The Solomons are an archipelago of hundreds of small islands in the southern part of the Pacific Ocean.
- The archipelago is located approximately 2,000 km from Australia. There are 6 big islands.
- It is part of the Member-State of FIPIC (Refer EPIC June 2023 (click) for India’s Engagement with Pacific Island States).

About China-Solomon Island Relations and US Response

- Solomon Islands and China (PRC) established official diplomatic relations in 2019. Prior to this, **Solomon Islands had diplomatic relations with Taiwan**.
- In 2022, China’s government signed a **security deal with the Solomon Islands**. (Refer EPIC May 2022 (click) for Security Deal between China and Solomon Islands).
- The Solomon Islands are **strategically located in the Pacific**. The US and its regional allies, Australia and New Zealand, are concerned that the **China-Solomon Islands security pact allows Chinese naval**



vessels to replenish there. That could **open the door to a Chinese naval base**, which would significantly extend China's military reach in the South Pacific.

- The US has responded by announcing plans to **reopen an American Embassy in the Solomon Islands**.
- The US convened a **summit of Pacific Island leaders in September 2022** to unveil a strategy that included cooperation in climate change, maritime security and preventing overfishing.
- The US has promised **US\$ 810 million in new aid for Pacific Island nations** over the next decade, including US\$ 130 million to address the effects of climate change.

7. Meeting of G20 Education Ministers

News: A meeting of G20 Education Ministers was held in Pune.

Key Decisions

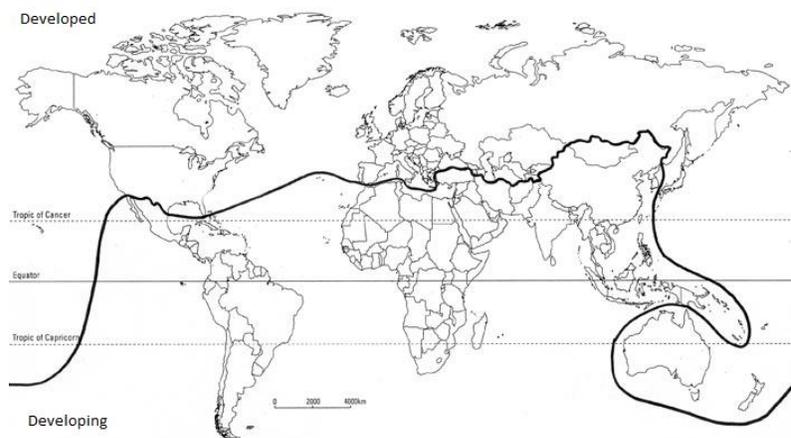
- G20 members have agreed on:
 - Work together for a resilient, equitable, inclusive and sustainable future through education.
 - Work towards an **equitable and inclusive use of Artificial Intelligence** in education and skills that respects human rights.
 - Ensure that everyone, irrespective of age, gender, socio-economic or cultural background have access to quality, inclusive and equitable education and training.
 - Overcome the digital divide for all learners by addressing the barriers to technological infrastructure.
 - Develop technology ecosystems and learning resources, including in local languages, that are affordable and easily accessible.
- The Ministers agreed that education is not only about academic learning but also about **developing life, technical and vocational skills** to make all learners future ready. They also underlined the need for lifelong learning.
- The meeting recognised the important role of digital transformations, **women-led development, green transition and education on sustainable development and lifestyles**.
- India mentioned the need to make the youth future-ready and demanded Governments to continuously **skill, re-skill and up-skill** them.

8. Global South

News: India has been raising the concerns of 'Global South' at various international platforms.

About the Meaning of Global South

- The term "Global South" broadly refers to **developing or under-developed countries**, primarily situated in **Africa, Asia, and Latin America**. These nations often face **higher levels of poverty, income inequality, and lower life expectancies** in comparison to the wealthier nations of the "Global North," which mostly include North America, Europe, and parts of Oceania.



Source: Wikimedia Commons. The Brandt line dividing Global North and South.

- The term was first used in 1969 but gained significant traction after the breakup of the USSR in 1991. Before that, **'Third World' was the widely used term for under-industrialized nations**, It had negative connotations and 'Global South' emerged as a more neutral replacement, dissociating from the problematic narratives of 'developed' and 'underdeveloped' nations.
- Global South is not geographically constrained. India and China are located in the northern hemisphere. Similarly, Australia and New Zealand are part of Global North, though located in the southern hemisphere.
- It is a **geopolitical term denoting political, economic, and historical commonalities**. Most of these nations **experienced colonialism and imperialism**, shaping their perspective on global power dynamics, especially in relation to the West.

Changing Dynamics of Global South

- A **significant shift in wealth** has been noted since the 21st century, with **wealth moving from the North Atlantic to Asia Pacific**.
- By 2030, 3 of the 4 largest economies (China, India, and Indonesia) are expected to be from the Global South.
- The combined GDP of BRICS nations, which are dominated by the Global South, has already surpassed that of the G7 countries. Cities like Beijing now boast more billionaires than New York.
- Countries from the Global South are increasingly flexing their political muscles. For instance, China is playing an important role in Middle Eastern diplomacy, while Brazil is actively proposing peace plans for the war in Ukraine. This rise in political and economic power is reshaping global dynamics, with experts predicting the arrival of an "Asian Century" and a "post-Western world".

Science and Technology

1. Artemis Accords

News: India has agreed to join the Artemis Accords related to peaceful cooperation in space exploration.

About the Artemis Accords

- The **Artemis Accords** is a **non-binding multilateral arrangement** between the US and other countries participating in the **Artemis program**. Artemis Programme is a US-led effort to return humans to the Moon by 2025, with the ultimate goal of **expanding space exploration to Mars and beyond**.
- Artemis Accords list the **Principles For Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes**. The principles note that the peaceful use of outer space should benefit all humankind. The Accords affirm compliance to **Outer Space Treaty (1967)**, **Rescue and Return Agreement (of Astronauts, 1968)**, and **Liability Convention (for damage caused by Space Objects, 1972)** among others.
- The Accords were signed by 8 countries in October 2020: Australia, Canada, Italy, Japan, Luxembourg, UAE, UK and the US. As of July 2023, there are 28 signatory countries and 1 territory (Isle of Man, a British Dependency).
- Commitments under the Accords include use of space activities for peaceful purposes, transparency, creation and utilization of common infrastructure for space exploration, sharing of data among others.

Artemis Programme

The Artemis Programme aims to **reestablish human presence on Moon** for the first time since Apollo 17 Mission (1972). Missions under the Programme include **Artemis 1** (unmanned), **Artemis 2** (manned flyby mission, won't land on Moon) and **Artemis 3** (manned mission to land on moon). Missions will continue further.

Implications for India

- Joining Artemis Accords will allow India to collaborate closely with other countries with respect to Space exploration missions. Indian scientists will get to work on advanced technologies, that will add value to India's own Space Missions including the manned mission, *Gaganyaan*.
- However, it might impact India's cooperation with Russia in the Space sector e.g., Russia has offered to train India astronauts for the *Gaganyaan* mission. Russia may not view India's joining of Artemis Accords favourably.

2. Measurement of Hubble Constant

News: Indian Scientists have proposed a new method to determine the value of Hubble Constant.

About Hubble Constant

- **Hubble's Law** states that the **galaxies are moving away from Earth** at speeds proportional to their distance i.e., the farther the galaxy away from the Earth, the faster it moves away. Hubble's Law forms the basis that the **Universe is expanding**.
- The Hubble constant is a unit that describes **how fast the universe is expanding** at different distances from a particular point in space. It is measured in (km/s)/Megaparsec. Megaparsec is unit for large distances, equal to 3.26 million light years.

Measurement of Hubble Constant

- Multiple methods have been developed to calculate Hubble's Constant. These methods include through **observing brightness of supernova explosions, changes in the Cosmic Microwave Background radiation, and through gravitation waves**. However, there has been a variation in values measured by the first two methods, while the 3rd method is still evolving. (Refer EPIC April 2023 for LIGO project in India).
- Indian Scientists have proposed measuring Hubble's Constant through **Gravitational Lensing**. Gravitational Lensing refers to phenomena where **massive objects bend rays of light**. Scientists believe that lensing can produce multiple copies of same gravitational signal that reaches the earth at different times. The delay between these signals can be used to calculate the expansion rate of the Universe. (Refer EPIC May 2022 (click) for Gravitational Lensing).

3. Solar Radiation Modification (SRM)

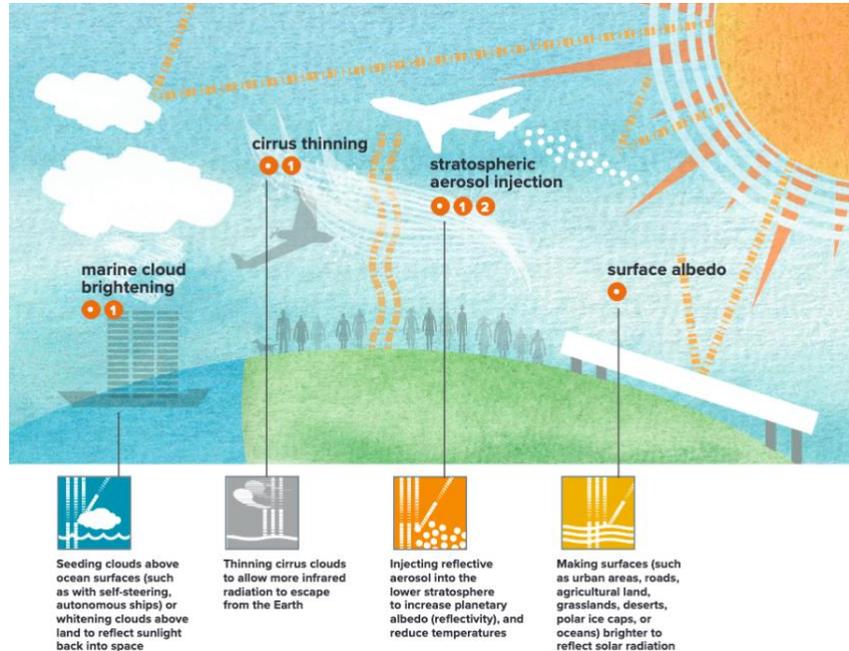
News: The US White House has released a report on Solar Radiation Modification.

About Solar Radiation Modification (SRM)

- **Solar Radiation Modification** or **Solar Geoengineering** is a type of climate geoengineering in which **part of sunlight is reflected back to space to limit incoming solar radiation**. It is one of the proposed methods to combat climate change.
- It includes multiple methods like **aerosol injection in the stratosphere, marine cloud brightening, cirrus thinning** etc.
- The methods are expected to **have a rapid cooling effect** on atmospheric temperature. But the **effect would be reversible**, i.e., the temperature will rise once the intervention is withdrawn.
- Climate Scientists fear that Earth's temperature may rise more than 1.5°C above the pre-industrial levels earlier than anticipated. The progress on Climate Action has been slow. There has been a greater interest in SRM in order to avoid possible catastrophic impacts of climate change. (Read more about Geoengineering Technologies: Applications and Concerns).

Risks Associated with SRM

- There are risks of **ecological disruption** associated with SRM e.g., aerosols could cause ozone depletion and hurt biodiversity.
- Experts fear that SRM can **impact the self-regulation capacity** of the atmosphere and can do more harm in the longer term. There may be **unintended consequences** like heavy rainfall causing damage to life and property.
- The impacts of SRM **may not be limited to national borders** and can have implications for other nations, including hazardous events like storms. Global regulation may be needed for such geoengineering methods.
- SRM will not address other impacts of climate change like ocean acidification.



Source: Carnegie Climate Geoengineering Governance Initiative. SRM includes multiple methods like cloud brightening, cirrus thinning, reflective aerosols and changing surface albedo.

About the US White House Report

- The report advocates **in-depth research** on SRM to assess all its risks and potential benefits.
- The report suggests the adoption of a '**risk versus risk**' framework to assist policymakers in developing an understanding regarding the risks associated with SRM in comparison to the risks posed by the current pace of climate action.

4. Bharat 6G Alliance

News: The Union Government has launched Bharat 6G Alliance to work towards setting up 6G network in India.

About Bharat 6G Alliance

- Bharat 6G Alliance (B6GA) is a **collaborative platform** consisting of public and private companies, academia, research institutions, and standards development organizations.
- The objectives of the Alliance include:
 - Understand the **business and societal needs of 6G** beyond technical requirements.
 - Foster consensus on the needs, and promote high-impact open research and development (R&D) initiatives. Bring together Indian start-ups, companies, and the manufacturing ecosystem to drive the **design, development, and deployment of 6G technologies** in India.
 - Facilitate market access for Indian telecom technology products and services, enabling India to emerge as a global leader in 6G technology.
- The Government aims for 10% of 6G patents by 2030. (Refer EPIC April 2023 (click) for Bharat 6G Vision Document).

About the Telecom Technology Development Fund (TTDF)

- It was launched in 2022.
- Its aim is to fund R&D in **rural-specific communication technology applications** and form synergies among academia, start-ups, research institutes, and the industry to build and develop the telecom ecosystem.
- It also aims to promote technology ownership and **indigenous manufacturing**, create a culture of **technology co-innovation**, reduce imports, boost export opportunities, and create Intellectual Property.
- 5% of annual collections from the Universal Service Obligation Fund (USOF) will be available for the TTDF Scheme.

About the Digital Communication Innovation Square Initiative

- It has been launched under the Champion Services Sector Scheme.
- Its aim is to **foster an ecosystem of indigenously developed telecom equipment**, in a bid to reduce reliance on imported equipment and technologies. The start-ups will get a grant of INR 50 lakhs, while MSMEs will get a grant of INR 2 crore, and a consortium will get a grant of INR 10 crore.

5. Dark Patterns

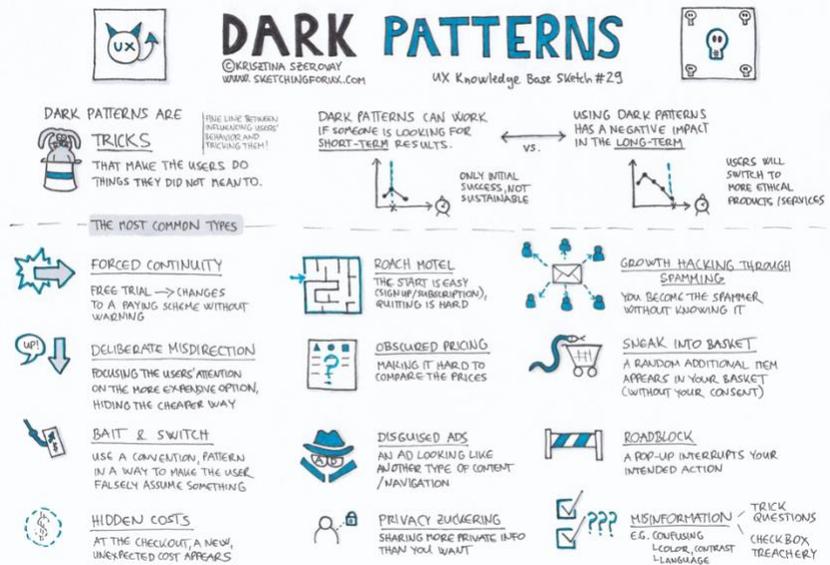
News: The Union Government has said that strict action will be taken against online platforms for the menace of dark patterns.

