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Focus Article

Israel-Iran/Lebanon Conflict and Implications for India

News: Geopolitical tensions in the Middle East have worsened with the killing of Hezbollah chief and firing of ballistic missiles on Israel by Iran. War in Gaza has been going on for a year now. A wider conflict in the region can destabilize global peace and has deep implications for India's strategic and economic interests.

What is the background to the Israel-Lebanon war?

- **Origins of the Conflict (1982):** The creation of Israel in 1948 had led to mass **influx of Palestinians into southern Lebanon**. This heightened **ethnic tensions** in the region.
 - During 1960s, militias associated with the **Palestine Liberation Organization (PLO)** established their base in Southern Lebanon and used the territory to attack cities in Northern Israel.
 - **Israel attacked Lebanon in 1982** with the aim of driving out PLO. Israel withdrew from Lebanon in 1985 and established a ≈ 20 km wide security zone in Southern Lebanon to prevent future attacks. However, Israel's war gave rise to groups like Hezbollah which was established in 1982 with the support of Iran.
 - Hezbollah was formed to resist Israel, but eventually extended its goal to **establish a theocratic State** in Lebanon.
- **Conflict in 1990s:** Hezbollah gained **popular support in 1990s** with its ability to deliver social services like healthcare and education, especially in the Southern Lebanon.
 - Hezbollah continued its attacks in Northern Israel. It used **civilian areas as shield** for military operations, which made it difficult for Israel to retaliate without **collateral damage**.
 - Hezbollah's **guerilla tactics** to carry out the war of attrition, and its resilience forced Israel to unilaterally withdraw its forces from Lebanon in 2000, despite its military superiority.
- **War of 2006:** In 2006, Hezbollah killed 3 Israeli soldiers. Israel's retaliation led to deaths of over 1,200 Lebanese and 160 Israelis. **Israel's forces were not able to eliminate Hezbollah**. Large loss of lives and the failure to eliminate Hezbollah led to domestic criticism of Israel's Government. Hezbollah gained popularity as a front of resistance against Israel.
- **Present Times:** Hezbollah was a player in the **Syrian conflict** and supported Assad regime along with Iran. It has undertaken regular attacks on Israel since the beginning of the **Israel-Hamas war in Gaza** in 2023.
 - Israel has retaliated by **eliminating the top leadership of Hezbollah** including its chief, Hassan Nasrallah. Iran, an ally of Hezbollah, fired ballistic missiles on Israel in response. This has raised concerns about escalation into a **full-fledged regional conflict**.



What are the global impacts of the escalation of Israel-Lebanon war?

- **Disruption in the Peace Process in the Middle-East:** Middle East has witnessed geopolitical realignments in recent times with the signing of **Abraham Accords**.

○ **Israel-Saudi Arabia-US deal** was also on the cards that would have normalized relationship between Israel and Saudi Arabia. The Israel-Hamas war, large scale loss of civilian lives in Gaza and now the Israel-Lebanon conflict has put the deal in danger and has halted the **process of normalization**.

● **Middle East as the theatre of War:** Middle East has been an unstable region with wars like Gulf War (1991), Iran-Iraq War (1980-88), Yom-Kippur War (1973), 6-day War (1967) etc. The recent Israel-Palestine conflict has potential to become a full-blown war with involvement of foreign powers like US/EU in support of Israel and Russia/China in support of Iran. This has made the region a theatre for **proxy wars**.

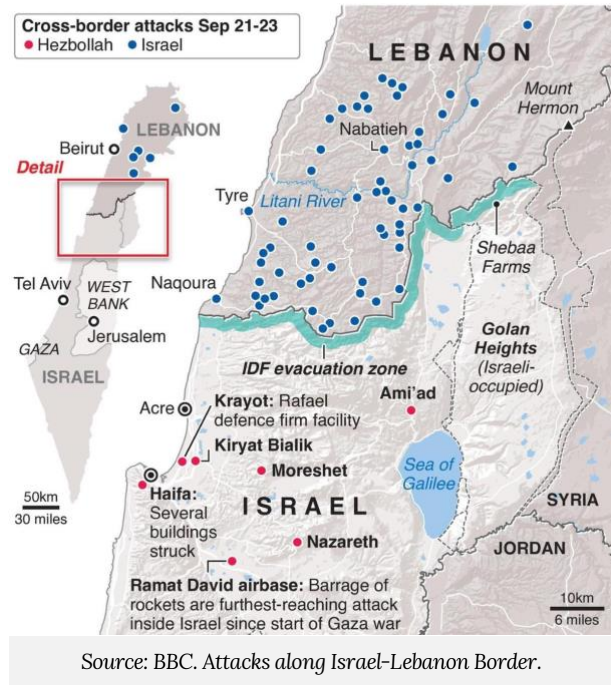
● **Disruption of Global Transport Routes:** The proposed projects like **India Middle East Economic Corridor (IMEC)** have faced disruptions due to the prolonged conflict in West Asia.

○ Escalation of Israel Lebanon conflict endangers **strategic supply routes** like the **Strait of Hormuz** and **Bab-al-Mandab** (Red Sea).

● **Disruption of the Global Supply Chains:** The escalation of the conflict will **impact the oil production and supply chain of goods**. This will further **increase global inflation**, which has already impacted several developed and developing economies across the world.

● **Increased Radicalization in the Middle East:** The conflict could serve as a rallying point for extremist groups across the Middle East and beyond. Groups like al-Qaeda or ISIS might use the conflict as an opportunity to **recruit new members**, by framing the war as a broader jihad against Israel and the West.

Israel strikes Hezbollah targets as conflict intensifies



What will be the impact of the Israel-Lebanon conflict on India?

● **Impact on De-hyphenation and West Asia Policy:** India has been successfully implementing its de-hyphenation policy in the region. India's relations with both the Arab World and Israel have improved. However, the escalation of the Israel-Lebanon conflict will affect India's de-hyphenation strategy in the region, as it will become difficult to balance relationship with Israel and Iran.

● **Diplomatic Balance:** India's challenge of maintaining balance in ties with the US and Russia will face further challenge as the US is firmly behind Israel, while Russia is supporting Iran.

● **Increase in Inflation:** More than 85% of India's domestic oil demand is met through imports. In 2023-24, out of India's total imports of US\$ 670 billion, US\$ 180 billion were contributed by oil. Possible fall in production and disruption in supply will raise India's oil import bill and domestic inflation.

● **Depreciation of the Indian Rupee:** The conflict will impact the inflow of FPI and FDI in the Indian financial markets. Increase in oil prices will further increase India's Current Account Deficit (CAD). These factors can collectively lead to depreciation of the Indian Rupee.

● **Effect on Trade:** Israel is a major defence and strategic partner of India. Involvement of Israel for a long period in the conflict can drastically reduce the trade between India-Israel. In FY2022-23, India's total exports to Israel stood at US\$ 8.4 billion, while India's imports from Israel were at \$2.3 billion.