About Dark Patterns

- Dark Patterns is a user interface carefully designed to **trick, coerce or influence consumers to make choices not in their best interest.**

- Different types of dark patterns include:

- **False Urgency:** This tactic creates a sense of urgency or scarcity to pressure consumers into making a purchase or taking action.
- **Basket Sneaking:** Websites or apps use dark patterns to add additional products or services to the shopping cart without user consent.
- **Subscription Traps:** This tactic makes it easy for consumers to sign up for a service but difficult for them to cancel it, often by hiding the cancellation option or requiring multiple steps.
- **Forced Action:** This involves forcing consumers into taking an action they may not want to take, such as signing up for a service in order to access content.
- **Bait and Switch:** It involves advertising one product/service but delivering another, often of lower quality.
- **Hidden Costs:** This tactic involves hiding additional costs from consumers until they are already committed to making a purchase
- **Disguised Ads:** Disguised ads are advertisements that are designed to look like other types of content, such as news articles or user-generated content.



Government Measures Against Dark Patterns

- The Government has listed engaging in such deceptive and manipulative conduct by using dark patterns as 'unfair trade practice' under the **Consumer Protection Act, 2019**.
- Consumers can report instances of 'dark patterns' or provide feedback and report such manipulative online practices on the **National Consumer Helpline (NCH)**.
- The Union Government has constituted a 17-member task force to prepare guidelines on protecting consumers against dark patterns.

6. CERT-IN Guidelines on Information Security Practices

News: CERT-IN has issued 'Guidelines on Information Security Practices' for Government entities for safe and trusted internet.

About the Guidelines

- The guidelines are a **roadmap for government entities and industries to reduce cyber risk, protect citizen data and continue to improve the cybersecurity ecosystem** in the country.
- The guidelines will apply to all Ministries, Departments, Secretariats, and Offices specified in the **First Schedule to the Government of India (Allocation of Business) Rules, 1961**, along with their attached and subordinate offices.
- Government organizations should **mandatorily report cyber incidents to CERT-In within 6 hours of noticing them**. The information shall be shared with stakeholders like sectoral CERTs and regulators.
- Government offices need to **conduct an internal** (at least once in 6 months) **and external** (at least annually) **audit of their entire cyber infrastructure and deploy appropriate security controls** based on the audit.
- Government organizations need to appoint a **Chief Information Security Officer (CISO)** who would be accompanied by a **dedicated cybersecurity team**, separate from the IT operations team.
- Government bodies shall maintain an inventory of authorized hardware and software for their organization, along with a mechanism for automated scanning to detect any unauthorized device or software.
- The guidelines recommend the **use of complex passwords** with a minimum length of 8 characters; never to store any usernames and passwords on the Internet browser; and to not store any payment-related information on the Internet browser. *(Read More about Cyber Security in India).*

The guidelines have been issued under section 70B of the **Information Technology Act, 2000**.

7. GE F414 Engine

News: During PM's visit to the US, a deal was announced between General Electric (GE) and Hindustan Aeronautics Limited (HAL) to manufacture GE's F414 engine for India's Light Combat Aircraft Tejas Mk2.

About the F414 Engine

- F414 is a part of General Electric's suite of **military aircraft engines**. It has been in use by the US Navy for more than 30 years.
- It is a **reliable and powerful engine** that is well-suited for use in a variety of fighter aircraft. It is being used to power the Indian Air Force's Tejas Mk2. F414 engines may also power the prototypes and the initial batch of **Advanced Medium Combat Aircraft (AMCA)**, India's futuristic 5th-generation fighter aircraft for Air Force.
- Under the Agreement, 80% of the engine manufacturing will take place within India, with only minor components being sourced from elsewhere.
- The agreement will facilitate the **transfer of at least 11 critical jet engine technologies to India**.

- The deal will allow India to make advanced jet engines. Only the US, Russia, the UK, and France have **mastered the technology and metallurgy** needed to manufacture an engine that can power combat aircraft. It can help **develop a domestic defence industrial base**.

8. Large Language Models (LLMs)

News: Large Language Models like ChatGPT will have a profound impact on learning and nature of work.

About LLMs

- A **large language model (LLM)** is based on recent advances in **deep learning** models, which can **process a large amount of text data**, mostly scraped from the Internet.
- Based on their deep learning and processing of huge database, they can **generate response to complex text-based questions**, or respond to common text-based enquiries.
- Popular LLMs include ChatGPT, PaLM (used by Google's Bard), LLaMA (Meta), BLOOM and Claude etc.

Issues Associated with LLMs

- LLMs are trained on the text available over the internet. However, the text on internet can be biased, incorrect or incomplete. The LLM models will incorporate these **biases in their processing and responses**.
- LLMs are known to '**hallucinate**' (*make things up*), wherein they provide **confident but wrong responses** that do not seem to be justified by the training data. The reasons for hallucinations are unknown, but experts attribute them to insufficient training data or contradictory information within the data.
- LLMs lack critical sense in assembling information and distinguishing what is appropriate and relevant. Hence their response is dependent on the quality of their training data.

Impact on Productivity of Workers

- A study "Generative AI at Work" on the impact of generative AI found **14% gains for weak employees**. However, it also found that **it will not be beneficial to skilled employees**.
- LLMs can help plug productivity gaps. A large workforce from India lack advanced skills and LLMs can help plug these gaps.
- However, LLMs are susceptible to make mistakes. Mistakes made by LLMs will be obvious to an expert, but a novice may not be able to point them out. Hence, a **multi-layer management system for LLMs is required**. In this system, first drafts will be produced by juniors using LLMs, which will be reviewed by experts. So that any mistake of the draft can be corrected by an expert.
- Till the models can be refined further and made more advanced (to address their limitations), LLMs will have applications in more basic tasks like email-based customer support, simple coding or as communication improvement tools (like correcting grammar in official communications). (Refer EPIC February 2023 (*click*) *Generative Artificial Intelligence (AI): Benefits and Concerns*).

9. Regulatory Sandbox

News: TRAI has released a consultation paper on 'Encouraging Innovative Technologies, Services, Use Cases, and Business Models through Regulatory Sandbox in Digital Communication Sector'.

About Regulatory Sandbox

- Regulatory sandbox refers to **live testing of new products or services in a controlled regulatory environment**. It acts as a 'safe space' for business as the regulators may or may not permit certain relaxations for the limited purpose of testing.

- The sandbox allows the regulator, the innovators, the service providers and the customers to **conduct field tests** to collect evidence on the **benefits and risks of new innovations**, while **carefully monitoring and containing their risks**.

Advantages of Regulatory Sandbox

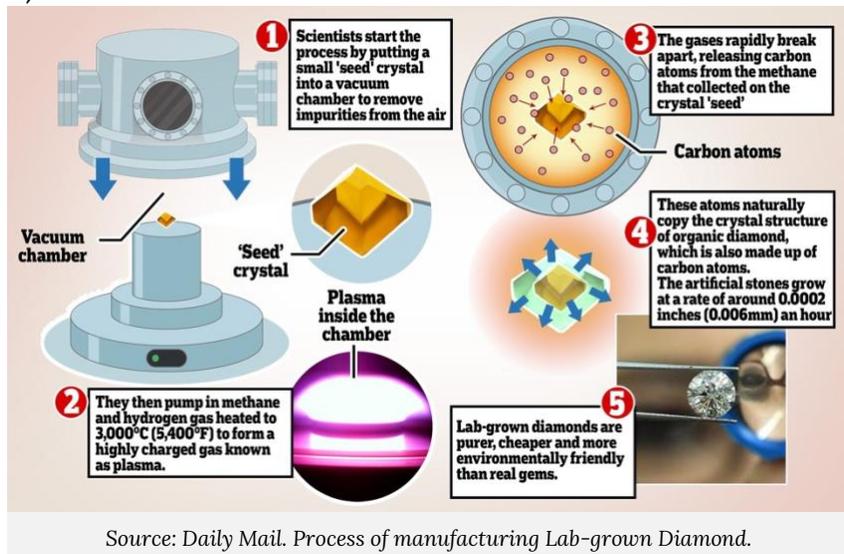
- Regulators obtain first-hand **empirical evidence** on the **benefits and risks of emerging technologies** and their implications. It enables them to **take a considered view on the regulatory changes** or new regulations that may be needed to support useful innovation, while containing the attendant risks.
- Users of a sandbox can test the product’s viability **without the need for a larger and more expensive roll-out**. If the product appears to have the potential to be successful, the product might then be authorized and brought to the broader market more quickly.
- Regulatory bodies in many countries have established **sandbox frameworks for telecom tech innovation**. These frameworks aim to promote regulators’ desire for innovation with **economic resilience** and **consumer protection**.

10. Lab-grown Diamonds

News: The Prime Minister of India presented the US First Lady with a lab-grown 7.5 carat green diamond.

About Lab-grown Diamonds (LGDs)

- **Naturally-formed diamonds** are pure carbon. They are formed (crystallised in the isometric cubic form) under **high temperature and pressure conditions beneath the earth’s crust**.
- **Lab-grown diamonds** are diamonds are **grown inside a laboratory** using cutting-edge technology. They are **chemically, physically and optically** similar to natural diamonds.



Source: Daily Mail. Process of manufacturing Lab-grown Diamond.

- Lab-grown diamonds can be created by two processes
 - High-Pressure High Temperature (HPHT).
 - Chemical Vapor Deposition (CVD).
- The CVD method is popular in India. It is a chemical process, the seed is **heated up to 800°C** in a sealed chamber filled with molecules of **carbon-rich gas such as methane**. These gas molecules are broken down into carbon and hydrogen atoms, which get deposited on the seed giving it the shape of a square, tabular diamond crystal. This process also requires heat or irradiation to give the crystal a colour effect.

Uses of Lab-Grown Diamonds

- They are most often used for **industrial purposes**, in machines and tools. Their hardness and extra strength make them **ideal for use as cutters**.

- Pure synthetic diamonds have **high thermal conductivity**, but **negligible electrical conductivity**. This combination is useful in electronics where such diamonds can be used as a heat spreader for **high-power laser diodes, laser arrays** and **high-power transistors**.
- As the Earth's reserves of natural diamonds are depleted, LGDs are slowly replacing the prized gemstone in the jewellery industry.

About the Lab Grown Diamond Industry in India

- At present, the share of lab-grown diamonds in the overall diamond business in India is just 2-3%. **India contributes ~15% of the global production** of lab-grown diamonds.
- In India, lab-grown diamonds are mostly used for **jewelleries** and **exports**. ~80% of the cut and polished LGDs are exported. India exports polished Lab Grown diamonds to the USA, Hongkong, UAE, Israel and Belgium. **The US accounts for ~67% of India's exports** followed by Hongkong (14%).
- In Budget 2023-24, the Union Finance Minister had **abolished the Customs duty** on imports of seeds used for manufacturing of rough lab-grown diamonds.

11. Synthetic Human Embryo

News: At the International Society of Stem Cell Research's annual meeting in Boston, a woman scientist announced the creation synthetic human embryos using stem cells, obviating the need for egg and sperm.

About Synthetic Human Embryos

- Synthetic embryos are **created without fertilization**. These are also known as **artificial embryos**.
- These embryos **do not require an egg or sperm cell** to facilitate their creation. Instead, these are the primitive embryos that include cells that go on to form the placenta, the yolk sac and the embryo itself.
- These embryos rely on self-assembling **stem cell structures** to mimic the natural process of early human development.
- In 2022, the same team had demonstrated that the stem cells from mice could be programmed into developing a beating heart and primordial brain. (Refer EPIC March 2022 (click) for Synthetic Biology).

Challenges Associated with Synthetic Human Embryos

- There are ethical concerns related to synthetic embryos e.g., in future the technology can misused to create designer babies with certain desired attributes related to physical appearance (e.g., tall, blonde, fair etc.) or intelligence (designer babies, eugenics).
- There are associated regulatory challenges to control misuse while allowing research for beneficial purposes like curing of diseases. (Read more about Human Genome Editing).
- None of the animal embryos has gone on to produce living species in the past.

12. One Health Agenda on Antimicrobial Resistance (AMR)

News: The UN Food and Agriculture Organisation (FAO), UN Environment Programme (UNEP), WHO and the World Organisation for Animal Health has released the One Health Priority Research Agenda on AMR.

About One Health

- One Health is an **integrated, unifying approach** that aims to **sustainably balance** and **optimize** the **health of people, animals, and ecosystems**.
- It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are **closely linked and interdependent**.

- The approach **mobilizes multiple sectors, disciplines and communities** at different levels of society to work together to foster well-being and tackle threats to health and ecosystems. It will address the collective need for healthy food, water, energy, and air, taking action on climate change and contributing to sustainable development.

About the One Health Priority Research Agenda on Antimicrobial Resistance (AMR)

- The agenda aims to guide a variety of stakeholders in generating new evidence to **address antimicrobial resistance**, with a focus on low- and middle-income countries.

- It focuses on 5 key pillars:

- **Transmission:** It focuses on the environment, plant, animal, and human sectors where AMR transmission, circulation and spread occur.
- **Integrated Surveillance:** It aims to identify cross-cutting priority research questions in order to improve common technical understanding and information exchange among One Health stakeholders.

- **Interventions:** It focuses on programmes, practises, tools, and activities aimed at preventing, containing, or reducing the incidence, prevalence, and spread of AMR.

- **Behavioural Insights and Change:** It focuses on research addressing human behaviour that affects AMR, including ways to combat it.

- **Economics and Policy:** It takes into account the cost-effectiveness of an AMR investment case, financial sustainability, and long-term financial impact.

- The Agenda will serve as a guide for countries, research institutes and funding bodies to support One Health AMR research. It will also allow policymakers, researchers, and the multidisciplinary scientific community to collaborate across sectors. (Refer EPIC February 2022 (click) for Study on Superbugs and Anti-microbial Resistance and EPIC November 2021 (click) for Action Plan on Antimicrobial Resistance).



Environment

1. Bonn Climate Stocktake

News: The Bonn Climate Change Conference was held in Bonn, Germany to prepare decisions for adoption at the COP28 to be held in UAE.

Key Outcomes of the Conference

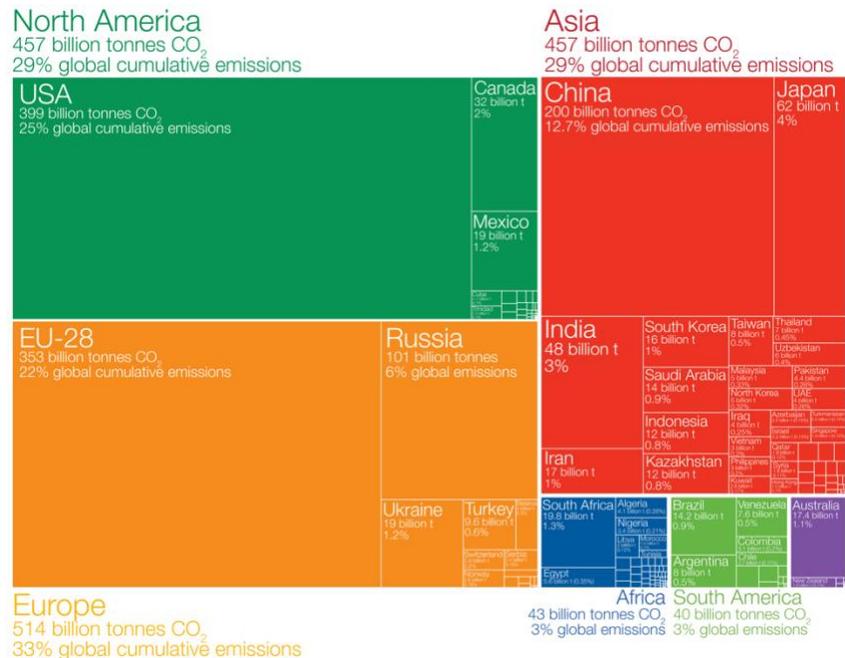
- **Global Stocktake** (mandated by 2015 Paris Agreement) is an exercise aimed at **assessing the progress** in the **fight against climate change** and **deciding ways to enhance climate action** and **bridge adequacy gap**.

○ There was repeated **fallout between the developed and developing countries** mainly over provisions related to **finance** and the **'historical responsibility'** of the rich countries.

○ Australia has argued that the historical emissions happened at a time *“when there was no alternative to fossil fuel-based energy sources”*, and *“when there was little understanding or consensus on the harm caused by greenhouse gases”*.

○ This historical responsibility has been the basis for the **differentiated burden-sharing on developed and developing countries** in the climate change framework.

- **Mitigation Work Programme (MWP)** was set up at COP26 in Glasgow in 2021 for climate action. It is a temporary emergency exercise focused only on **increasing emission cuts**.
 - The IPCC says global emissions have to come down by 43% from 2019 levels by 2030 in order to meet the 1.5°C target. As of now, emissions are still growing and, in 2021, were higher than 2019 levels.
 - Developing countries complained about **lack of climate finance** and **transfer of technology** while being pressurized to undertake greater emission cuts.
 - According to an assessment, developing countries need ~US\$ 6 trillion between now and 2030 just to implement their climate action plans. (Refer EPIC June 2023 (click) for Global Stocktake of Climate Action).



Source: Our World in Data. Historical contribution to global CO2 emissions between 1750-2017. The US (25%) and EU (22%) collectively contributed 47% of emissions.

About New Collective Quantified Goal (NCQG)

- The US\$ 100 billion climate finance goal will be succeeded by the New Collective Quantified Goal (NCQG) in 2025. The 2015 Paris Climate Agreement had agreed on setting NCGQ for climate financing before 2025.
- The NCGQ aims to **account for the needs and priorities of developing nations**, considering scientific evidence and addressing the growing demands for Loss and Damage funding.
- Developed countries have failed to meet the commitment of ‘US\$ 100 billion per year till 2020’, agreed at COP15 in 2009. No effort has been made to **define climate finance or its source**.
- OECD had reported that developed countries provided US\$ 83.3 billion in 2020 (instead of US\$ 100 billion). However, Oxfam has reported that the figure could be **inflated by 225% due to dishonest and shady reporting**.
- New estimates suggest that transition to low-carbon economy will require US\$ 4-6 trillion every year. Countries have only a year or so to agree upon the NCQG ahead of 2024.
- A recent study by the Centre for Science and Environment (CSE) found **~5% of climate finance comes from grants**; the rest through loans and equity **burdening developing countries with a debilitating debt crisis**.
- Developed countries argue that NCQG must be viewed as a **“collective goal”** for all developed and developing countries. This puts the onus on developing countries too. (Refer EPIC November 2022 (click) for Climate Finance).

2. Melting of Arctic Ice

News: A study has predicted that the Arctic Ocean could be free of ice in summers by 2030s.

About Melting of Arctic Ice

- The Arctic has been **experiencing climate heating faster than any other part of the Earth**. The ice which remains at the end of summer is called **multiyear sea ice** and is considerably thicker than seasonal ice.
- It acts as barrier to the transfer of moisture and heat between the ocean and atmosphere.
- Over the past 40 years, the multiyear sea ice in the Arctic has shrunk from around 7 million sq. km to 4 million (loss of ice cover roughly equal to size of India).
- **Blue Ocean Event** refers to the situation of **Arctic Ocean becoming ice-free during the summer**, with the sea ice area dropping below 1 million square kms.

The Arctic Ice Cover is Receding

Arctic sea ice cover in March 1979-2019 (in million square miles)



Source: Statista. The Arctic Ice cover reaches its maximum extent in March. Over the years, the extent of maximum cover has reduced consistently from ~6.4 million square miles to ~5.7 million square miles.

Consequences of Ice-free Arctic

- Arctic sea ice is an **important component of the climate system**. Loss of ice reduces reflection of sunlight, causing further warming and loss of ice, accelerating the whole process through positive feedback.
- This, in turn, will make the Greenland ice sheet melt faster, which is already a major contributor to sea level rise. The loss of sea ice in summer would also mean **changes in atmospheric circulation** and storm tracks and **fundamental shifts in ocean biological activity**. (Refer EPIC September 2022 (click) for Arctic Amplification and EPIC July 2022 (click) for Exceptional Warming of Barents Sea and Atlantification).

3. Energy Transition Index, 2023

News: World Economic Forum (WEF) has released the Energy Transition Index, 2023.

About the Energy Transition Index (ETI)

- It is an annual report by the World Economic Forum (WEF).
- The ranking aims to **enable policy-makers and businesses to plan for a successful energy transition**.
- It checks the readiness of countries for transition to **secure, sustainable, affordable, and inclusive energy systems**.
- It ranks countries on the basis of: Economic development and growth; Environmental sustainability and Energy security and access.

Findings of the Index

- Sweden has topped the list and was followed by Denmark, Norway, Finland and Switzerland in the top five. France (7) was the only G20 Country in the top 10.
- **India has been ranked 67th out of 120 countries**. India is the only major economy with energy transition momentum accelerating across all dimensions.
- India has successfully **reduced the energy intensity of its economy** and the **carbon intensity of its energy mix**, while **achieving universal energy access** and effectively managing affordability of electricity.

- **Universal access to electricity, replacing solid fuels with clean cooking options and increasing renewable energy deployment** have been primary contributors to the improvement of India's performance.
- The risk faced by Indian include **rising import dependence** amid global energy market volatilities, and a predominant **carbon-intensive energy mix**.
- Challenges include **balancing economic growth** and **creating quality jobs** for the growing working-age population.
- A skilled workforce, public-private collaboration in innovation, and investment in R&D in low-carbon technologies are necessary to enable India's energy transition.

4. Green Credits Scheme

News: The Ministry of Environment has issued a draft notification detailing the Green Credits Scheme.

About the Green Credits Scheme

- A Green Credit Programme is proposed to be launched at the national level that would **leverage a competitive market-based approach for Green Credits**.
- It is expected to **incentivise voluntary environmental actions** by various stakeholders. It will encourage private sector industries to meet their existing obligations (under other legal frameworks) by taking actions which are able to converge with activities relevant to generating or buying Green Credits.
- These credits, through a yet-to-be-specified mechanism, can also be traded for money.
- It will focus on **8 sectors** including tree plantation, water (conservation, water harvesting, water-use efficiency etc), sustainable agriculture among others.
- The scheme will incentivise a host of activities like **afforestation programmes, water conservation, waste management** etc. by allowing individuals and organisations to generate 'green credits'.
- Experts have raised concerns. Unlike carbon markets, where only greenhouse gas emissions are traded, the Green Credit Scheme is "trickier" as it involves **accounting for a wide range of actions**. There are a few examples globally but nowhere in the world is such a wide range of actions considered. (Refer EPIC August 2022 (click) for Amendments to Energy Conservation Act and Carbon Markets).



Source: Business Standard. Focus areas under Green Credit Scheme.

5. Report on Forest Cover

News: Global Forest Watch, World Resources Institute has released a report on forest cover.

Key Findings of the Report

- **Forest Loss in Tropical Areas:** In 2022, Tropical areas lost **4.1 million hectares of forest cover**. The primary forest cover loss in tropical areas in 2022 was 10% more than in 2021.
 - Primary forest loss is almost irreversible in nature. Even if the green cover regrows, a

Primary Forests

Primary forests have been defined as **naturally regenerated forest** of native tree species, **where there are no clearly visible indications of human activities** and the **ecological processes are not significantly disturbed**. They often **store more carbon** than other forests and are **rich sources of biodiversity**.

secondary forest is unlikely to match the extent of biodiversity and carbon sequestering capabilities of a primary forest.

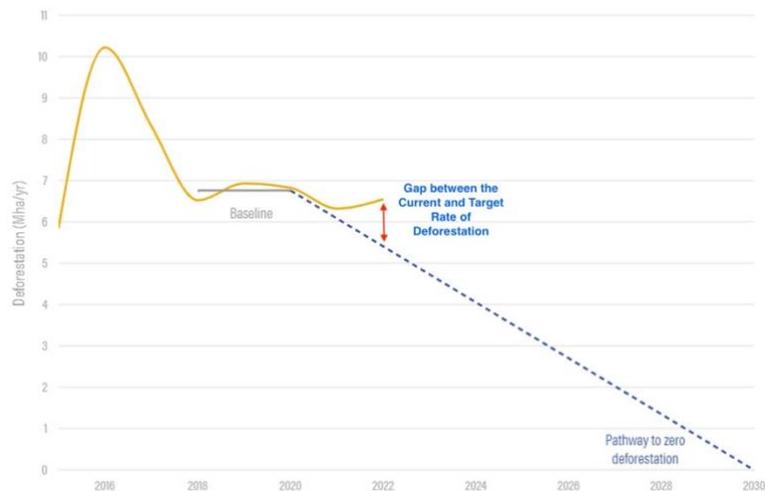
- The World is not on track to meet the forest related commitments.
 - **Ending deforestation by 2030:** For this, the global deforestation rate **needs to decrease by at least 10% annually** to meet the 2030 target. In 2022, the deforestation rates reduced by 3.1% compared to the 2018–2020 baseline. It is still far away from the 2030 goal.

- **Restoring 350 million hectares of lost and degraded forests by 2030:**

The overall change in tree cover over the past two decades has been a **net loss of 100 million hectares**. This indicates that forests are still being lost **instead of being restored** at the required rate.

- **Countries by Tropical Forest Cover:** Brazil and the Democratic Republic of Congo have most tropical forest cover and both registered losses of this resource in 2022. Indonesia and Malaysia have managed to keep their primary forest cover loss to record-low levels in 2022.
- **India:** India lost 43.9 thousand hectares of humid primary forest between 2021 and 2022, which accounts for 17% of the country's total tree cover loss in the period. The total tree cover loss in India between 2021 and 2022 was 255 thousand hectares. (Refer EPIC January 2022 (click) for India State of Forest Report 2021).

Global progress toward target to end deforestation by 2030



Source: World Resources Institute. The rate of deforestation is much higher above the target rate.

6. Impact of Climate Change on Mountain Ecosystems

News: Two Studies have pointed out possible disastrous impact of Climate Change on Mountain Ecosystems.

Findings of the Studies

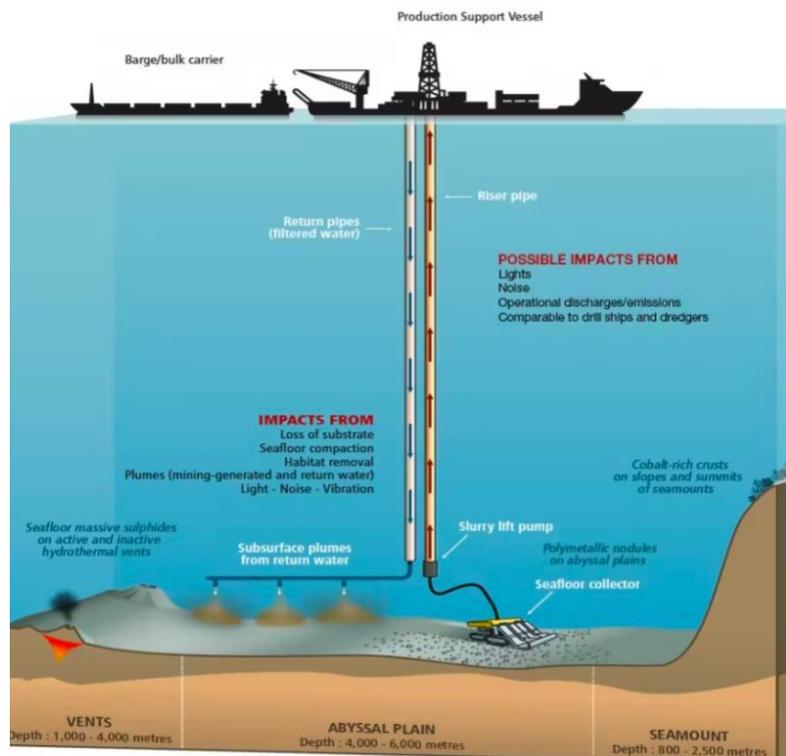
- A study has pointed out that climate change will cause a shift from snowfall to rainfall in mountain regions across the Northern Hemisphere.
- The mountains (Himalayas, Alps etc.) are likely to see 15%, 30% and 45% increase in rain for 1°C, 2°C and 3°C rise in temperature.
- The shift from snowfall to rainfall will **increase the risk of disasters** such as floods, landslides, and soil erosion. ~25% of the global population living downstream from mountainous regions face risk of disastrous consequences. **Himalayas and Western Cordilleras are at a greater risk than the Alps** (Europe).
- Another study has pointed out rapid melting of glaciers in the Hindu Kush-Himalayas region. The region could lose up to 75% of the volume by end of the century. The region gives birth to world's most important river systems including Ganga, Indus, Brahmaputra, Mekong, Yellow rivers providing essential water and energy resources to more than 2 billion people.
- Between 2011 and 2020, the glaciers in the Hindu Kush-Himalaya (HKH) region vanished 65% faster than in the previous decade, primarily due to the impacts of climate change.
- Even if the temperature rise is limited to 1.5–2°C, the glaciers are projected to lose between one-third (33.3%) and one-half (59%) of their volume by 2100.
- Melting could lead to flooding followed by severe water shortage.

7. Deep Sea Mining

News: The International Seabed Authority is preparing to resume negotiations on opening of international seabed for deep sea mining.

About Deep Sea Mining

- Deep-sea mining is the process of extracting or excavating mineral deposits from the **deep seabed**. The deep seabed is the seabed at ocean depths **greater than 200m**. It covers ~2/3rd of the total seafloor.
- Most extractable minerals are in the form of **polymetallic nodules** formed on ocean floors over a period of millions of years. The nodules are predominantly composed of iron, manganese, copper and cobalt. Other areas of interest are extraction from **cobalt-rich ferromanganese crusts** and polymetallic sulphides.
- Deep sea mining has been necessitated by **depleting terrestrial deposits** of metals like copper, nickel, aluminium, manganese, zinc, lithium and cobalt. Their demand is increasing in technologies like smartphones, wind turbines, solar panels and batteries.



Source: Wikimedia Commons. Extraction of Polymetallic nodules, sulphides and ferromanganese crusts and possible harmful impacts.

Regulation of Deep Sea Mining

- Countries manage their own maritime territory and exclusive economic zones (EEZs).
- 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 nations regardless of whether or not they have signed or ratified it.
- Under the treaty, the seabed and its mineral resources are considered the '**common heritage of mankind**'. It 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**.
- Outside EEZs, **International Seabed Authority (ISA)**, set up under UNCLOS regulates deep sea mining. ISA has **provided 15-year contracts** for the exploration for polymetallic nodules (PMN), polymetallic sulphides (PMS) and cobalt-rich ferromanganese crusts (CFC) in the deep seabed to **22** contractors.
- Mining companies interested in deep sea exploitation are partnering with countries to help them get exploration license.
- In 2021, Nauru (a Pacific island nation, in partnership with a mining company) applied to the ISA to exploit minerals in a specified deep sea area. This triggered a clause of the UN treaty that requires the ISA to complete regulations governing deep sea exploitation. If no regulations are finalized, Nauru can submit an application to conduct the mining without any governing regulations.

Environmental Impact of Deep-sea Mining

- The deep oceans absorb and store more than 90% of the excess heat and approximately 38% of the carbon dioxide generated by humans. Breakdown of carbon (even a small fraction) stored in marine sediments could **exacerbate climate change**.
- Noise from deep-sea mining could **disrupt marine mammals**, (whales, dolphins), that use sound as a primary means of underwater communication. (Refer EPIC March 2023 (click) for Impact of Marine Underwater Noise).
- **Waste water** and the **particles discharged by mining ships** at the ocean surface will **affect ecosystems** and commercially important or **vulnerable species**. It can lead to loss of habitats and biodiversity.
- There are implications for the **human rights of communities** that could be affected by pollution or damaged fisheries. (Refer EPIC April 2023 (click) for The UN High Seas Treaty: Significance and Challenges).