- India's trade with the GCC exceeded US\$ 160 billion in 2023-24, with ≈ US\$ 60 billion in exports from India. Disruption in trade will result in slowdown of the Indian economy.
- **Safety of Indian Diaspora:** The Middle East region is home to a large Indian diaspora. Their security will be in a jeopardy in the event of a wider conflict. Their evacuation will be a big logistical challenge.
 - Indian migrants in the Middle East are a source of large remittances back to India (≈ US\$ 40 billion) which might be negatively impacted in case of wider war.
- **Security:** Instability in West Asia will provide fertile ground for radical groups like IS, Al-Qaeda to recruit new cadres. A new wave a radicalization might spread, especially through online media platforms. India is also vulnerable to such radicalization. It can endanger India's security.

Factors Contributing to Instability in the Middle East

- ★ **Geopolitical Rivalries:** The region is a theater of **geopolitical rivalry between Iran and Saudi Arabia** and their quest to expand their respective influence in the region.
- ★ **Religious Sectarianism:** The **Shia-Sunni divide** has contributed to conflict, including between Iran-Saudi Arabia, Iran-Iraq and within the Gulf monarchies like Bahrain.
- ★ **Colonial Legacy:** The **arbitrary borders** drawn by the colonial powers led to ethnic tensions e.g., the division of **Kurd population** or the **Israel-Palestine conflict**.
- ★ **Proxy-Wars:** The **presence of oil** and the quest of global powers to secure oil reserves has contributed to **proxy wars** in the region, first between US-USSR and now US-Russia/China.
- ★ **Authoritarian Regimes:** Most States in the Middle East are **Autocracies, Monarchies or Military Dictatorships**. Repression and discontent contribute to instability.

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What has been India's Response?

- India has urged that the **conflicts should not expand regionally** and has called for all issues to be resolved through **dialogue and diplomacy**.
- The Prime Minister of India met Palestinian President Mahmoud Abbas on September 23 during the session of the UN General Assembly, expressing **concern over humanitarian situation in Gaza** and reaffirming India's support for peace.
- The Prime Minister has also spoken to the Israel's PM, condemning terrorism and stressing the **need to prevent regional escalation**, securing the safe release of hostages, and **restoring peace**.
- India has not yet offered to mediate but maintains strategic ties with both Israel and Iran.

What should be done to diffuse the crisis?

- **Role of UNSC:** UNSC must find ways to prevent further escalation of the war. The UNSC along with the West must put pressure on Israel to halt operations in Gaza now that the top leadership of Hamas has been eliminated. Iran must be prevented from undertaking further attacks on Israel.
- **Indirect Negotiations:** Indirect talks mediated by third parties, such as the UN, or other countries like Qatar (mediating between Israel/Hamas) or Norway (mediated between Israel/PLO leading to Oslo Accords), can help lower tensions between Israel and Lebanon.
- **Strengthening UNIFIL's Role:** Strengthening the mandate and capabilities of the United Nations Interim Force in Lebanon (UNIFIL), which has been tasked with maintaining peace along the Lebanon-Israel border, could help in preventing further conflicts.

- **De-militarization of the Shebaa Farm Area:** The Shebaa Farms area could be demilitarized and placed under international control. This will reduce the likelihood of future conflict between Israel-Lebanon conflict over the territory.
- **Engaging Regional Actors:** Regional powers like Egypt, Jordan, Saudi Arabia, and Qatar, as well as the Arab League, could play an important role in mediating the Israel-Palestine conflict and fostering a more peaceful environment.

What should be India's Approach to manage the situation?

- **Strategic Autonomy:** India should maintain its policy of strategic autonomy and foster stronger bilateral relationships with key players like Israel, Saudi Arabia, the UAE and Iran.
 - India should **avoid explicitly aligning with any camp** or be embroiled in any rivalries. India should have principled and neutral stand on issues, while pursuing its national and strategic interests.
 - Fostering stronger ties with all nations can allow India to position itself as a reliable partner for all.
- **Strengthen Economic Ties:** India should strengthen economic and trade ties with the nations in the Middle East. Stronger economic ties can provide India a leverage to influence the strategic choices of its partners. This can enhance India's role as a mediator as well.
 - India should also work on **diversifying economic ties** beyond energy to other sectors like investments, infrastructure, technology, green economy etc.
 - India's CEPA with the UAE can work as a template for similar agreements with other Gulf nations like Saudi Arabia.
 - India should focus on **improving regional connectivity** which can lead to better integration and enhance trade in the region. This will lead to closer economic ties and improve regional prosperity. Stronger regional integration reduces incentives for conflict.
- **Diversify Energy Trade:** India should reduce dependence on the Middle East for its energy needs, by enhancing sourcing of oil and energy from other regions like Russia and Latin American countries.
 - India should rapidly develop its **renewable energy potential** to reduce dependence on oil imports. Investments from the UAE and Saudi Arabia can be used to develop **Green Hydrogen** and other renewable energy projects like solar/wind energy.
 - India should expand the capacity of its **strategic petroleum reserves**. At the same time, focus should be on **boosting domestic production**, especially in the KG-Basin region.
- **Multilateral Engagement:** India can also use multilateral groupings like I2U2 (India, Israel, UAE, US) to promote regional cooperation. India can seek greater participation in platforms like Gulf Cooperation Council (GCC) and Organization for Islamic Cooperation (OIC) to enhance its role as a constructive regional actor.
- **Defense and Security Cooperation:** India already undertakes regular military exercises with countries like Oman, UAE etc. India should enhance naval presence in the region and cooperation with its partners to check threats like piracy, and **securing sea lines of communication**.
 - India should further strengthen cooperation in the domains of counter-terrorism, intelligence sharing, cyber-security and counter-radicalization.
- **Indian Diaspora:** India can collaborate with its Gulf partners to improve the working conditions of Indian migrants in the gulf. India should also enhance tracking mechanisms of migrants which can prove helpful in emergency situations.
- India can explore new avenues for cooperation like **scholarships, exchange programmes and technical training**. Several Indian Universities (like IIT Delhi, BITS Pilani) already have presence in the Middle East through their overseas campuses. They can be leveraged for offering scholarships to students in the Middle East.

General Studies Paper I

1. The Issue of Marital Rape

News: The Supreme Court is hearing petitions challenging the legal exception that protects husbands from being prosecuted for marital rape (exception to marital rape).

What provision has been challenged by the Petitions?

- This exception, found in **Section 375** (Rape) of the **Indian Penal Code** (IPC), protects husbands from being charged with rape if their wife is over 15 years old (raised to 18 years by the Supreme Court).
- The challenge also extends to a similar provision (Section 63, Rape) in the new **Bharatiya Nyaya Sanhita** (BNS), 2023.

Exception to IPC Section 375 and BNS Section 63

IPC 375, Exception 2: Sexual intercourse or sexual acts by a man with his own wife, the wife not being under fifteen years of age, is not rape.

BNS 63, Exception 2: Sexual intercourse or sexual acts by a man with his own wife, the wife not being under eighteen years of age, is not rape.

What are the origins of exception to marital rape?