8. Crop Residue Management Guidelines

News: The Government of India has revised the crop residue management guidelines for Punjab, Haryana, UP and Delhi to help tackle the challenge of stubble burning and improve air quality.

About Crop Residue

- Crop residues are materials left in an agricultural field after the harvesting of crops. These residues include stalks and stubble (stems), leaves, and seed pods.
- Crop residues are primarily used as bedding material for animals, livestock feed, soil mulching, bio-gas generation, bio-manure/compost, thatching for rural homes, mushroom cultivation, biomass energy production, fuel for domestic and industrial use, etc.
- A large portion of crop residue is burnt 'on-farm' primarily to clean the field for sowing the next crop.
- The problem of '**on-farm**' **burning of crop residues is intensifying** in recent years due to **shortage of human labour**, the **high cost of removing the crop residue** from the field, and **mechanized harvesting** of crops.

Adverse Effects of Burning Crop Residue

- **Loss of Nutrients:** Burning one tonne of rice straw accounts for the loss of 5.5 kg Nitrogen, 2.3 kg phosphorus, 25 kg potassium, and 1.2 kg sulphur besides, organic carbon.
- **Impact on Soil Properties:** Heat from burning residues elevates soil temperature, causing **death of beneficial soil organisms**.
- **Emission of Greenhouse Gases:** Crop residue burning is a potential source of Green House Gases (GHGs) and other chemically and radiative important trace gases and aerosols such as CH₄, CO, N₂O, NOX, and other hydrocarbons.

Revised Crop Residue Management Guidelines

- Techno-commercial pilot projects for **Paddy Straw Supply Chain** will be established under the bilateral agreement between the Beneficiary/Aggregator (Farmers, Cooperative Societies of Farmers, Farmers Producer Organizations (FPOs), and Panchayats) and Industries utilizing the paddy straw.
- Government shall provide **financial assistance on the capital cost of machinery and equipment**.
- The required working capital may be financed either by the Industry and Beneficiary jointly or utilizing the **Agriculture Infrastructure Fund (AIF)**, NABARD Financial, or Financing from the Financial Institutions by the beneficiary.
- The **land for storage of the collected paddy straw** will be arranged and prepared by the beneficiary as may be **guided by the end-use industry**. (Refer EPIC November 2022 (click) for The Issue of Stubble Burning).

Significance of Revised Guidelines

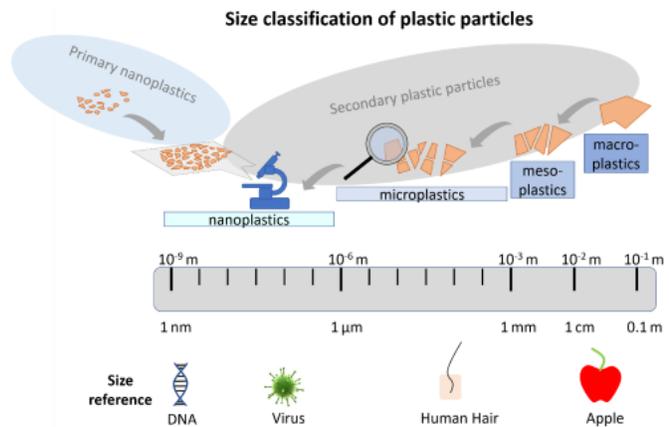
- The guidelines will supplement the efforts of paddy straw management through in-situ options.
- Air pollution caused by stubble burning is expected to be considerably reduced.
- It would also help generate employment opportunities of about 9,00,000 man-days.

9. Impact of Nanoplastics

News: The FAO has found that micro- and nanoplastics considerably impact human and animal gut microbes.

About Micro and Nanoplastics

- Microplastics (size: 0.1 to 5,000 μm) and nanoplastics (size: 0.001 to 0.1 μm) (1 μm (micrometer = 10^{-6}m) are tiny plastic particles. They are generated from both primary and secondary sources.
 - **Primary** nanoplastics are **deliberately created for consumer and industrial uses**, such as exfoliants in cleansers, cosmetics, as drug delivery particles in medicines, and industrial air blasting.
 - **Secondary** micro/nanoplastics are generated through **disintegration of macroplastics** into smaller particles. They occur both terrestrially and in the aquatic environment.
- Microplastics and Nanoplastics enter human body through 3 key routes:
 - **Inhalation:** Inhaled airborne microplastics originate from urban dust, and include synthetic textiles and rubber tyres.
 - **Ingestion:** Microplastics are prevalent in the food chain and water supplies and are ingested.
 - **Skin contact:** Skin membrane is too fine for microplastics or nanoplastics to pass through. But it is possible for them to enter through wounds, sweat glands or hair follicles.



Impact on Human and Animal Gut

- Microplastics and nanoplastics considerably impact human and animal **gastrointestinal tracts** and **gut microbiomes** as well as the environment.
- Researchers have found that injection of these plastics has led to changes in gene markers, biochemical markers, mucus layer, gut permeability, oxidative stress, immune response and liver function.
- There is lack of adequate research on long-term impact of accumulation of plastics inside human body. However, some studies point to satiety in the organism and reduced food consumption leading to weight loss and metabolic changes. They can cause inflammation of intestines.

History, Art and Culture

1. Upanishads

News: The Prime Minister of India gifted the book *The Ten Principal Upanishads* to the US President during his State visit to the US.

About Ancient Indian Texts

- There are broadly two categories of Hindu sacred texts: **shruti** ('the revealed') and **smriti** ('the remembered').

- The first category is considered to be the most authoritative and consists of the 4 **Vedas** (*Rigveda*, *Yajurveda*, *Samaveda* and *Atharvaveda*) and accompanying texts: **Brahmanas** (ritual texts), **Aranyakas** ('forest' or 'wilderness' texts), and **Upanishads** (philosophical texts).
- The second category is less authoritative. They are considered to be **derived from the first**, but are more popularly known. These include the great epics of **Ramayana** and **Mahabharata**, **Dharmashastras**, **Puranas** and all other post-Vedic scriptures.

About Upanishads

- The *Upanishads* date back to ~800-500 BC. They are also known as the **Vedanta** – as they signal the end of the total Veda. They speculate about the **ontological connection between humanity and the cosmos**.
- They serve as **foundational texts** in many traditions of Hindu theology and have hence attracted far more attention than the *Vedas* themselves.
- Upanishads also discuss concepts such as **transmigration** (passing of a person's soul from one body to another after death).
- The Upanishads were given particular importance in Hindu theology by 8th-century Hindu scholar **Adi Shankara**, whose interpretations synthesized the **Advaita Vedanta** tradition.
- **Advaita Vedanta** is a **non-dualistic philosophy** that has in modern times, under philosophers such as Swami Vivekananda and S Radhakrishnan, become the most dominant force in Hindu intellectual thought.
- This philosophy emphasizes on the illusory nature of the transient phenomenal world around us, and puts forth the idea that the **brahman** is the only and ultimate real.
- Much of the *Upanishads* are concerned with the relationship between the *atman*, or the distinct, unchanging self of an individual, and the *brahman*, the ultimate reality in the universe.

2. Patthuppattu: Sangam Literature

News: The Tamil Nadu Textbook and Education Services Corporation has released *Patthuppattu*, a collection of 10 idylls, one the earliest Sangam poetry collections.

About Sangam Age

- The Sangam Age constitutes an important chapter in the history of South India.
- According to Tamil legends, there existed 3 Sangams (Academy of Tamil poets) in ancient Tamil Nadu popularly called **Muchchangam**. These Sangams flourished under the **royal patronage of the Pandyas**.
- The 1st Sangam was held in **Madurai**. It was attended by gods and legendary sages but no literary work of this Sangam is available.
- The 2nd Sangam was held at **Kapadapuram** but all the literary works had perished except **Tolkappiyam**.
- The 3rd Sangam at Madurai was founded by **Mudathirumaran**. It was attended by a large number of poets who produced voluminous literature but only a few had survived. These Tamil literary works remain useful sources to reconstruct the history of the Sangam Age.

About Sangam Literature

- The collection of Sangam literature includes **Tolkappiyam**, **Ettutogai**, **Pattuppattu**, **Pathinenkilkanakku** and the two epics: **Silappathigaram** and **Manimegalai**.
- *Tolkappiyam* authored by **Tolkappiyar** is the earliest of Tamil literature. It is a work on **Tamil grammar** but it provides information on the **political and socioeconomic conditions of the Sangam period**.
- The *Ettutogai* or 8 Anthologies consist of 8 works. The *Pattuppattu* or Ten Idylls consist of 10 works. Both *Ettutogai* and *Pattuppattu* were divided into 2 main groups: **Ahom** (love) and **Puram** (valour).

- **Pathinenkilkanakku** contains 18 works mostly dealing with ethics and morals. The most important among them is **Tirukkural** authored by **Thiruvalluvar**.
- **Silappathigaram** written by **Elango Adigal** and **Manimegalai** by **Sittalai Sattanar** also provides valuable information on the Sangam polity and society.

3. Lambani Embroidery

News: At the 3rd G20 culture working group (CWG) meeting in Hampi, a Guinness world record was created for the ‘largest display of Lambani items’.

About Lambani Embroidery

- Over 450 Lambani women artisans and cultural practitioners associated with **Sandur Kushala Kala Kendra** (SKKK) came together to display Lambani items.
- 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 practised in several villages of Karnataka such as Sandur, Keri Tanda, Mariyammanahalli, Kadirampur, Sitaram Tanda, Bijapur, and Kamalapur.
- This embroidery is predominantly done by the skilled women of the Lambani community. It serves them as a vital source of livelihood and sustenance.
- Lambani embroidery involves stitching together small pieces of discarded fabric to create a beautiful fabric.
- The embroidery traditions of the Lambanis are shared in terms of technique and aesthetics with textile traditions across Eastern Europe, West, and Central Asia. This signifies the movement of the nomadic communities across such regions historically, forming a shared artistic culture.



Source: Google Arts and Culture. Lambani Embroidery.

About Sandur Kushala Kala Kendra Kendra (SKKK)

- It is a registered society established in 1988.
- Its aim is to revive traditional crafts and enhance the livelihoods of craftswomen by nurturing their skills, promoting their products, and thus ensuring a steady income.
- SKKK has gained national and international recognition for the Lambani craft earning the prestigious **UNESCO Seal of Excellence for Handicrafts** in South Asia in 2004 and 2012.
- It has also obtained the GI tag for the craft ‘Sandur Lambani hand embroidery’ in 2008.

4. Rock Paintings at Rudragiri, Andhra Pradesh

News: Rudragiri has rich historical and artistic legacy.

About Rock Paintings at Rudragiri Hillock

- Rudragiri Hillock is located in Guntur district in Andhra Pradesh.
- It is nestled amidst the Eastern Ghats, features 5 **naturally formed rock shelters at its foothills**.
- It features a unique combination of **prehistoric rock paintings** from the **Mesolithic period** and exquisite artwork from the **Kakatiya dynasty**, dating back to around 1300 AD.
- One cave presents a narrative mural portraying the intense battle between the **Vanara** brothers, **Bali** and **Sugriva** from the epic **Ramayana**.

- In another cave, a grand sketch of Lord **Hanuman**, accompanied by sacred symbols of the **conch** (Sankha) and the fire altar (**Yagna Vedi**) is present. Lord Hanuman is depicted carrying the **Sanjeevani hill** in his right hand symbolizing his mission to save Lord Lakshman's life.
- The third cave houses the **prehistoric rock paintings from the Mesolithic era**. The Kakatiya artist chose the same rock shelter to superimpose the elegant figure of Lord Hanuman who is portrayed in a unique '**Anjali**' posture, folding his hands in a divine offering.
- There is a striking resemblance between the splendid frescoes on Rudragiri's rock shelters and those discovered in **Muppavaram** and **Pandavula Gutta** in Warangal, Telangana.
- These similarities suggest that the *Ramayana* scenes depicted at Rudragiri might have drawn inspiration from the artworks at Muppavaram.
- Moreover, the **Ganapati Deva** (1199-1262 AD), the founder of Muppavaram temple and a prominent figure of the Kakatiya dynasty likely patronized the rich ancient mural heritage found at Rudragiri.



Source: *The Hindu*. Rock painting depicting Lord Hanuman lifting the Sanjeevani hill.

5. Rani Durgavati

News: Rani Durgavati Gaurav Yatra was held in Madhya Pradesh.

About Rani Durgavati

- Rani Durgavati (1524 – 1564) was the ruling Queen of Gondwana between 1550-1564. She was born in **Mahoba's Chandela dynasty**.
- She is chiefly remembered for defending her kingdom against the Mughal Empire.
- She was married to Dalpat Shah, the son of the Gond King Sangram Shah of the kingdom of Garha-Katanga. This kingdom is noted as one of the most powerful kingdoms of the Gond tribe. The Chandelas of Mahoba and Rajgonds of Garha-Mandla dynasties became allies through this marriage.
- Dalpat Shah died in 1550 and due to the young age of their son, Durgavati took the reins of the Gondwana kingdom.
- In 1562, Akbar conquered Malwa, making it a Mughal dominion and Mughal empire reached the boundaries of Gond.
- The kingdom was attacked by Mughal general Abdul Majid Asaf Khan. She valiantly defended her kingdom. When it became apparent that the Mughal forces will overpower the kingdom, she is believed to have stabbed herself with her dagger instead of surrendering.



Source: RDV, Jabalpur. Rani Durgavati statue at Jabalpur.

Remembering Rani Durgavati

- In 1983, the Government of Madhya Pradesh renamed the University of Jabalpur as Rani Durgavati Vishwavidyalaya in her memory.
- The Government of India issued a postal stamp in June 1988 commemorating her death.
- The train between Jabalpur Junction and Jammu is known as Durgavati Express in the name of the Queen.
- Indian Coast Guard 2018 commissioned ICGS *Rani Durgavati*, an Inshore Patrol Vessel (IPV).

6. Hul Diwas

News: Hul Diwas is celebrated to commemorate the sacrifice of Santhals against the British Rule.

About Santhal Rebellion

- The Santhal rebellion or '**Hul**' began in 1855.
- It was an **organized war against colonialism** led by the Santhals, standing against the various forms of oppression they were subjected to by the British and their collaborators.
- The Santhal people were not the original inhabitants of modern-day Santhal Pargana. They had migrated from the Birbhum and Manbhum regions (present-day Bengal), due to the **1770 famine in Bengal**.
- With the enactment of the **Permanent Settlement Act of 1790**, the East India Company was desperate to bring an ever-increasing area in its control under settled agriculture.
- They chose the area of *Damin-i-Koh*, at the time heavily forested, to be settled by the Santhals, in order to collect a steady stream of revenue.
- However, once settled, the Santhals bore the brunt of colonial oppression.
- The **Murmu brothers**: Sidho, Kanhu, Chand and Bhairab led the revolt. The women also played an important role. Phulo Murmu and Jhalo Murmu, sisters from the same family, participated in the Hul, inspiring women to join the rebellion.
- The rebellion saw **participation from 32 communities**, both tribals, and non-tribals, challenging the notion that it was solely a Santhal rebellion.
- The East India Company's army was defeated twice during the rebellion, debunking the belief that they were invincible.
- In 1855, martial law was introduced to curb the revolt, and the Hul was quashed by early 1856.
- The Santhal rebellion did not end with its suppression in 1855. It continued to **inspire future uprisings**, such as the Santhal involvement in the 1857 mutiny. The Hul rebellion also **symbolized resistance against British colonialism** and laid the foundation for subsequent movements in Jharkhand.

7. Zo People

News: Mizoram's Zoram People's Movement (ZPM) has called for a reunification of the Zo people in view of the continuing ethnic violence in Manipur.

About Zo People

- The Zo people are an ethnic group. They inhabit areas of **India, Myanmar** and the **Chittagong hill tracts of Bangladesh**. The **Chin Hills** or Indo-Chin hill ranges in North-western Myanmar is the home to a large number of tribes that come under the Zo umbrella.
- Zo group includes many sub-tribes and clans such as the Chin, Kuki, Mizo, Lushei, Zomi, Paitei, Hmar, Ralte, Pawi, Lai, Mara, Gangte, Thadou, etc.
- These tribes are believed to have **migrated from China** through Tibet to settle in Myanmar, and speak a group of **Tibeto-Burman languages**.
- Constant feuds among the tribal clans and their kings (chieftains) drove many of the clans westward to modern-day Mizoram and parts of Manipur in the 17th century.
- They settled in new villages but even so remained socially and emotionally connected with the Chin tribes of Myanmar. Apart from ethnicity, the tribes are also connected together by Christianity.



Miscellaneous

1. Tectonic Deformation in Haryana Plains

News: A study has found signs of active tectonic deformations in the Piedmont alluvial plains of Haryana.

About the Study

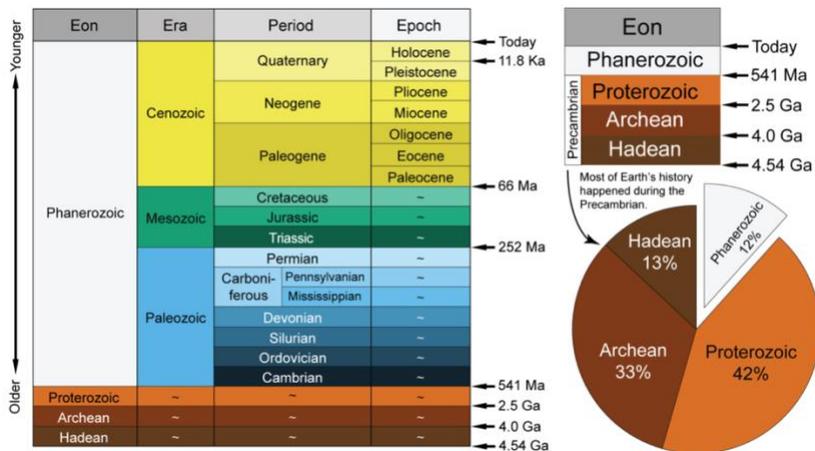
- Tectonic deformation refers to the **changes in the Earth’s crust** caused by the **movement and interaction of tectonic plates**.
- The study investigated the piedmont zone between the Ghaggar and Yamuna river basins in the frontal parts of the northwest Himalayas of Haryana. It focused on the **piedmont alluvial plains** and covered parts of Panchkula, Ambala and Yamunanagar districts in Haryana and Mohali district in Punjab. Piedmont plains refer to plains **situated at the foot of mountains or hills**.
- Researchers have found active signs of **tectonic deformations** in the studied plains.
- This active deformation zone could **become a future seismic hazard zone**, increasing the possibility of high intensity earthquake in future.
- The study also said that this active tectonics and geodynamic framework of the area **may have played a role in the extinction of the Saraswati river that once flowed through the region**.
- This study was conducted using satellite data and validated by geophysical **Ground Penetrating Radar (GPR)** surveys. GPR can obtain high-resolution profiles of subsurface over range of a few meters to tens of meters.

2. Geological Time Scale and Anthropocene Epoch

News: According to the Anthropocene Working Group (AWG), sediments at Crawford Lake in Canada’s Ontario have provided evidence of the beginning of the Anthropocene epoch.

About Geological Time Scale

- The geologic time scale is the calendar for events in Earth’s history.
- It is divided into 5 categories: Eons, Eras, Periods, Epochs, and Ages. **Eon is the broadest category** of geological time, **age is the smallest**.
- Each of these categories is further divided into sub-categories. Earth’s history is characterized by **4 Eons: Hadean, Archean, Proterozoic, and Phanerozoic**.
- Officially, the present times fall in **Phanerozoic Eon, Cenozoic Era, Quaternary Period, Holocene Epoch** and the **Meghalayan Age**.



Source: National Geographic. Ka represents 10³ years, Ma 10⁶ years and Ga 10⁹ years.

About Anthropocene Epoch

- Anthropocene (‘anthropo’: man and ‘cene’: new) is a proposed epoch that denotes the present geological time interval, in which the **Earth’s ecosystem has gone through radical changes due to impact of human activities**.

- There are numerous phenomena associated with the proposed epoch such as **global warming, sea-level rise, ocean acidification, mass-scale soil erosion**, the advent of **deadly heat waves, deterioration of the biosphere** and other detrimental changes in the environment. Due to such profound impacts, the present era has been proposed to be named 'Anthropocene'.
- Scientists at AWG has claimed that Anthropocene can be said to have begun between 1950-54.
- However, scientists are still debating whether the Anthropocene is different from the Holocene. The term Anthropocene has also not been formally adopted by the **International Union of Geological Sciences (IUGS)**, the international organization that names and defines epochs.
- The primary question that the IUGS needs to answer before declaring the Anthropocene an epoch is **if humans have changed the Earth system to the point that it is reflected in the rock strata.**

3. Change in Sea Colour

News: A recent study has indicated that Tropical Ocean waters are turning Green in colour due to alteration in phytoplankton communities.

About the Study

- The study has found that 56% of the global ocean experienced colour change between 2002 and 2022.
- Tropical ocean regions near the Equator seem to have become greener over time. The southern Indian Ocean, in particular, has seen a significant colour change.
- **Green-coloured water indicates life**, especially **phytoplankton**. Blue, in contrast, indicates little life.
- The **colour also determines the amount of carbon dioxide absorbed by the ocean**. Currently, oceans absorb 25% of all carbon dioxide (CO₂) emissions.
- Researchers have said that more work would be needed to find out the implications of change in colour. But they have said **climate change** was very likely to be the cause.
- Climate change threatens global oceans and the life that depends on them in multiple ways. A 2020 study has warned that **polar bears could largely disappear by the end of the century if global warming continues**. Another study has found that half of the world's coral reefs have already been killed by warmer waters and ocean acidification.

Phytoplankton

Phytoplankton are the autotrophic (self-feeding) components of the plankton community. They are **photosynthesizing microscopic protists and bacteria** that inhabit the **upper sunlit layer of marine and fresh water bodies of water.**

4. Farmers Distress Index

News: Central Research Institute for Dryland Agriculture (CRIDA), under the Indian Council of Agricultural Research (ICAR) has developed an early warning system, 'Farmers Distress Index'.

About the Farmers Distress Index

- Its aim is to **minimize the agrarian distress** in the form of **crop loss/failure** and **income shock**. This will help in **decreasing farmer suicides**.
- The index methodology involves going through local newspapers, other news platforms and social media platforms for any report on **incidence of farmers distress** like localised cases of issues with debt repayment, death by suicide, pest attacks, drought, floods, migration, among others.
- Telephonic interviews will be conducted, which will have 21 standardized questions to gauge early signs of distress. Based on these questions, the degree of distress will be identified.

- **The index will have values from 0-1.** A value between **0-0.5** will indicate ‘**low**’ distress, **0.5-0.7** will indicate ‘**moderate**’ distress and **above 0.7** will indicate ‘**severe**’ distress. If the index is severe, it will identify which component among the seven is more severe and contributes maximum to farmers’ distress.
- The index will help in **anticipating agrarian distress**. It will prevent its spread by **pre-warning different stakeholders**, including Central, State, Local and Non-government agencies about the future occurrence of farmers distress in a particular region. They can take **timely preventive measures**.

5. Global Peace Index, 2023

News: The Global Peace Index, 2023 has been released.

About the Global Peace Index

- It is released by the **Institute for Economics and Peace (IEP)**.
- Its aim is to present comprehensive **data-driven analysis on trends in peace**, its economic value, and how to develop peaceful societies.
- The index covers 163 countries comprising 99.7% of the world’s population.
- It measures the state of peace across three domains:
 - Societal Safety and Security.
 - Ongoing Domestic and International Conflict.
 - Militarisation.
- The average level of global peacefulness has deteriorated by 0.42%.
- **Iceland is the most peaceful country in the world** (since 2008). **Afghanistan is the least peaceful country** for the 8th consecutive year.
- **India has occupied the 126th spot** in the rankings, two higher than its previous position.
 - India has experienced an improvement of 3.5% in overall peacefulness over the past year, owing to improvements in violent crime, neighboring countries’ relations and political instability.
 - The reduction in geopolitical tensions with China owing to the decrease in border incidents as well as less social unrest has led to an improvement in the political instability in India. (Refer EPIC April 2023 (click) for Global Terrorism Index, 2023).

The Pillars of Positive Peace

This graphic provides a visual representation of the factors that constitute Positive Peace. All eight factors are highly interconnected and interact in varied and complex ways.



Source: IEP. It defines **Negative Peace** as absence of violence or fear of violence. **Positive Peace** is defined as the attitudes, institutions and structures that **create and sustain peaceful societies**.

6. Global Gender Gap Report, 2023

News: The World Economic Forum (WEF) has released the Gender Gap Report, 2023.

About the Global Gender Gap Report, 2023

- The Global Gender Gap Report has been released annually by the WEF since 2006.
- It measures gender parity in 146 countries and across 4 areas: **Economic Participation and Opportunity; Educational Attainment; Health and Survival; Political Empowerment**.
- Iceland topped the ranking for the 14th consecutive year with **91.2% of its overall gender gap closed**. It is also the only country with a score which is above 90%.

- The overall gender gap closed by a mere 0.3% compared to the previous year. At the current rate of progress, the world would take 131 years to close the overall gender gap between men and women.
- The bottom 5 countries on the list: Pakistan (57.5%), Iran (57.5%), Algeria (57.3%), Chad (57%), and Afghanistan (40.5%), have scored below 60%.
- **India has been ranked 127 among 146 countries**, up 8 places from 2022. India was ranked 135 in 2022.
- **India has closed 64.3% of the overall gender gap.**
 - However, the report has underlined that India has reached **only 36.7% parity in economic participation and opportunity**. The country has attained parity in enrolment across all levels of education.
 - There has been an **uptick in parity in wages and income**, but the **share of women in senior positions and technical roles has dropped slightly**.
 - India has registered 25.3% parity on political empowerment, with women making up 15.1% of MPs. (Refer EPIC July 2022 (click) for Gender Representation in the Parliament and Gender Pay Gap).

7. Challenges in Eliminating AIDS by 2030

News: Despite concerted efforts, eliminating AIDS by 2030 remains a big challenge.

Constraints in Eliminating AIDS

- **Poverty and Marginalization:** Poor and marginalized communities lack access to the necessary healthcare and are subjected to stigma.
- **Gender inequality:** Men avoid getting tested due to societal pressure (hyper-masculinity), hindering early diagnosis and treatment. Women, particularly in low-income regions, do not receive optimal HIV treatment.
- **Insufficient Funding:** Despite increasing overall health budgets, lower and middle-income countries heavily depend on external funds for AIDS related expenses. These funds are insufficient to effectively combat AIDS, especially in parts of West Asia and Africa.
- **Lack of Prevention Programs:** There's a significant gap in HIV prevention programs, especially for children and young women. In sub-Saharan Africa, only 40% of districts with high HIV incidence are covered by dedicated prevention programs.
- **Drug Shortages:** There is an urgent need for improved supply chains and local manufacturing capacities to ensure the continuous availability of AIDS medication.

Future Steps

- There is a need to address poverty and gender gaps in access to AIDS healthcare.
- Men should be encouraged to undergo testing and women should get appropriate treatment.
- Scale of prevention programmes need to significantly enhanced.

8. Bharat NCAP

News: Bharat New Car Assessment Programme will be operational from October 01, 2023.

About the Bharat New Car Assessment Programme (NCAP)

- It is a new **safety assessment programme for passenger vehicles** that can seat up to 8 persons and weigh less than 3.5 tonnes.
- As part of the programme, **cars will be crash-tested** and given points which in turn would translate into stars. **The safest cars will get 5 Stars.**
- There will be 3 types of crash tests: **Frontal, Side and Pole-side impact tests**. Scoring would be done for both adult safety for front passengers and child safety at the rear.
- For **5-Star rating**, a car should get **minimum 27 points out of maximum 32 points**.

- For child safety, 5-Star rating would require at least 41 out of 49 points.
- Bharat NCAP will be rolled out from October 01, 2023. **It will be voluntary**, so cars will only be tested at the request of makers. **Car Assessment Programmers are mostly voluntary even in developed countries.** They are aimed at nudging firms to offer more than the basic safety features by sparking competition.
- Bharat NCAP will bring India at par with countries like the US, Europe, Japan, Australia etc. It will **bring more transparency, create awareness among consumers** and help buyers choose cars based on their **safety credentials**. (Refer EPIC September 2022 (click) for The Issue of Road Safety in India).

Safety in stars

Minimum qualifying points for star rating.



Maximum points for adult safety is 32; for child safety, it is 49. Source: Ministry of heavy industries

Source: Mint. Star Rating System under the Bharat NCAP.

9. World Drug Report, 2023

News: The UN Office of Drugs and Crime (UNODC) has released the World Drug Report, 2023.

Key Findings of the World Drug Report, 2023

- Globally, over 296 million people used drugs in 2021. There has been an increase of 23% in drug consumers over the previous decade.
- The number of people who suffer from drug use disorders has reached 39.5 million. This was equivalent to a 45% increase over 10 years.
- ~1 in 5 people (20%) suffering from drug-related disorders were in treatment for drug use in 2021 with **widening disparities in access to treatment across regions**.
- **Youth populations are the most vulnerable to using drugs** and are also **more severely affected** by substance use disorder in several regions.
- Large inequalities in access and availability of controlled drugs for medical use persist, particularly for pain management. The disparity is particularly prevalent between the global North and South, and across urban and rural areas.
- **Drug trafficking is accelerating environmental damage**, particularly in the Amazon Basin. The **production of illicit drugs contributes to deforestation**, pollution, and the use of harmful chemicals, leading to **ecological harm** and the **loss of biodiversity**.
- The opium ban in Afghanistan had a positive result, but concerns remain about the production of synthetic drugs. However, farmers' income has suffered in Afghanistan due to the Opium ban by the Taliban.
- The Report has recommended that **Public health, prevention, and access to treatment services** must be prioritized worldwide. **Law enforcement forces need to keep pace with criminal business models** and the proliferation of cheap synthetic drugs that are easy to bring to market. (Refer EPIC April 2023 (click) for Issue of Drug Trafficking in India).



Source: UNODC. The report highlights connection between illicit drug economy and illegal mining, wildlife trafficking, deforestation (logging) and violence etc.

Pointly

1. Shelf Cloud

Shelf clouds are a type of **arcus cloud**. They often resemble a large, horizontal wedge or shelf extending from the base of a thunderstorm or cumulonimbus cloud. They are typically formed on the **leading edge of a storm**. They are formed when a **mass of cold and dense air is forcefully driven by the wind into a warmer air mass**. It happens during the **downdraft of a thunderstorm**, where the cold air rapidly descends and disperses, creating a strong gust front. The underside of the shelf cloud is often dark, with turbulent and rapidly rising air. **The leading edge of the cloud is typically smooth and well-defined**, appearing as a rolling arc or shelf. This edge may have a **greenish or bluish tint due to the scattering of sunlight** caused by water droplets within the cloud.



Source: Wikimedia Commons. Two forms of Arcus Clouds: Shelf Cloud (above), Roll Cloud (below).