- The Marital Rape Exception (MRE) law originated from **English common law**, specifically the '**Doctrine of Coverture**'. This doctrine treated the husband and wife as a single entity after marriage, **denying women legal autonomy**.
- British jurist Matthew Hale codified the MRE in a 1736 treatise, stating that a **husband could not rape his wife due to marital consent**.

Doctrine of Coverture

Under the Doctrine, upon marriage, a woman (*feme covert*) had no independent legal existence of her own, in keeping with society's expectation that her husband was to provide for and protect her. Her legal rights and obligations were mostly subsumed by those of her husband. An unmarried woman, (*feme sole*) retained the right to own property and make contracts in her own name.

- The doctrine was adopted by British colonies, including India.
- England has abolished the exception to marital rape in 1991 in **R vs R**, recognizing that it no longer reflected the modern view of marriage and women's rights.
 - In **R vs R**, the defendant (husband) had claimed that it was not legally possible for a husband to rape his wife, as the wife had **given irrevocable consent to sexual intercourse with her husband** through the contract of marriage, which she could not subsequently withdraw. The Court and the House of Lords differed, and upheld the rape conviction.

What are the major issues with exception to Marital Rape?

- **Violation of Equality (Article 14):** It creates unequal treatment by denying married women legal protection against non-consensual sex, unlike unmarried women.
- **Impact on Women's Rights:** It violates **women's right to privacy** and **bodily autonomy** (Article 21), as seen in **K.S. Puttaswamy** and **Joseph Shine** cases.
- **High Incidence of Domestic Violence:** Nearly one-third of married women (18-49 years) in India experience physical or sexual violence by their husbands (NFHS-5).
- **Colonial Legacy:** The exception stems from outdated colonial laws rooted in patriarchal views of marriage.
- **Mental Health:** It has a deep psychological impact on the victim women. According to a study, victims of marital rape are **twice as likely to experience depression**.

What is the Government’s stance?

- Government has opposed the removal of exception to marital rape.
- The Government has argued that marriage creates an **expectation of “reasonable sexual access”**, that is not found in other relationships.
- It has acknowledged that **violating a wife’s consent is wrong** but considers labelling it as “rape” to be **too harsh and disproportionate**. A man does not have the right to “force his wife”, but there are other enough laws to protect married women from sexual violence.
- It warns that criminalizing marital rape **could harm the sanctity of marriage and lead to false accusations**.

Judicial View on Marital Rape



- **Nimeshbhai Bharatbhai Desai vs State of Gujarat (2018)**: The Gujarat High Court observed that a husband cannot violate the dignity of marriage by coercing his wife to engage in a sexual act without her full and free consent. However, due to the non-recognition of marital rape as a crime, the HC held that the husband is liable only for outraging her modesty and unnatural sex.
- **xx vs xx (2021)**: The Kerala High Court held **marital rape as a ground for divorce**. The HC observed that treating a wife’s body as something owned by husband and **committing sexual acts against her will** is nothing but ‘marital rape’.
- **Dilip Pandey and ors vs State of Chhattisgarh (2021)**: The Chhattisgarh High Court acquitted a man accused of raping his wife. The Court held that sexual intercourse between legally wedded man and woman is **not rape even if it is by force or against the wishes of the wife**. Created by: ForumIAS®

How can the issue of Marital rape be addressed?

- **Recommendations of Justice Verma Committee**: It was constituted in 2012 to strengthen **anti-rape laws**. The Committee had observed that marital rape is a criminal offence in most countries and had strongly recommended that the **exception for marital rape under IPC be removed**. *(Read more about the Issue of Marital Rape)*.
 - It highlighted the recommendations of **Convention on Elimination of All Forms of Discrimination Against Women (CEDAW)** with respect of India in 2007. The CEDAW asked for ‘widening the definition of rape to reflect the realities of sexual abuse experienced by women, and to remove the exception to marital rape from the definition of rape’. So, the Parliament can legislate a law to bring the necessary changes.
- **Judicial Interventions**: The Courts (globally and in India) have played a great role in shaping Jurisprudence. The European Commission of Human Rights (ECHR) has held that “a rapist remains a rapist, regardless of his relationship with the victim”. While decriminalising adultery, the Supreme Court in **Joseph Shine vs. Union of India (2018)** had observed that the legislation that perpetuates stereotypes in relationships and institutionalises discrimination is a clear **violation of the fundamental rights** guaranteed by the Constitution. The SC can strike down the exception to Section 375 (IPC)/Section 63 (BNS) using its powers under Article 142.
- **Societal Change**: Laws alone cannot be used to fight marital rape issues, societal change is pivotal. The notions related to consent withing marriage need to be challenged.

Judicial View on Marital Rape



- **Hrishikesh Sahoo vs State of Karnataka (2022)**: The Karnataka High Court ruled that exception to marital rape **amounts to discrimination** because a wife is treated as sub-ordinate to husband. It destroys the women’s right to equality. It refused to quash the charge of rape against the husband.
- **RIT Foundation vs Union of India (2022)**: The Delhi High Court delivered a **split judgment**. One Judge termed the exception as **unconstitutional**, while the other Judge held that the **law has to be changed by Legislature** since it requires consideration of social, cultural and legal aspects.
- **X vs Government of NCT Delhi (2022)**: The Supreme Court held that the meaning of rape must include ‘marital rape’ for the purpose of the **Medical Termination of Pregnancy Act and Rules**. Wives, who conceived out of forced sex by their husbands will also come within the ambit of ‘survivors of sexual assault’ or ‘rape’ or ‘incest’ under the MTP Act. However, the Court clarified that its interpretation only applies to the MTP Act and would not affect the challenge to the exception under the IPC. Created by: ForumIAS®

2. State Control of Temples in India

News: The controversy over possible use of animal fat in the Laddu Prasadam in Tirupati Temple has once again stirred the debate over the State control of temples in India.

What has been the history of State Control of Temples in India?

- According to Census 2011, Hindu temples form the majority of ~ 30 lakh places of worship in India. The State control of temples in India has a long history, starting from the colonial period to post-Independence India.

Period	Development
Colonial Period	<ul style="list-style-type: none"> • The East India Company enacted laws in Bengal, Madras, and Bombay between 1810 and 1817, which allowed interference in administration of temples to prevent misappropriation of income. • The Religious Endowments Act (1863) passed by the British Government, aimed to secularise temple management by transferring temple control to committees. However, the Government retained influence through legal frameworks like the Civil Procedure Code and the Charitable and Religious Trusts Act (1920). • The Madras Hindu Religious Endowments Act (1925) established a statutory body, Hindu Religious and Charitable Endowments Board. It empowered Provincial Governments to legislate on temple matters, and allowed oversight by a board of commissioners.
Post-Independence Period	<ul style="list-style-type: none"> • The Law Commission of India recommended enactment of legislations to prevent the misuse of temple funds. • The Tamil Nadu Hindu Religious and Charitable Endowments Act, 1951, provided the creation of a Department of Hindu Religious and Charitable Endowments for the administration, protection, and preservation of temples and their properties. • Bihar Hindu Religious Trusts Act, 1950 was passed in Bihar to regulate the religious institutions.