2. Arcus Cloud

An **arcus cloud** is a low, horizontal cloud formation, usually appearing as an accessory cloud to a cumulonimbus. **Roll clouds** and **shelf clouds** are the two main types of arcus clouds

3. Lightning as a Natural Disaster

The Union Government is **not in favour of declaring Lightning a natural disaster** as **deaths caused by it can be prevented by making people aware of safety steps**. NCRB data show that 2,880 people died in lightning strikes in 2021. The deaths made up 40% of all accidental deaths caused by “forces of nature”. India is among **only 5 countries in the world that has an early warning system for lightning**, the forecast is available from **5 days to up to 3 hours**. Several states have been demanding that lightning deaths be covered as a natural disaster. Once notified, the victims will be entitled to compensation from the **State Disaster Response Fund (SDRF)**. The Union Government makes 75% of the contribution to the SDRF. Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslip, avalanche, cloudburst, pest attack, frost and cold wave are now considered disasters under the SDRF. (Refer EPIC March 2023 (click) for Lightning as Natural Disaster).

4. Zaporizhzhia Nuclear Power Plant (Ukraine)

Russia and Ukraine have accused each other over **shelling near the Nuclear Power Plant (NPP)** that caused power outages. It is the **largest nuclear power plant in Europe** and among the 10 largest in the world. It is located in

Nuclear power plants in Ukraine



south-east Ukraine in Enerhodar on the banks of the Kakhovka reservoir on the Dnieper River. It is one of the **4 operating NPPs in Ukraine** and has been operating since 1984. It accounts for about 40% of the total electricity generated by all the Ukrainian NPPs and ~20% of Ukraine's annual electricity production. ZNPP has **pressurized water reactors**. They are **housed in thick steel reinforced concrete containment units** which are built to withstand extreme explosions, such as an aircraft crash.

5. Henley Passport Index

It is released by the consultancy firm Henley & Partners. It is the ranking of all the world's passports according to the **number of destinations their holders can access without a prior visa**. The index includes 199 passports and 227 travel destinations. Singapore has topped the index. Its citizens able to visit 192 travel destinations out of 227 around the world visa-free. Germany, Italy, and Spain jointly occupied the second place. India has climbed 7 places in 2023 and is ranked at 80th position. **Indian citizens can now enjoy visa-free access to 57 destinations**.

6. Henley Openness Index

Henley Openness Index measures **how many nations does a country allows visa-free access to**. The top 20 'most open' countries are all small island nations or African states. India has been ranked 94 out of a total of 97 ranks for allowing **only 4 countries visa-free access**.

7. Mekong Ganga Cooperation (MGC)

India's External Affairs Minister addressed the 12th Mekong Ganga Cooperation (MGC) Mechanism meeting. MGC was launched in 2000 at **Vientiane**, Lao PDR (Laos) with the signing of the **Vientiane Declaration**. The grouping was initially called **Ganga Suvarnabhumi Programme (GMSP)**. Both the Ganga and the Mekong are **civilizational rivers** and the MGC initiative aims to **facilitate closer contacts among the people inhabiting these two major river basins**. MGC has 6 members: **India, Cambodia, Lao PDR, Myanmar, Thailand and Vietnam**. The MGC meetings are co-chaired alternately every year between India and one of the 5 Mekong countries.

The cooperation under the MGC has been expanded from 4 foundational areas (**Tourism, Culture, Education, and Transport & Communication**) to include new areas like **health and traditional medicine, agriculture and allied sectors, small and medium enterprises, water resources management, science and technology, skill development, and capacity building**.

8. Quick Impact Projects (QIP) Initiative

India had announced the implementation of Quick Impact Projects in CLMV (Cambodia, Lao PDR, Myanmar, and Vietnam) countries at the 6th MGC Ministerial Meeting held in New Delhi in 2012. The emphasis of QIPs is on **short gestation** (up to 1 year) **high visibility projects** which **directly benefits the local communities** with results that are immediate and visible. QIPs include creation or up-gradation of physical infrastructure such as roads, local community centers and social infrastructures such as in the education, health, sanitation, or community development sectors.

9. INDUS-X

The US Department of Defence (DoD) and the Ministry of Defense has launched the India-US Defense Acceleration Ecosystem (INDUS-X). Its aim is to foster **collaboration and innovation between Indian and US defence start-ups**, promoting technological advancements in the sector. It will be led by India's **Innovations for Defense Excellence (iDEX, read more)** and the Office of the Secretary of Defense (OSD). (Refer EPIC June 2023 (click) for Prime Minister's State Visit to the US and EPIC February 2023 (click) for iCET).

10. JIMEX Exercise

The 7th edition of **Japan-India Maritime Exercise 2023** (JIMEX 23) was held in the Bay of Bengal. JIMEX is an **annual maritime exercise between India and Japan**. Other bilateral exercises between Indian and Japan include **Exercise DHARMA GUARDIAN** (annual joint military exercise) and **SHINYUU Maitri** (joint exercise between the Air Forces).

11. Scorpene Submarines

The Defence Acquisition Council has cleared proposals to buy 3 additional Scorpene submarines and 26 Rafale Marine fighter jets for the Navy. The Scorpene submarines are **conventional attack subs**, meaning that they are designed to **target and sink adversary naval vessels**. They are capable of launching a **large array of torpedoes and missiles**. They are also equipped with a range of **surveillance and intelligence-gathering mechanisms**. These submarines use **diesel-electric propulsion systems**, with an endurance (ability to operate independently without refuelling) of ~50 days. This propulsion system **alternates between using diesel** (for functioning on the surface) and **electric** (for functioning underwater) system.

Mazagon Dock Shipbuilders Limited is building 6 Scorpene class submarines under the **Project-75**, as part of a deal signed in 2005, which **allowed for transfer of technology** from the French defense firm, Naval Group. **INS Kalvari**, **INS Khanderi**, **INS Karanj**, **INS Vela**, and **INS Vagir** have already been commissioned and **INS Vagsheer** will likely be commissioned early next year.

12. India's Naval Arsenal

At present, the Navy has **16 conventional submarines in service**: 7 of the **Sindhughosh** class (Russian Kilo class), 4 of the **Shishumar** class (modified German Type 209) and 5 of the **Kalvari** class (French Scorpene class). To carry out its full spectrum of operations the Navy needs at least 18 such submarines. At any given time, around 30% of the submarines are under refit, thus bringing down the strength of operational submarines.

13. Endurance of Nuclear Submarines

Nuclear submarines are known for their **unlimited endurance**. A nuclear reactor on a submarine has an **operational life of up to 30 years**. As they are not propelled by batteries, these submarines only **need to come to the surface for replenishing supplies for the crew**. They are also able to move much faster than conventional submarines. However, nuclear submarines are expensive and require specialized experience to operate.

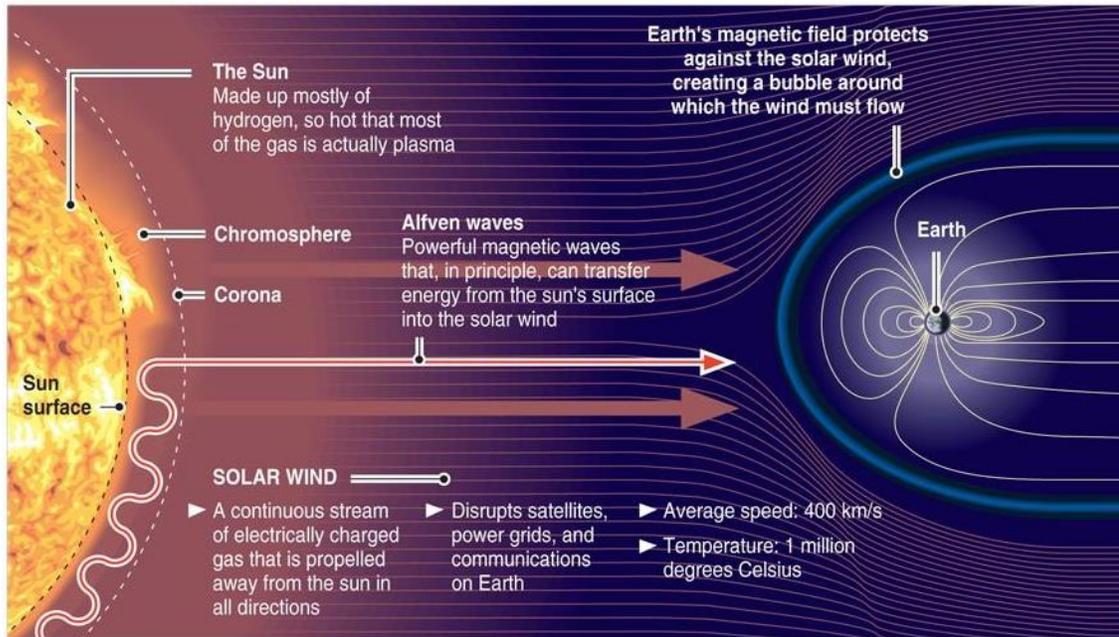
14. Solar Flares

The Sun emitted an **X-class solar flare disrupting radio communications** over parts of the US and the Pacific Ocean. A solar flare is a tremendous explosion in the Sun that happens **when energy stored in 'twisted' magnetic fields** (usually above sunspots) **is suddenly released**. Solar flares produce a burst of radiation that spans the electromagnetic spectrum, from radio waves to x-rays and gamma rays. Solar Flares can **affect radio communications, power grids and navigation signals** and endanger astronauts and spacecraft.

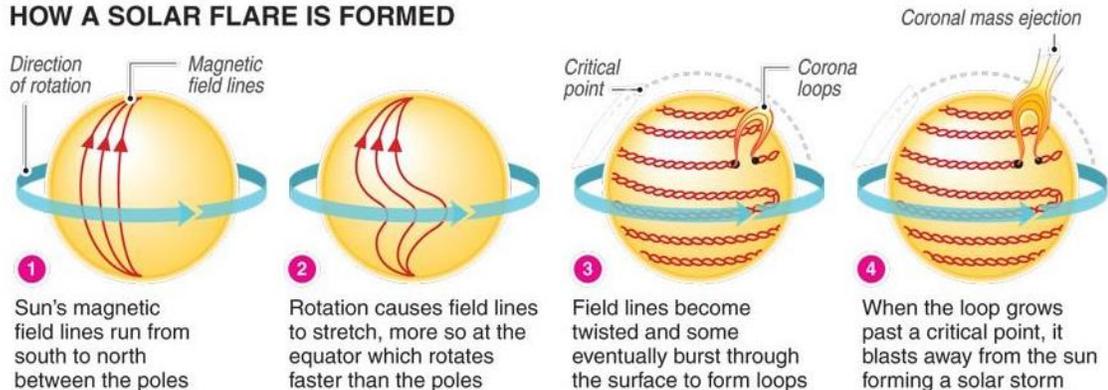
Solar flares can be divided into various categories based on their brightness in X-ray wavelengths. **X-class flares** are large, significant events that have the power to cause **global radio blackouts** and persistent radiation storms in the upper atmosphere.

Medium-sized M-class flares typically result in brief radio blackouts that affect the Earth's polar regions. Sometimes an M-class flare is followed by small radiation storms.

C-class flares are slight and have little effect on the Earth.



HOW A SOLAR FLARE IS FORMED



15. Chromosphere

Chromosphere is the 2nd layer of a sun's atmosphere, **located above the photosphere and below the solar transition region and corona**. Chromosphere is **~3,000-5,000 kilometres in height**, or slightly more than 1% of the Sun's radius at maximum thickness. The chromosphere emits a reddish glow as **super-heated hydrogen burns off**. Light from the chromosphere is usually too weak to be seen against the brighter photosphere. Chromosphere plays a crucial role in transferring energy (specifically non-thermal energy) that heats the corona and **fuels the solar wind**, which extends outward into the surrounding regions of the solar atmosphere.

16. Fast Radio Bursts (FRBs)

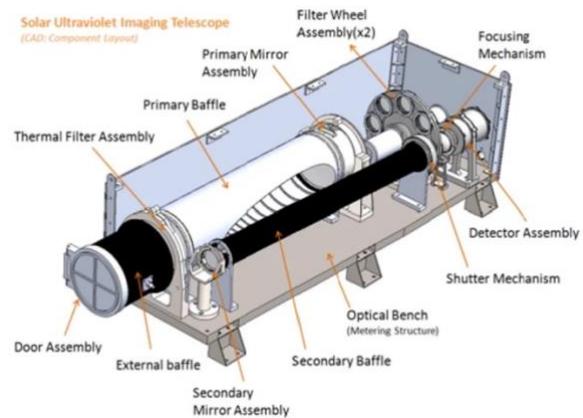
FRBs are **bright bursts of radio waves** that blaze for a **few milliseconds** before vanishing without a trace. The first FRB was spotted in 2007. Since then, scientists have spotted more than 600 FRBs in their telescopes. **Their origins are still unknown**, and their appearance is highly unpredictable. One theory states that FRBs are caused by **magnetars**, a type of slowly **rotating neutron star**. Another theory postulates that FRBs could be triggered by a **collision between two neutron stars** and are **released just before they crash into each other**. This impact could set off two

different kinds of signals: **Gravitational waves** and **FRBs**. (Refer EPIC April 2023 (click) for LIGO Project in India).

17. Solar Ultraviolet Imaging Telescope (SUIT)

SUIT is a **space telescope** developed by Pune's Inter-University Center for Astronomy and Astrophysics. The telescope is set to be **integrated with the ADITYA-L1 mission**, expected to be launched in mid-August, 2023. The telescope aims to study the **Sun's ultraviolet (UV) emissions** and capture high-resolution images of the Sun's atmosphere, known as the corona, in various UV wavelengths. It will operate in the far and near ultraviolet regions, **covering**

wavelengths of 200-400 nanometers. (10-9m). The SUIT telescope will address fundamental questions such as the existence of a higher-temperature atmosphere above the cooler surface of the Sun and the origin and variation of near-ultraviolet radiation and **high-energy solar flares**.



18. Chiral Bose Liquid State

Normally matter exists in three states: solid, liquid, and gas. **Plasma** and **Bose-Einstein Condensate** exist at extremely high and low temperatures respectively. Researchers have now claimed that they have found a new phase of matter called the **chiral Bose-liquid state**. The new form has been discovered in a **frustrated quantum system**. In this state, **electrons can be frozen into predictable patterns**, making them resilient to changes in spin (a defining characteristic of subatomic particles) and **have electrons synchronize their movements**. It is very difficult to create such states of matter but going ahead may be used to fashion **novel digital encryption systems**.

19. Frustrated Quantum State

In quantum systems, there are billions of particles and billions of parameters governing their interactions. This means that not all quantum systems can be well-described and understood. Some physical systems have competing interactions between particles or components that **prevent the system from achieving its lowest energy state**. This leads to a **state of frustration**, where the system cannot fully optimize its energy or configuration due to conflicting influences. In these systems, the arrangement and **behaviour of particles or spins become highly complex** and can give rise **novel states of matter**.

20. Supercapacitor from Seaweed

A supercapacitor is an **electrochemical charge storage device** with a **fast charging/discharging cycle**, **high power density** and a **longer life cycle**. They are used in **power-smoothing, pitch-control, start-stop operations, regenerative-braking, smart-grids**, and specialty UPS applications (Uninterrupted Power Supply). Scientists at Gujarat Energy Research and Management Institute (GERMI) have developed the **thinnest, lightweight and biodegradable paper-based supercapacitor** from seaweed (marine macroalgae). This supercapacitor can **fully charge a device within 10 seconds**. The device has **high tensile strength** and performance, and is **cost-effective**. It can be used in **electronics, memory backup systems, airbags, heavy machines, electric vehicles**, etc.

21. Seaweed

Seaweeds are macroalgae attached to rock or other substrata and are found in coastal areas. They are classified as *chlorophyta* (green), *rhodophyta* (red) and *phaeophyta* (brown) on the basis of their pigmentation.