What are the Constitutional Provisions?

- **Article 25(2)**: It allows the State to regulate economic, financial, political or secular activities linked to religious practices and to enact laws for social welfare, reform, and opening Hindu religious institutions to all classes of Hindus.
- **Seventh Schedule**: Religious endowments and institutions fall under the Concurrent List of the Seventh Schedule of the Constitution, allowing both the Centre and States to legislate on the subject.

What arguments favour the State control of Temples in India?

- **Prevention of Temple Mismanagement**: The central argument presented in favour of temple management control is the **enhancement of transparency** in the administration of temple funds, and reduction of risks of **misappropriation and corruption**.
 - Government oversight helps in the responsible and ethical management of temple funds.
- **Protection from Commercialization**: Government involvement in the management of temple funds is aimed at their prevention from commercialization and exploitation by vested interests.
- **Promotion of Gender Equality**: State management is aimed at ensuring that the temples' services and resources are accessible to all devotees regardless of their gender e.g., the Travancore Devaswom Board supported equitable access to the temple for women in the Sabrimala Temple entry case.
- **Redistribution of Resources**: The revenue generated from temples is redirected towards State initiatives that benefit the wider community, such as the infrastructure development or social welfare programs.
 - HRCE Department of Tamil Nadu has used temple funds for community development programs such as establishing schools, colleges, and hospitals.
- **Religious and Cultural Inclusivity**: State control ensures that temples adhere to constitutional principles of inclusivity for the individuals from vulnerable communities e.g., in Tamil Nadu, the HRCE Department has worked on ensuring temple entry for Dalits and backward communities in temples that restricted access.

- **Prevention of Exploitation of Devotees:** State control aims to protect devotees from exploitation by temple authorities, such as charging of exorbitant fees for rituals. Temples in Tamil Nadu and Andhra Pradesh have set up guidelines on fees for rituals and offerings.

Judicial View on State Control of Temples



- **Shirur Mutt vs. The Commissioner, Hindu Religious Endowments, Madras (1954):** The Shirur Mutt case set important precedents for the protection of religious freedoms and property rights in India. The Supreme Court (SC) of India ruled that the state can regulate the administration of religious or charitable institutions.
- **Ratilal Panachand Gandhi vs State of Bombay (1954):** The SC held that the state can regulate the administration of trust properties.
- **Pannalal Bansilal Pitti vs State Of Andhra Pradesh (1996):** The SC upheld a law abolishing hereditary rights over temple management and rejected the argument that such laws must apply equally to all religions.

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What are the arguments against State control of Temples in India?

- **Unfair and Unequal Treatment:** Critics argue that while the Government controls Hindu temples in several States, other religious institutions, such as mosques, churches, and gurdwaras, are generally allowed to manage their own affairs independently.
- **Mismanagement and Bureaucratic Inefficiency:** Government-appointed boards or officials often lack the expertise, commitment, or **religious understanding** necessary to manage temple affairs effectively. This can lead to mismanagement, and inefficiency in the management of temple affairs. There have been several allegations of corruption, poor administration, and neglect of temple properties by the HRCE.
- **Diversion of Temple Funds:** Diversion of funds for secular activities has often been opposed by the devotees.
- **Erosion of Temple Heritage and Traditions:** The imposition of administrative norms by the State that are not aligned with the **spiritual and ritualistic aspects** of temple management, often leads to the erosion of temple heritage and traditions. The support to the entry of women in Sabarimala by the Government-controlled Board has been at odds with the **temple's ritualistic traditions**.
- **Decline in Devotee Trust and Participation:** Critics argue that the bureaucratic control of the temples leads to decline in the participation and involvement of devotees in temple management.
- **Economic Mismanagement of Temple Assets:** In States like Tamil Nadu and Karnataka, there have been numerous reported cases of encroachment on temple land by private individuals. This further fuels concerns regarding the economic mismanagement of temple resources by the State.
- **Better Management through Private Trusts:** Critics argue that the temples that are not under State control, such as the Shirdi Sai Baba Temple Trust in Maharashtra, successfully run charitable hospitals, schools, and community programs.

What should be the way forward?

- **Greater Autonomy with Oversight:** Establishment of independent temple trusts comprising local religious leaders, community representatives, and legal or financial experts can help improve the management of temples. The Government should only undertake the oversight functions.
- **Transparency/Accountability in Management of Funds:** An independent auditing body should conduct regular financial audits of temples and public disclosure of temple funds must be made mandatory.

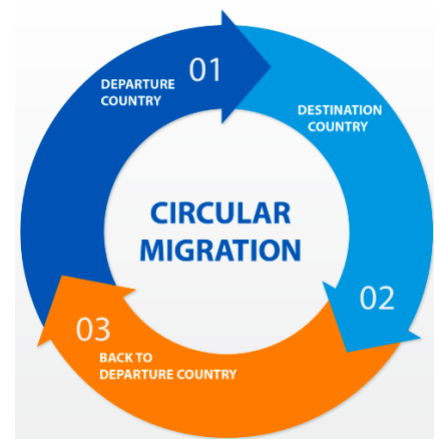
- **Formation of Devotee Councils:** Local councils comprising devotees and community leaders could be formed to advise on temple management, rituals, and festivals etc. This would empower the community to safeguard the religious and cultural traditions of the temple.
- **Government as a Custodian of Heritage:** The State's role should shift to that of a custodian responsible for preserving the heritage and architecture of ancient temples, instead of being a manager.
- **Consent of Temple Authorities:** Temple funds could be used for social welfare programs such as healthcare, education, poverty alleviation etc., but only after consultation with temple authorities controlled by members of the community.

3. Circular Migration: Benefits and Challenges

News: Globalization has enhanced opportunities for circular migration. It offers several benefits over brain drain. The Government has taken several steps to facilitate circular migration.

What is Circular Migration and how is it different from Brain Drain?

- Circular migration is defined by **temporary residence**, potential for **multiple entries**, and **freedom of movement** between origin and destination. In the context of international migration, it involves **workers going abroad temporarily** and **returning with enhanced skills**, benefiting both India and the host countries. As an example, ≈1,000 skilled youth from India are working in Israel for 5 years and will return with advanced construction skills.
- **Brain Drain** is **permanent migration** of highly qualified individuals, leading to a loss of talent for the home country. For example, many doctors and engineers, educated in subsidized Indian institutions, go abroad for higher studies and then permanently settle there, mostly in the US. Their talent benefits the US economy instead of India.
- The key difference between the two is that Circular migration leads to skill transfer back to India, while brain drain results in a **permanent loss of talent**, with **limited economic returns in the form of remittances**.
- India also experiences substantial internal circular migration, notably from rural to urban areas, often for jobs in sectors like construction.



How does Circular Migration benefit India?

- Circular migration allows Indian workers to gain international experience and return with advanced skills, benefiting India's industries.
- Over 40% of India's remittances come from manual workers in the Middle East.
- Initiatives by MITRA and NSDC ensure workers are trained to meet global skill standards, improving job opportunities abroad. It provides opportunities of skill development for domestic workers.

What initiatives have been launched by the Government to facilitate Circular Migration?

To address challenges like matching skills to international standards, language barriers, legal compliances, the Government has initiated several steps:

- **Labor Mobility Agreements:** India has signed agreements with countries like Israel, Japan, and Germany to fill skill shortages.
- **Skill Development:** The National Skill Development Corporation offers booster training to upgrade skills.
 - Maharashtra's MITRA and NSDC trained ≈1,000 workers for jobs in Israel, focusing on construction works like plastering and bar bending.

- **Language and Skill-Matching:** Training includes skills in foreign languages like English, German etc. and other skills in demand in foreign countries.
- **Infrastructure Support:** ITIs are building infrastructure and providing machines for skill-building e.g., one ITI in Pune developed bar-bending machines to meet the requirements of Israeli construction companies, ensuring workers passed the required tests for international placements.

What more should be done?

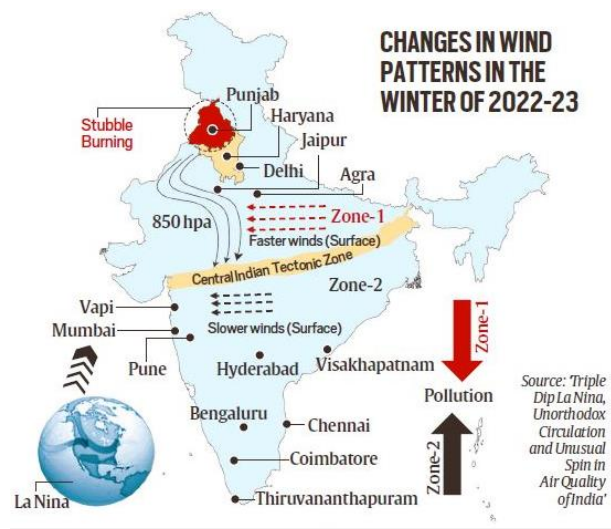
- Government needs to **formulate policies** that accurately comprehend and manage the scope of circular migration. Thorough documentation and **understanding of migrant patterns** is crucial for effective policy-making.
- India should **establish safeguards to protect the rights of migrants** especially in regions where there are higher chances of exploitation like in the Middle East. Ensuring that workers are not exploited and have **access to fair wages** and **safe working conditions** is pivotal.
- India should expand circular migration to countries like Japan and Germany with ageing populations.
- With targeted skill development, language training, and government support, India can fill global skill gaps while benefiting from the skills of experienced workers who come back. (Read more about Circular Migration).

4. Onset of La Niña and Winter Air Pollution in India

News: The possible delay in the onset of La Niña is expected to worsen winter air pollution in Northern India.

What is the impact of La Niña on Air Quality?

- The delayed onset of La Niña will **worsen air quality** in North India. Without La Niña, **stagnant surface winds will trap pollutants**, raising the levels of **PM2.5** and **PM10**.
- **Stubble burning** in Northwest India, combined with stagnant winds, will further deteriorate air quality.
- Studies have **linked climate change and meteorological phenomena** like La Niña to **fluctuating air quality**. The National Institute of Advanced Science (NIAS) found that changes in wind pattern due to La Niña greatly improved Delhi's air during the winter of 2022-23 (the best in a decade). However, the same phenomena worsened air quality in Mumbai (Refer EPIC February 2024 for Impact of La-Niña on Air Quality).
- The NIAS-SAFAR model predicts that if La Niña begins by December 2024 or January 2025, it might improve air quality slightly. This is due to expected stronger winds and dynamic atmospheric conditions which help disperse pollutants.



Source: Indian Express. The change in wind pattern in 2022-23 shifted pollutants to Southern India.

What should be done?

- Addressing air pollution should go **beyond local emissions** and the approach and policy measures should include larger meteorological and climatological factors. (Refer EPIC June 2023 for El-Niño and Its Impacts).
- There is a need to **shift focus from individual cities to larger airsheds**, incorporating broader factors into air quality strategies to enhance public health protection.
- The emphasis should be on reduction of PM2.5 from emissions from fossil fuels. There's also a need for **integrated scientific approaches** and **health-focused measures** to combat air pollution effectively.

General Studies Paper II

1. Supreme Court Upholds Section 6A of the Citizenship Act

News: The Supreme Court has upheld the constitutional validity of Section 6A of the Citizenship Act.

What is Assam Accord and Section 6A of the Citizenship Act?

Accord/Section	Details
Assam Accord 1985	<ul style="list-style-type: none"> It is an agreement between the Government of India and the All Assam Students' Union. The Accord aimed to address the influx of migrants in to Assam by setting a cut-off date for citizenship. It led to addition of Section 6A to the Citizenship Act, 1955.
Section 6A of the Citizenship Act, 1955	<ul style="list-style-type: none"> Section 6A of the Citizenship act codified the Assam Accord of 1985. Identification of Foreigners: It set January 1, 1966 as the base date for identification of "foreigners" and their removal from electoral rolls. Application for Indian Citizenship: Section 6A allows migrants of Indian origin who entered Assam between January 1, 1966, and March 25, 1971, to apply for Indian citizenship.

What arguments have been put forth against Section 6A of the Citizenship Act?

- Violation of the Constitutional Provisions:** Petitioners argued that Section 6A was violative of Constitutional provisions on citizenship provided by Article 6 and Article 7. Both these Articles govern citizenship for those who migrated from Pakistan.
- Violation of Right to Equality:** Petitioners contended that Section 6A violated the Right to Equality by granting citizenship only to migrants in Assam while excluding other border States.
- Arbitrary Cut-off Date:** The cut-off date of March 24, 1971 for granting citizenship was arbitrary.
- Violation of the Right of Cultural Preservation:** Granting citizenship to migrants violated the rights of Assamese people under **Article 29(1)** of the Constitution, which protects the right to conserve their distinct culture.
- Facilitation of External Aggression:** The petitioners argued that Section 6A facilitated 'external aggression' by allowing illegal immigration, citing the Court's previous ruling in *Sarbananda Sonowal vs Union of India* (2005).
- Violation of National Fraternity:** It was argued that the Constitution of India supports national fraternity instead of global fraternity.

What is the Supreme Court Judgment?

- Section 6A Doesn't Violate the Constitution:** The SC held that Articles 6 and 7 applied only to citizenship at the time of Constitution's commencement in 1950, whereas Section 6A dealt with later migrants. The SC also held that **Section 6A aligned with the intent behind Articles 6 and 7**, which aimed to protect the rights of Partition-affected migrants.
- Section 6A and the Right to Equality:** The SC has held that Assam's unique demographic and political situation, including the Assam Movement, justified separate treatment in the form of Section 6A. The Court emphasized that the migrant influx had a greater impact on Assam's smaller population and cultural fabric than in other States.
- Endorsement of the Cut-off Date of March 24, 1971:** The SC held that the cut-off date, aligned with the **Illegal Migrants (Determination by Tribunals) Act, 1983** and, marked the day Pakistan's military began **Operation Searchlight**, targeting the nationalist movement in East Pakistan (now Bangladesh). The SC held that the

migrants who arrived before this operation were considered part of the Partition-era migration, which India had previously handled with a liberal policy.