22. Perovskite

Perovskite is a mineral containing calcium titanium oxide (CaTiO_3). It is also used for materials having same type of crystal structure (Perovskite Structure). Because of their unique crystal make-up, perovskites often display a number of interesting properties, including **superconductivity**, **giant magnetoresistance**, and **ferroelectricity**.

23. Perovskite Solar Cell (PSC)

It is a type of solar cell that includes a perovskite-structured compound, most commonly a hybrid **organic-inorganic lead** or **tin halide-based material**, as the light-harvesting active layer. PSCs offer a promising **alternative to traditional silicon solar cells** as they have **higher efficiencies** and **very low production costs**. However, PSCs face the problem of **degradation during operation** when they **come in contact** with **heat, moisture, light**, and other environmental factors. This long-duration stability is a major hindrance in the large-scale commercialisation of the product.

Indian Scientists have indigenously developed **highly stable, low-cost Carbon-based perovskite solar cells** with **superior thermal and moisture stability** which can help overcome the challenges of degradation during operation.

24. Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme

SIGHT is a major financial measure under the **National Green Hydrogen Mission**. Its objective is to maximize production of Green Hydrogen and its derivatives, **enhance cost-competitiveness of Green Hydrogen** and its derivatives vis a-vis fossil-based alternatives and encourage large scale utilization of Green Hydrogen and its derivatives. The programme has 2 distinct financial incentive components: Component I: It targets **domestic manufacturing of electrolyzers**. Component II: It focuses on **Green Hydrogen Production**. It is being implemented by **Solar Energy Corporation of India** (SECI). (Refer EPIC January 2023 (click) for National Green Hydrogen Mission).

25. Sagar Sampark

It is a **terrestrial based enhancement system** that corrects the errors and inaccuracies in the Global Navigation Satellite System (GNSS) and **provides more accurate positioning information**. *Sagar Sampark* is able to transmit corrections for both GPS and Global Navigation Satellite System (GLONASS). It improves the accuracy of GPS positioning by **reducing errors caused by atmospheric inferences, satellite clock drift** and other factors. It will help mariners in safe navigation and will reduce the risk of collisions, groundings, and accidents in the port and harbour areas. This will lead to the safe & efficient movement of vessels.

26. Data Scraping

Data scraping (web scraping), is the **automated process of extracting large amounts of data from websites or online sources**. It involves using software tools or programming techniques to gather information from web pages and convert it into a **structured format**, such as a spreadsheet or a database. Researchers and analysts can scrape data to gather information for **market research, trend analysis, or monitoring competitors' pricing and product information, collect customer**

feedback, reviews, or to **generate leads for their sales teams**. Data scraping can also be used for **academic research**, **data journalism** or to create innovative applications and services. It can lead to copyright infringement, violation of terms of service or user agreement, violation of privacy rights (like accessing personal data) etc. It can impact performance of the website as data scraping puts load on the website and can lead to crashing of website.

27. Medicines Patent Pool

It is a UN-backed group working towards **increasing access to**, and **facilitating the development of, life-saving medicines** for **low- and middle-income countries**. It partners with civil society, governments, international organisations, industry, patient groups, and other stakeholders, to **prioritise and license needed medicines** and **pool intellectual property to encourage generic manufacture** and the development of new formulations.

28. Nilotinib

MPP has signed sub-licence agreements with India-based companies to make **generic versions of the drug Nilotinib** developed by pharmaceutical corporation Novartis. Nilotinib is used for the **treatment of chronic myeloid leukaemia** (a type of blood cancer). Under the agreement, selected manufacturers can **make generic versions of Nilotinib in India** and **7 middle-income countries**. The move will give an **affordable treatment option** to people diagnosed with the disease. This will make certain cancer drugs more accessible for patients.

29. Crimean-Congo Haemorrhagic Fever (CCHF)

It is a viral haemorrhagic fever usually transmitted by ticks. The virus is present in the tick family of insects. Animals such as cattle, goats, sheep and hares serve as amplifying hosts for the virus. Transmission to humans occurs through **contact with infected ticks or animal blood**. CCHF can also be **transmitted from one infected human to another by contact with infectious blood or body fluids such as sweat and saliva**. CCHF is endemic in all of Africa, the Balkans, the Middle East and in Asia. The virus can lead to epidemics. It also has a high case fatality ratio (10–40%). **There is no vaccine for the virus** in either humans or animals, and treatment generally consists of managing symptoms.

30. Climate Change Aiding Spread of Viruses

According to the WHO, Climate Change is helping in the spread of deadly viruses like CCHF. As temperature patterns are disrupted, **pathogens are thriving in geographies that traditionally had a climate hostile to them** e.g., warmer climate in Europe in recent times expands the habitat of ticks and other insects and **gives them more time to reproduce**. This is leading to spread of viruses like CCHF.

31. Anxiety Disorders

Anxiety disorders are a **cluster of mental disorders** characterized by significant and **uncontrollable feelings of anxiety and fear** such that a person's social, occupational, and personal functions are significantly impaired. Types of disorders include **Generalized Anxiety Disorder** (excessive worrying not restricted to particular circumstances), **Panic disorder** (recurrent unexpected surges of severe anxiety, panic attacks), **Social anxiety disorder** (intense, persistent fear of being scrutinized or evaluated negatively by others), **Separation anxiety disorder** (fear concerning separation from those to whom an individual is attached), **Specific phobia** (fear of

particular objects, animals or situations etc.). India's National Mental Health Survey (NMHS) of 2015-2016 found the prevalence of neurosis and stress-related disorders to be 3.5%. (*Read more about Issues with Mental Health and Mental Healthcare in India*).

32. Precision Fermentation

Precision fermentation uses microbial hosts as 'cell factories' for **producing specific functional ingredients**. In the precision fermentation process, single-cell organisms (bacteria, microalgae or fungi) are **made to produce a protein by giving it coded instructions**. Traditional fermentation methods use live microbial cultures to produce desired products. **But precision fermentation teaches a microbe how to make a protein by using a genetic code** (through the recombinant DNA technology). Precision fermentation is now widely used **to produce insulin** (for treating diabetics), in a lab and not from a pig's pancreas. Similarly rennet (an enzyme required to make hard cheese) is produced through fermentation instead of stomach linings of young nursing calves (a large number of calves were butchered). At present, the costs are high but it is hoped that costs will fall down drastically in future as the technology progresses.

33. Rainbow Diet Campaign

It has been launched by the ICAR-Central Tuber Crops Research Institute (CTCRI). Its aim is to **popularize biofortified tubers** and their value-added derivatives among the tribal communities for tackling malnutrition and ensuring a balanced diet. Rainbow diet is a meal plan comprising different-coloured fresh fruits and vegetables. With its tuber crop-based rainbow diet, the CTCRI is popularizing the **orange-fleshed sweet potato** (rich in beta-carotene), the **purple-fleshed sweet potato**, and **purple-fleshed yam** (rich in anthocyanin).

34. Tubers

Tubers are **specialized storage stems** of certain seed plants. They are usually short and thickened and typically **grow below the soil**. Tubers serve as a source of nutrients and energy for the plant. Examples of tuber crops include **potatoes, sweet potatoes, yams** and **cassava**.

35. Joha Rice

Joha Rice is an **aromatic rice** cultivated in the North-eastern region of India. It is an indigenous rice class of Assam and is a special class of winter rice. It had got Geographical Indication (GI) tag in 2017. Joha is generally known for its **scent, essence** and **exemplary taste**. Joha rice variety has two unsaturated fatty acids, linoleic acid (omega-6) and linolenic (omega-3) acid. These **essential fatty acids** (which humans cannot produce) **can help maintain various physiological conditions**. Omega-3 fatty acid **prevents several metabolic diseases** such as **diabetes, cardiovascular diseases**, and cancer. It has also proved to be effective in lowering blood glucose and preventing onset of diabetes.

36. PBW RS1

It is a new variety of wheat developed by the Punjab Agricultural University (PAU). It has high amylose content and is resistant to starch. This ensures **that glucose is released more slowly into the bloodstream**. This can help in **bringing down the prevalence of diet-related diseases including obesity and diabetes** (especially type 2). It is also resistant to yellow rust and moderately resistant to brown rust fungal diseases. However, it has lower productivity compared to other wheat varieties of Punjab.

37. GEMCOVAC - OM

It is **India's first indigenous mRNA vaccine** for the Omicron variant. It has been **approved under emergency use guidelines** by the **Drug Controller General of India**. It has been developed by Pune-based Gennova Biopharmaceuticals Ltd. Those who are 18 years of age and older can take the vaccine as a booster dose. It is a **thermo-stable vaccine**, which **does not require ultra-cold chain infrastructure** used for other approved mRNA-based vaccines, making it **easy for deployment pan India**. It is delivered **intra-dermally using a needle-free injection device system**.

38. Coverage of DPT-3 Vaccine

The WHO and UNICEF estimates for national immunization coverage for 2022 have been released. The coverage rate for DPT3 vaccine in India has risen to an **all-time high of 93% in 2022** (91% in 2019). The DPT vaccine is a class of **combination vaccines** against 3 infectious diseases in humans: **diphtheria, pertussis** (whooping cough), and **tetanus**. The vaccine include **diphtheria and tetanus toxoids** and either kill whole cells of the bacterium that causes pertussis or pertussis antigens. **Toxoid vaccines use a toxin made by the disease causing germs and create immunity** within the body.

39. Carbon Credit Trading Scheme (CCTS)

India will launch a Carbon Credit Trading Scheme (CCTS), to help local businesses adjust to Carbon Adjustment Mechanism (CBAM). The CBAM sets stricter standards for the export of carbon-heavy goods such as cement, steel, aluminium, and fertilisers. CCTS will allow companies to **trade carbon credits**. These credits **represent a reduction in greenhouse gas emissions**.

The **Central Electricity Regulatory Commission (CERC)** has been identified as the only regulator in the scheme. **Bureau of Energy Efficiency** will act as the market's administrator, with the **Grid Controller of India** handling registrations of market players. (Refer EPIC June 2023 (click) for Carbon Border Adjustment Mechanism (CBAM) and EPIC August 2022 (click) for Amendments to Energy Conservation Act and Carbon Markets).

40. Western Ghats Spatial Decision Support System (WGSDDS)

It has been launched by Indian Institute of Science's (IISc) Energy and Wetlands Research Group. It is a web portal that has been designed as part of the ongoing ecological research in the Western Ghats. According to data from WGSDDS, Western Ghats (WGs) have seen a loss of 5% evergreen forest cover with an increase 9% in agriculture area.

Researchers have classified the Western Ghats into **4 categories of Ecologically Sensitive Regions (ESR)**: **very high** (63,148 sq. km.), **high** (27,646 sq. km.), **moderate** (48,490 sq. km.), and **low ecological fragility** (20,716 sq. km.).

41. Floral and Faunal Database of India

The Floral and Faunal Database are maintained by the Botanical Survey of India and Zoological Survey of India respectively. India has added **664 animal species to its faunal database in 2022**. These comprise 467 new species and 197 new records [species found in India for the first time]. The maximum number of new discoveries were recorded from **Kerala**, followed by **Karnataka** and **Tamil Nadu**. Major faunal discoveries include 2 species of bats (in Meghalaya), **Sela macaque** (Arunachal Pradesh), **Macaca leucogenys** (Arunachal Pradesh).

India has added **339 taxa to its flora during 2022**. These comprise **319 species**, and **20 infraspecific taxa**. The discoveries encompass seed plants, fungi, lichen, algae, bryophytes, microbes, and pteridophytes. **Western Himalayas** and **Western Ghats** are prominent regions for plant discoveries. Kerala has recorded the highest number of plant discoveries (57), accounting for 16.8% of all discoveries. Major floral discoveries include **Nandadevia Pusalkar** (Uttarakhand Himalayas), **Nilgiriella Pusalkar** (southern Western Ghats), **Calanthe lamellose** (Japfu mountain range in Kohima, Nagaland).

42. Ghaggar River

Ghaggar-Hakra River is an **intermittent river** that **flows only during the monsoon season**. It originates in Shivalik Hills (Himachal Pradesh) and **flows through Punjab, Haryana and Rajasthan**. The main tributaries of the Ghaggar are the Kaushalya, Tangri, Markanda, Beghna and Sukhna and Chautang. Ghaggar river and its tributaries are considered dead rivers and are heavily encroached upon. At many places, it is impossible to locate the river bed. However, this monsoon heavy rains in the Shivalik hills caused flash floods in the catchment areas of the Ghaggar and its tributaries. Many cities in Punjab and Haryana were heavily flooded causing massive losses.



43. Indian Gazelle

Indian gazelle (*Gazella bennettii*) is also called Chinkara. Its range includes India, Iran, Pakistan and possibly Afghanistan. The chinkara inhabits **arid areas**, including sand deserts, flat plains and hills, dry scrub and light forest. **They can go for a long time without water**, and are adapted to live in very dry areas. It is **mostly a solitary animal**, but sometimes forms small groups of 2 – 4 individuals. Most of the global population is found in the Thar Desert. It is the State animal of Rajasthan. Its IUCN status is least concern.



44. Hoolock Gibbon

Hoolock Gibbon is the **only ape found in India**. It is native to eastern Bangladesh, India, Myanmar, and Southwest China. In India, they are **confined to the 7 North-eastern States** with Brahmaputra as the distribution boundary. They form an **arboreal species** and live in **canopies of the evergreen forests**. They traverse across the canopy using their **very long forelimbs** hanging and jumping from branch to branch.



They are famous for their loud **holou calls** (that inspires their name “Hoolock”) and duets which both male and female of a group indulge in. Hoolock gibbon faces threat primarily from the **falling of trees** for infrastructure Projects.

There are two species found in India, **Eastern** and **Western Hoolock Gibbon**. IUCN has listed **Western Gibbon as Endangered** and **Eastern Gibbon as vulnerable**. However, a study by Centre for Cellular and Molecular Biology has said that there is **only one species of Hoolock Gibbon based on genetic analysis**.

45. Alligator Gar Fish

The discovery of an Alligator Gar fish (*Atractosteus spatula*, an invasive species in India) in Kashmir’s Dal Lake has raised concerns about its impact on the native fish species. The alligator gar is a close relative of the bowfin species. It is a **ray-finned euryhaline fish** and is one of **the biggest freshwater fish in North America**.



They can reach over 50 centimetres in length in their first year if they’re in suitable conditions. They are harmless to humans but will eat any prey item that they can swallow whole (they do not have the ability to bite off pieces of flesh). The IUCN status is least concern. Being a carnivorous fish, the Alligator Gar **poses a threat to the native fish species of Dal Lake**. Concerns arise about the fate of the lake’s biodiversity and the impact on the local fish fauna.

46. Ambergris

Ambergris is a waxy substance that **originates from the digestive system of protected sperm whales**. One theory suggests that it is produced in the gastrointestinal tract of some sperm whales for the passage of hard, sharp objects that are ingested when the whale eats large quantities of marine animals. It is a **rare substance**, and has high demand and price in the international market. Traditionally, it has been used to **produce perfumes** which have notes of musk. In the past cultures, it was used to **flavour food**, in alcoholic beverages and tobacco.



There is a **ban on the possession and trade of ambergris** in countries like the USA, Australia and India. But it is a **tradable commodity** in many countries. In India, **sperm whales are a protected species under Schedule 2 of the Wildlife Protection Act**. Possession or trade of its by-products, including Ambergris and its by-products, is **illegal under provisions of the Wildlife Protection Act, 1972**.