- **The Right of Cultural Preservation:** The SC has held that changes in demography do not automatically infringe upon cultural rights.
- **Section 6A and India's Fraternity Goals:** The SC rejected the petitioners restricted view of fraternity. The Court has held that fraternity in the Indian context is more broad based and inclusive, and is aligned with goals of social justice.
- **Section 6A does not amount to External Aggression:** The SC held that Section 6A offers a '**controlled and regulated**' approach to migration, and does not amount to external aggression.

What is the significance of the Supreme Court's Judgment?

- **Comprehensive Judicial Examination of Citizenship:** The SC verdict on the Constitutionality of section 6A is the first comprehensive judicial examination of citizenship under the Indian Constitution.
- **Liberal View of Citizenship:** The SC has rejected the narrow interpretation of citizenship based on cultural exclusivity. The verdict has, reinforced that citizenship is a broad, plural concept.
- **Right of Cultural Conservation and the Framework of Multiculturalism:** The Constitutional right to conserve culture must be interpreted within the framework of India's multiculturalism.
- **Upholds Parliament's Authority:** The SC has upheld the Parliament's authority under **Entry 17 of the Union List** and **Article 11** of the Constitution, which grants it broad powers to make laws related to citizenship.

What concerns remain regarding Section 6A?

- **Ineffective Implementation:** The SC has acknowledged that the ineffective implementation of Section 6A has failed to restrict illegal immigration after 1971.
- **Clash of Section 6A with Section 6B:** The Citizenship Amendment Act, 2019 introduced Section 6B in the Act, which provides citizenship to non-Muslim migrants from Pakistan, Afghanistan, and Bangladesh who entered India before December 31, 2014. The cut-off date under Section 6B could clash with the March 25, 1971 cut-off date in Assam, which has been upheld by the Supreme Court in this judgment.
- **Lack of Proper Mechanism to Grant Citizenship:** There are concerns due to the lack of proper mechanism to grant citizenship to those who migrated between January 1, 1966, and March 24, 1971.
- **Ineffectiveness of Section 6A:** Section 6A has become ineffective over time due to the absence of a fixed timeframe for identifying and removing migrants from electoral rolls.

2. Supreme Court's Judgment on Child Pornography

News: The SC has ruled that viewing, downloading, storing, distributing, or displaying pornographic acts involving children is a criminal offense under the POCSO Act and the Information Technology (IT) Act.

What is the Supreme Court Judgment?

- The SC has ruled that accessing or storing child sexual material is punishable under the Protection of Children from Sexual Offences (POCSO) Act.
- It applies to **both possession** and **viewing** of such material online, even **without actual storage** on a device.
 - The Judgment invoked the doctrine of '**constructive possession**' to expand the ambit of 'possession' under **Article 15 of the POCSO Act**. Constructive possession refers to a situation in which an individual has **actual control** over something **without actually having physical control** over it.
- The SC held that the individuals can be held criminally liable if they had control over **Child Sexual Exploitative and Abuse Material (CSEAM)**, **even if they deleted it later**.
 - Offenders can't evade liability through tactics like deleting child pornographic materials after viewing.

- The Court ruled that even the mere storage of such material, without deleting it, **constitutes possession and intent to transmit**.
- The Court has **set aside a Madras High Court Judgment**. The Madras HC had ruled that watching or downloading child pornography was not a crime. However, the SC has emphasized that **merely watching child pornographic material also violates the law**.
- The Court highlighted that the sexual abuse of a child is just the beginning of their victimization, and the recording, circulation, and viewing of these acts in cyberspace perpetuate the trauma.
- The Judgment has highlighted the need to **avoid narrow legal interpretations**, reinforcing the penalties outlined in **Section 67B of the Information Technology Act** and **Section 15 of the POCSO Act**.
- The Court equated viewing of CSEAM with the act of child sexual abuse due to the shared malicious intent of sexual exploitation and degradation.

Legal Framework to Deal With Child Pornography

Section 15 of the POCSO Act: It criminalizes the storage, possession, transmission, propagation, display or distribution of child pornography (now referred to as CSEAM).

Section 67B of the IT Act: It penalizes the use, transmission, and publication of obscene materials involving children, including viewing and browsing such content. It also criminalizes collection, browsing, downloading, advertising, exchange, distribution of material depicting children in obscene or indecent or sexually explicit manner.

What directions and recommendations have been given by the Supreme Court?

- The Court recommended using the term “**Child Sexual Exploitative and Abuse Material**” (CSEAM) instead of “child pornography” to **better reflect the gravity of the crime**.
 - It called upon the Parliament to replace the term ‘child pornography’ with CSEAM in the POCSO Act.
- The Judgment has mandated **strict accountability for social media intermediaries** to report CSEAM to law enforcement. It reminded platforms and intermediaries of their **duty to remove such content**.
 - The Court advised that automatic downloads or suspicious links should not only be closed but reported to the authorities for further investigation.
- The SC urged the Government to **implement comprehensive sex education programs to raise awareness** about the legal and ethical issues related to child exploitation.

What should be the approach going ahead?

Legal Measures

- The laws should be suitably amended to clearly define cybercrime and include CSEAM as an **organized crime**.
- **AI-generated** child sexual abuse material must be treated as **equivalent to real child abuse**.
- Platforms should report CSEAM to law enforcement in real-time, as ordered by the Supreme Court.

Technical Measures

- India should establish **domestic forensic labs** with advanced technology to handle increased reporting of CSEAM. Currently, international agencies like Interpol flag Indian IP addresses, delaying the response.
- Individuals prosecuted for CSEAM should be entered into a national database and **barred from jobs involving children**.

Global Measures

- Since CSEAM is a global crime, it needs a global solution. The UN has not addressed such emerging crimes. An **international convention** is needed, and financial institutions must help track the money supporting child exploitation networks.
- An international database of sex offenders should be established to **improve global cooperation** in law enforcement.

3. Challenges in Disciplining Conduct of Judges

News: The SC has expressed ‘serious concern’ on the controversial remarks made by a Karnataka High Court Judge. The SC didn’t take any action against the HC Judge after he apologized.

What protections are available to the Judges of Constitutional Courts?

- Judges of the Supreme Court and High Courts have strong protections to **ensure judicial independence**. The only constitutional method of removing a judge is **through impeachment**.
- According to **Article 124(4)**, a Supreme Court Judge can only be removed through a political process in Parliament. Impeachment requires a majority of the total membership and **two-thirds of members present and voting** in each House. The only basis for removal of a Judge are “**misbehaviour**” or “**incapacity**”. This requirement of high standard makes impeachment rare.
- **Impeachment proceedings** have been **initiated 5 times**, including against Justice V Ramaswami (1993), Justice Soumitra Sen (2011), and Justice C V Nagarjuna (2017). However, **no judge has been successfully impeached** till now, although Justice Sen resigned after being impeached by the Rajya Sabha.

What other methods are available to the Supreme Court to discipline Judges?

- **Judicial Intervention:** The Supreme Court can act directly against an errant Judge. In 2017, Justice C S Karnan was sentenced to **6 months’ imprisonment for contempt of court**. This set an uneasy precedent but showed SC’s willingness to act.
- **Transfer Policy:** The Supreme Court’s Collegium transfers judges as a disciplinary measure. For instance, Justice P D Dinakaran was transferred from Karnataka High Court to Sikkim High Court amidst corruption allegations. However, critics argue that such action only shifts the problem instead of solving it.
- **Mild Reproach:** The SC can issue reprimands. In the recent case, the Karnataka HC Judge apologized after the SC expressed concern. The SC didn’t intervene further.

Restatement of Values of Judicial Life, 1997

The Supreme Court had adopted the Charter in 1997. It has 16 points, the salient points include:

- The behaviour and conduct of members of the higher judiciary must **reaffirm the people’s faith** in the impartiality of the judiciary. *Justice must not merely be done but it must also be seen to be done.*
- A Judge **should not contest the election** to any office of a club, society or other association.
- **Close association with individual members of the Bar**, particularly those who practice in the same court, shall be eschewed (avoided).
- A Judge should **not permit any member of his immediate family**, if a member of the Bar, **to appear before him** or even be associated in any manner with a cause to be dealt with by him.
- No member of his family, who is a member of the Bar, shall be permitted to use the residence in which the Judge actually resides or other facilities for professional work. **A Judge shall not hear and decide a matter in which a member of his family**, a close relation or a friend is concerned.
- A Judge shall not enter into public debate or express his views in public on political matters.
- A Judge shall not accept gifts or hospitality except from his family, close relations and friends.
- A Judge **shall not speculate in shares, stocks** or the like. A Judge **shall not hear and decide a matter in which a company in which he holds shares** is concerned unless he has disclosed his interest and no objection to his hearing and deciding the matter is raised.

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What should be the approach?

- The Supreme Court had adopted a Resolution on ‘**The Restatement of Values in Judicial Life**’ in 1997. It has not been able to address such cases of deviant behaviour.

- The SC can codify the guidelines and make it **mandatory** in nature. (Refer EPIC September 2023 for Declaration of Assets by Judges and Judicial Accountability).
- The **Judicial Standards and Accountability Bill** was presented in the Parliament in 2010, but it eventually lapsed. A new **Act on setting judicial standards** is necessary. As suggested by a former Chairperson of the Law Commission, any law on the matter must address the concerns associated with the previous lapsed Bill (e.g., *the responsibility of enacting the Code of Conduct was given to the Parliament*) and should **avoid giving excessive control to the Legislature or the Executive**. (Refer EPIC June 2022 for Judicial Accountability in India).
- To allay any fears regarding Government's interference, the **Judiciary should be extensively consulted** before finalizing the draft, so that Judicial independence is not compromised.
- A **permanent disciplinary committee** should be set up at the central level to deal with complaints against judges. The Committee should recommend further course of action based on the seriousness of misconduct (e.g., setting up a judicial inquiry committee under the **Judges Inquiry Act** for major misconduct).

Judgements Related to Judicial Accountability

- **S.P. Gupta v. Union of India**: The Supreme Court agreed that **Judiciary is accountable to the public** to answer queries related to the decisions they take for the interest of the public. This has been granted to the public by Article 19(1) (a) of the Constitution.
- **C. Ravichandran Iyer vs Justice A.M. Bhattacharjee**: The Supreme Court held that an **in-house "peer review" procedure** could be laid down for **correcting deviant behaviour**. Where the allegations do not warrant removal, the in-house mechanism could impose "minor measures".
- **K. Veeraswami v. Union of India**: The SC held that no Judge of superior court could be subjected to a criminal investigation **without the written permission of the Chief Justice of India**. Justice Veeraswami had assets vastly disproportionate to his income. Due to this judgment, it has been very rare that a judge has been subjected to investigation.

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4. Sixth Schedule Areas in India

News: There has been an ongoing demand for inclusion of Ladakh into the Sixth Schedule.

What is the historical basis for the Fifth and Sixth Schedule of the Constitution?

- The demands for inclusion of regions in Fifth and Sixth Schedules are rooted in **asymmetrical federalism** in India. Under this asymmetric structure, certain States or regions have more autonomy than others.
- Unlike symmetrical federations like the US or Australia, where all States share equal powers, the Constitution of India grants special provisions to some areas (under Fifth and Sixth Schedule), especially those with unique ethnic compositions.

Historical Context of Fifth and Sixth Schedules

- The Fifth and Sixth Schedules of the Constitution have their roots in colonial policies that recognized the **distinct nature of tribal populations**.
 - Tribals maintained their autonomy over their lands until **British forest policies restricted their rights**. This led to **rebellions** like the Kol (1831-32) and Santhal (1885) revolts.
 - To address **tribal discontent**, the Government of India Act (1935) introduced 'excluded' and 'partially excluded' areas, which later influenced the creation of the Fifth and Sixth Schedules.

Why is Ladakh demanding inclusion in the Sixth Schedule of the Constitution?

- **Political Representation and Autonomy**: The Jammu and Kashmir Reorganisation Act 2019, created two separate UTs of J&K (with Legislature) and Ladakh (without Legislature). While there had been 4 MLAs from the Ladakh region in the erstwhile J&K Assembly, now the administration of Ladakh is completely in the hands of bureaucrats. Sixth Schedule status is being demanded to **ensure political representation and autonomy**.

- **Lack of Local Employment Opportunities:** The administration of UT of Ladakh has failed to create local employment opportunities for youth of Ladakh.
- **Preservation of Cultural Identity:** Sixth Schedule status is also being demanded to protect Ladakh's unique cultural heritage and traditional customs. Tribals like Gujjars, Bakarwals, Bots, Changpas, Baltis and Purigpas have distinct cultures which can be better preserved under the Sixth Schedule.
- **Preservation of Ladakh's Fragile Ecosystem:** Climate activists have flagged serious concerns regarding mining and industrialisation in the fragile glacial ecological system of Ladakh. Sixth Schedule status is being demanded to **protect the high-altitude deserts, glaciers and alpine meadows** which are a crucial habitat for rare and endangered species.
- **Change in Domicile Policy of J&K:** The change of domicile policy in UT of J&K has amplified demands for Sixth Schedule for Ladakh to ensure domicile for Ladakh population.
- **Strengthening Democratic Institutions:** The establishment of autonomous councils under the Sixth Schedule would strengthen democratic institutions at the grassroots level.