47. Kui Language

The Odisha Cabinet has approved a proposal to **recommend the inclusion of the Kui language in the Eighth schedule of the Constitution**. Kui is a South-Eastern **Dravidian language** spoken by the Khonds (Kondha and Kandha) community. It is primarily spoken in Odisha and is traditionally written using the **Odia script**. It is closely related to other languages in the **Dravidian family such as Gondi and Kuvi**. It was also referred to as the **Kuinga** language during the historical period. Inclusion in Eighth Schedule will help in the preservation, promotion, and propagation of the Kui language and culture.

48. Heliopolis Memorial

The Prime Minister of India paid his respects at the Heliopolis (Port Tewfik) Memorial in the Heliopolis War Cemetery in Cairo, Egypt. The Heliopolis (Port Tewfik) Memorial is part of the larger Heliopolis Commonwealth War Graves Cemetery. This **memorial commemorates the memory of 3,727 Indian soldiers who died fighting in various campaigns in Egypt and Palestine in the First World War**. The Indian troops had played a key role in **securing the Suez Canal in Egypt** and in Palestine, where Indian cavalry participated in the **Battle of Haifa**, commemorated in New Delhi in a war memorial.

49. GI Tags for Products of Uttar Pradesh

The Geographical Indications Registry has given tags to 7 different products from Uttar Pradesh. These products include **Amroha Dholak** (musical instrument crafted from natural wood, specifically mango, jackfruit, and teakwood), **Mahoba Gaura Patthar Hastashlip** (form of stone craft), **Mainpuri Tarkashi** (brass wire inlay work on wood), **Sambhal Horn Craft**, **Baghpat Home Furnishings**, **Barabanki Handloom Product** and **Kalpi Handmade Paper**.

50. Namda Art

Namda is a type of traditional **Kashmiri rug** made of woven fabric that is usually used to cover a floor. It is made of **sheep wool** through felting technique instead of the normal weaving process. Felting is the process of producing a textile or fabric by combining and compressing the loose fibers, wool or hair. Due to low availability of raw material, lack of skilled manpower and marketing techniques, the **export of Namda craft has declined almost 100% between 1998 and 2008**. To preserve this craft, the Government has launched a project to revive the Namda craft under a Skill India's Pilot Project as part of the **Pradhan Mantri Kaushal Vikas Yojana** (PMKVY) and has trained nearly 2,200 candidates. The exports have witnessed an uptick after the initiative.



51. National Maritime Heritage Complex (NMHC)

It is being developed at Lothal, Gujarat. It is being developed by the Ministry of Ports, Shipping and Waterways under the *Sagarmala* programme. The complex will include the world's highest lighthouse museum and world's largest open aquatic gallery. It will also have several innovative and unique features such as mini recreation of Lothal to **recreate Harappan architecture and lifestyle** and 4 theme. The project will **display India's rich and diverse maritime heritage** and also help Lothal to emerge as a **world-class international tourist destination**. It will provide tremendous **job opportunities to the local people** and will transform the socio-economic condition of the entire region.

52. Tankai Method of Shipbuilding

It is a **2000-year-old technique of shipbuilding**. It is also known as '**stitched shipbuilding method**'. In this method, the **ships are constructed by stitching wooden planks together rather than using nails**. This method offers **flexibility and durability to ships** making them **less susceptible to damage** from shoals and sandbars. The arrival of European ships led to a shift in shipbuilding

techniques. But this art of stitching ships has survived in a few coastal regions of India, primarily for small local fishing boats.

The Ministry of Culture and Indian Navy have entered into a Memorandum of Understanding (MoU) to revive and preserve the Tankai method.

53. World Investment Report, 2023

It has been published by the United Nations Conference on Trade and Development (UNCTAD). The global FDI fell by 12% in 2022 to US\$ 1.3 trillion mainly due to multiple global crises: the **war in Ukraine, high food and energy prices, and soaring public debt. India was the 3rd largest recipient of FDI in greenfield projects** in 2022. The FDI flows into India rose 10% from US\$ 44.7 billion in 2021 to US\$ 49.3 billion in 2022. Record FDI inflows were recorded in 2020 (US\$ 64 billion). Indian MNCs substantially increased their overseas investments in 2022 and invested about US\$ 42 billion overseas.

54. Global Survey on Digital and Sustainable Trade Facilitation 2023

UN Economic and Social Commission for Asia Pacific's (UNESCAP) has released the Global Survey on Digital and Sustainable Trade Facilitation 2023. Its aim is to review the **progress of trade facilitation reforms**. It measures progress on 11 categories like transparency, paperless trade, transit facilitation, Trade facilitation for SMEs, Agriculture, Women in trade facilitation etc. India has received an impressive score of 93.55% in 2023 vis-à-vis 90.32% in 2021. The overall score of India has been greater than many developed countries including Canada, France, UK, Germany etc. This has been possible through **efforts to streamline trade procedures and improve transparency** through initiatives such as **Turant** customs, **Single Window Interface for Facilitation of Trade** (SWIFT), pre-arrival data processing, **e-Sanchit**, and coordinated border management. (Refer EPIC April 2023 (click) for India's Foreign Trade Policy, 2023).

55. World Competitiveness Ranking

The International Institute for Management Development (IMD) has released the World Competitiveness Ranking 2023. It analyzes and ranks countries according to how **they manage their competencies to achieve long-term value creation** and evaluates them based on 4 key factors: economic performance, government efficiency, infrastructure and business efficiency. Denmark, Ireland and Switzerland have been named the top three among 64 economies. India has been ranked 40th (43rd in 2019-2021). India has witnessed **improvements in government efficiency**. The top 3 contributing factors that positively impacted India's score are: Exchange rate stability, compensation levels, and advancements in pollution control. Sustaining high GDP growth, managing financial market volatility, controlling inflation and fiscal deficit, accelerating digital transformation and mobilizing resources for infrastructure development are the major challenges before India.

56. Global Liveability Index, 2023

Economist Intelligence Unit (EIU) has released the Global Liveability Index 2023. The index quantifies the challenges presented to an individual's lifestyle in 173 cities worldwide and ranked them on 5 metrics: Healthcare, Culture, Environment, Education, and Stability. Vienna (Austria), Copenhagen (Denmark). New Delhi and Mumbai are at 141st position and Chennai at 144th. Ahmedabad and Bengaluru have been ranked 147 and 148.

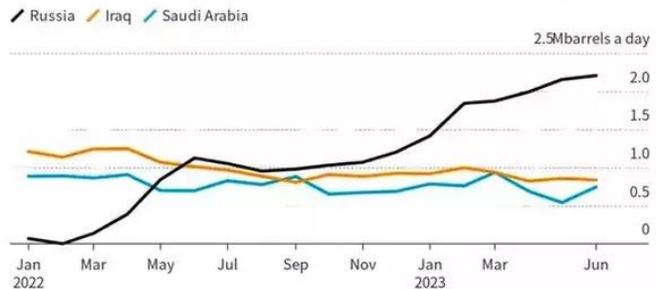
57. Payments of Russian Oil Imports in Yuan

Indian refiners have begun **paying for some oil imports from Russia in Chinese yuan**. India has emerged as a **largest buyer of seaborne Russian oil**.

This has increased output of Indian refineries as well. It has also enabled them to export refined products competitively to Europe and take a bigger market share. Due to large trade surplus with India, Russia has been reluctant to accept Rupee for its oil exports to India. Rise in Yuan payments has given a boost to China's efforts to internationalize its currency.

India's Oil Imports from Russia Scale a New Peak

June marked the 10th consecutive monthly rise in India's Russia imports



58. FL2027

FL 2027 is a **potato variety with high dry matter and low sugar content better suited for making chips**. This variety was developed in 1996 by Frito-Lay Agricultural Research, a division of **PepsiCo Inc.** It is used in Lay's Chips. PepsiCo India was granted a certificate of registration for FL 2027 as an "extant variety" on February 1, 2016. The validity period (*during which nobody else could commercially produce, sell, market, distribute, import or export it without the breeder's authorisation*) was 6 years from the date of registration and extendable up to 15 years.

The **Protection of Plant Varieties and Farmers Rights' Authority (PPVFRA)** had revoked PepsiCo's registration for 'FL 2027' on the grounds provided under Section 34 (grounds for revocation of registration) of the **Protection of Plant Varieties and Farmers Rights Act, 2001**. PepsiCo had appealed in Delhi High Court against the order, but Delhi HC has dismissed the petition.

59. Export Preparedness Index, 2022

NITI Aayog has released the 3rd edition of Export Preparedness Index (EPI), 2022. **Tamil Nadu has topped the index followed by Maharashtra and Karnataka**. Gujarat had topped the 2021 index, but has fallen to the 4th spot. **Uttarakhand secured the top position among hilly/Himalayan states** in the EPI 2022. **Haryana topped the chart among the landlocked regions. Among the UTs, Goa stood 1st** followed by J&K, A&N Islands and Ladakh. Out of the 680 districts engaged in exports, the top 100 districts contribute about 87% of the total exports from India. **Among the districts, Jamnagar in Gujarat topped the index**, followed by Surat, Mumbai Suburban, Mumbai, Pune, Bharuch and Kanchipuram. To boost exports, the Report has recommended **location-specific strategies, diversification of export markets** (such as based on GI products), **Leveraging foreign markets through the FTAs, focusing on high-growth sectors** such as pharmaceuticals, automotive, textiles and renewable energy etc. (Refer EPIC April 2022 for Export Preparedness Index).

60. Advance Authorisation Scheme

It is implemented by the Directorate General of Foreign Trade (DGFT) under the Foreign Trade Policy. The scheme **allows duty-free import of inputs for the purpose of exports**. In addition to inputs, packaging material, fuel, oil and catalyst utilized in the process of production of export products is also allowed.

61. Variable Rate Reverse Repo

The RBI uses various ways to increase or decrease liquidity in the banking system. **The RBI lends to commercial banks** (against Government securities) **at the Repo Rate. Reverse Repo is the interest the RBI pays to banks for funds** (i.e., Rate at which RBI borrows). Variable Rate Reverse Repo (VRRR) is a sub-type of Reverse Repo. It is usually undertaken to reduce surplus liquidity by withdrawing existing cash in the system. The RBI regularly conducted VRRR auctions in July 2023 to reduce excess liquidity.

62. Money Muling

Money muling is a type of money laundering. A money mule receives money from a third party in their back account and pays it someone else either through bank transfer or in cash. The mule charges a commission against the transfer. Even if money mules are not directly involved in the crimes that generate the money (cybercrime, payment and on-line fraud, drugs, human trafficking, etc.), **they are accomplices as they launder the proceeds of such crimes.** Money mules **help criminal syndicates to remain anonymous** while moving funds around the world.

63. GST Council Meet

The 50th meeting of GST Council was held recently. The Council approved the imposition of uniform 28% tax on full 'face value' of bets involving online gaming, casinos and horse racing. GST on restaurants against Cineplexes has been reduced from 18% to 5%. The Council exempted the cancer drug Dinutuximab and Food for Special Medical Purposes (treatment of rare diseases) from GST. The council has **recommended setting up of a mechanism for appellate tribunals.**

64. Geocoding

The GST Network (GSTN) has introduced geocoding functionality in all States and UTs. **Geocoding converts an address or description of a location into geographic coordinates.** It has been introduced to **ensure the accuracy of address details in GSTN records** and **streamline the address location and verification process.** Accuracy of the address details is crucial in determining the applicable GST rates, place of supply rules, and other compliance requirements. GSTN has already geocoded 1.8 crore principal places of businesses.

65. Tele Law Initiative

It was launched in 2017 by the Department of Justice. It is an **e-interface mechanism to seek legal advice and consultation** at a pre-litigation stage with the aim of '**Reaching the Unreached**'. Smart technology like video conferencing, telephone/instant calling facilities available at the Common Service Centres at the Panchayat level are used to connect the poor, vulnerable, unreached groups and communities with the Panel Lawyers for **seeking timely and valuable legal advice.** Services can also be accessed through Tele Law Mobile App. Services are provided either free of cost or at very nominal rate.

66. UTPRERAK

It has been set up the Bureau of Energy Efficiency, Ministry of Power. It stands for **Unnat Takniki Pradarshan Kendra.** It is a **Centre of Excellence to accelerate adoption of energy efficient technologies.** It has also been named as Advanced Industrial Technology Demonstration Centre (AITDC). It will demonstrate and showcase energy-efficient technologies in key industry sectors

and serve as a strategic capacity-building institution. It will provide key inputs for national energy policy formulation.

67. National e-Governance Service Delivery Assessment (NeSDA)

The NeSDA framework was launched in 2018 by the Department of Administrative Reforms & Public Grievances (DARPG). Its objective is to measure the **depth and effectiveness of existing e-Governance service delivery mechanisms** from the perspective of citizens. The framework is based on the **Online Service Index (OSI) of UNDESA eGovernment Survey**. DARPG undertakes NeSDA study **biennially**.

68. Special Assistance to States for Capital Investment

The Ministry of Finance has approved capital investment proposals of INR 56,415 crore in 16 States in the current financial year under the Scheme. The Scheme was announced in the Union Budget 2023-24. The aim of the scheme is to provide a boost to capital spending by State Governments. Special assistance is being provided to the State Governments in the form of a **50-year interest-free loans**.

69. Startup20

Startup20 is an **official engagement group established under India's G20 Presidency**. It acts as a **dialogue forum with the G20 nations startup ecosystem stakeholders**. It intends to represent the startup ecosystem of the G20 nations to raise the macroeconomic concerns and challenges faced by the startup ecosystem players in these nations. It has established 3 task forces on Finance, Foundations and Alliances and Inclusion and Sustainability.

70. eSewa Kendras

Around 815 eSewa Kendras have been set up **under 25 High Courts**. eSewa Kendras have been created in the **High Courts and in one District Court in each State on a pilot basis**. It is being expanded to cover all court complexes. It is being set up at the entry point of the court complexes. It enables litigants to **obtain information with respect to case status and to obtain copies of judgments and orders**. These centers also extend assistance in the e-filing of cases. The Kendras help expand access to justice to the common man.

71. PARAKH

PARAKH stands for Performance Assessment, Review, and Analysis of Knowledge for Holistic Development. It has been set up as an organization under **NCERT**. It has been launched as part of the implementation of the **National Education Policy (NEP)-2020**. Its mandate is to work on bringing the school Boards across States and UTs on a common platform. It will also act as a platform for interaction of all concerned stakeholders in order to develop a holistic approach that ensures a **fair assessment system which promotes equity in performance and equivalence in the assessment of students**.

72. Food Safety Index

State Food Safety Index is an annual assessment released by the **Food Safety and Standards Authority of India (FSSAI)**. It is a dynamic benchmarking model that provides an objective framework for **evaluating food safety across all States/UTs**. This index is based on the performance of the State/ UT on parameters like Compliance, Food Testing Infrastructure and

Surveillance, Training & Capacity Building and Consumer Empowerment. According to the latest rankings, Kerala is at the top of large States followed by Punjab and Tamil Nadu. Goa, Manipur and Sikkim are among top 3 in small States. In UTs, J&K, Delhi and Chandigarh have taken the top 3 ranks respectively.

73. Zero FIR

When a police station receives a complaint regarding an alleged offence that has been committed in the jurisdiction of another police station, it registers an FIR and then transfers it to the relevant police station for further investigation. This is called a Zero FIR. No regular FIR number is given. After receiving the Zero FIR, the relevant police station registers a fresh FIR and starts the investigation. The concept of Zero FIR was introduced based on the recommendation of Justice Verma Committee (2013) to recommend amendments to the Criminal Law so as to provide for quicker trial and enhanced punishment for criminals accused of committing sexual assault against women.

NOTE: With effect from 1st February 2022, the monthly ForumIAS Epic Magazine, for the month will provide wholistic coverage for the said month up to 20th of the month. This ensures that issues / stories that occur after 21st of the month are allowed to fully develop and are covered wholistically in the next month.