Schedule/Area	Distinctive Features
Fifth Schedule	<ul style="list-style-type: none"> • The Fifth Schedule applies to 'Scheduled Areas,' which are identified based on criteria like high tribal population and economic backwardness. • The Fifth Schedule areas span across 10 states. Tribes Advisory Councils (TACs) advise on tribal welfare. • Governors have powers to regulate land allotment and manage money-lending practices in these areas, ensuring some degree of tribal autonomy.
Sixth Schedule	<ul style="list-style-type: none"> • The Sixth Schedule grants greater autonomy to tribal areas in Assam, Meghalaya, Mizoram, and Tripura. • Autonomous District Councils (ADCs) manage land use, inheritance laws, and social customs. ADCs hold legislative, executive, and financial powers, with the ability to collect taxes and manage local resources. • Unlike the Fifth Schedule, ADCs can make laws that supersede those of the State, pending approval by the Governor.
Special Provisions for Northeastern States	<ul style="list-style-type: none"> • Several Northeastern States have additional protections under Part XXI of the Constitution (Articles 371A-H), which safeguard local customs and practices. • These provisions ensure representation and development in tribal and hill areas of Nagaland, Assam, Manipur, Sikkim, Mizoram, and Arunachal Pradesh.

What are the issues with the Sixth Schedule?

- **Limited Geographical Coverage:** The Sixth Schedule areas are limited in their **geographical coverage** and exclude numerous tribal communities, leading to unequal treatment and exclusion.
- **Lack of Effective Decentralisation:** The Sixth Schedule areas often lack effective and real decentralisation of powers and administration e.g., there has been only 1 Council for entire Bodo Territorial Area districts.
- **Control of State over Autonomous Councils:** The laws made by the councils require the assent of Governor. In case of conflict of interest between the District Councils and the State Legislature, the latter would prevail.
- **Financial Dependence:** Autonomous councils are dependent on their respective State Governments for funds in addition to the occasional special package from the Centre. States have not constituted the **State Finance Commissions** in a timely manner to recommend devolution of funds to District Councils.
- **Corruption and Financial Mismanagement:** The functioning of different councils in the Sixth Schedule areas has been marred by corruption and financial mismanagement.

- **Lack of Skilled Professionals:**

The Autonomous Councils lack skilled planning professionals, which results in ill-conceived development projects without proper technical and financial considerations.

- **Codification of Customary Laws:**

The Councils have failed to codify customary laws of local tribal population.

- **Political Interference:**

The autonomy granted by the Sixth Schedule is often undermined by political interference from the Centre and State Governments.

- **Pending Reforms:** The delay in passage of the 125th Constitutional Amendment Bill, which aims to empower ADCs, has hindered greater self-governance in these areas.

- **Non-implementation of FRA:** The Forest Rights Act, 2006, which aims to protect tribal land rights, has not yet been implemented in the Sixth Schedule areas.

Advantages of Inclusion in the Sixth Schedule

★ **Democratic Devolution:** Sixth Schedule has helped in democratic devolution of powers through the creation of **Autonomous District Councils (ADCs)** which have some degree of **legislative, judicial and administrative autonomy** within a State.

★ **Preservation of Cultural Practices and Customs:** The inclusion of a region in the Sixth Schedule ensures **protection of local language, cultural practices and customs**.

★ **Protection of Tribal Land Rights:** Sixth Schedule has helped in **protection of agrarian and land rights** by granting the **Autonomous Councils** the **powers to legislate** on matters like **land, forests, and fisheries**.

★ **Grant-in Funds:** Sixth Schedule areas are provided with **enhanced Grant-in Funds** for rapid development and transformation.

★ **Sustainable Socio-Economic Development:** The inclusion of a region in the Sixth Schedule provides opportunities for **sustainable socio-economic development** of a region.

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What should be the way forward?

- **Creation of Elected Village Councils:** Village Councils must be created with accountability to Gram Sabhas.
- **Regular Elections:** The State Governments must ensure regular, free and fair elections to Autonomous Councils. (Refer EPIC October 2022 for Issues with the Working of Local Governance in India).
- **Representation of Women and other Ethnic Minorities:** Women and other ethnic minorities must be provided adequate representation in the Autonomous Councils.
- **Increase Geographical Coverage:** The Constitution can be amended to expand the coverage of Sixth Schedule areas in other tribal dominated regions which need greater protection.
- **Transparency:** Transparency in funds, functions and functionaries of Autonomous District Councils must be enhanced for effective socio-economic development.

5. Need for a Law to Regulate India's Defense Exports

News: The Supreme Court has rejected a plea to stop India's defense exports to Israel, citing foreign policy limits. The issue highlights the lack of legal provisions regarding regulation of defense exports in India; to ensure compliance with the international humanitarian law in arms exports.

What are the legal provisions in other countries?

- **Netherlands:** A court blocked export of parts of F-35 fighter jets to Israel. This decision was based on EU regulations that prohibit military exports to countries at risk of **violating International Humanitarian Law**.
- **United Kingdom:** The UK Government reviewed Israel's compliance with the International Humanitarian Law (IHL). It found a clear risk that certain arms exported to Israel would facilitate serious violations of the IHL. This review was conducted under the UK's **Export Control Act**.
- Both countries enforce legal measures to **ensure military exports align with international law**, preventing potential violations of IHL.

What is the legal framework in India regarding defence exports?

- They are regulated through the **Foreign Trade Act, 1992**, and the **Weapons of Mass Destruction Act, 2005**.

- These laws allow the Government to restrict exports for reasons like **national security** and **international obligations**.

How does international law influence India's defence exports?

- **Arms Trade Treaty (ATT):** The ATT prohibits export of arms if there is knowledge that they would be used to **commit war crimes**. India is **not a signatory to the ATT**, so it is not bound by its provisions. However, some ATT elements reflect **customary international law**.
- **Geneva Conventions:** India is bound by **Common Article 1 of the Geneva Conventions**, requiring countries to not supply arms to nations likely to violate international humanitarian law.
- The International Court of Justice in **Nicaragua vs United States** highlighted the obligation to avoid supplying weapons if there is knowledge they may **breach the Conventions**.
- **Legal Gaps in India:** India's current laws, like the Foreign Trade Act and Weapons of Mass Destruction Act, **do not mandate IHL compliance checks** for arms exports.

What should India do to improve its defence export policies?

- India should update its laws to include **mandatory IHL compliance assessments** for countries purchasing Indian defense goods.
- The Supreme Court has previously **incorporated international law into domestic law** when gaps existed, such as in **Vishakha vs State of Rajasthan**, where international conventions on women's rights were used to address the absence of specific domestic laws on harassment at workplace.
 - Similarly, in the present situation, the Court could use international humanitarian law to fill gaps in Indian law regarding **arms export controls**, ensuring that India's exports comply with international obligations.

6. Treaty on Prohibition of Nuclear Weapons (TPNW)

News: September 26 is observed as the International Day for the Total Elimination of Nuclear Weapons. In the 2024 session, the General Assembly agenda included a session on the Treaty on the Prohibition of Nuclear Weapons (TPNW).

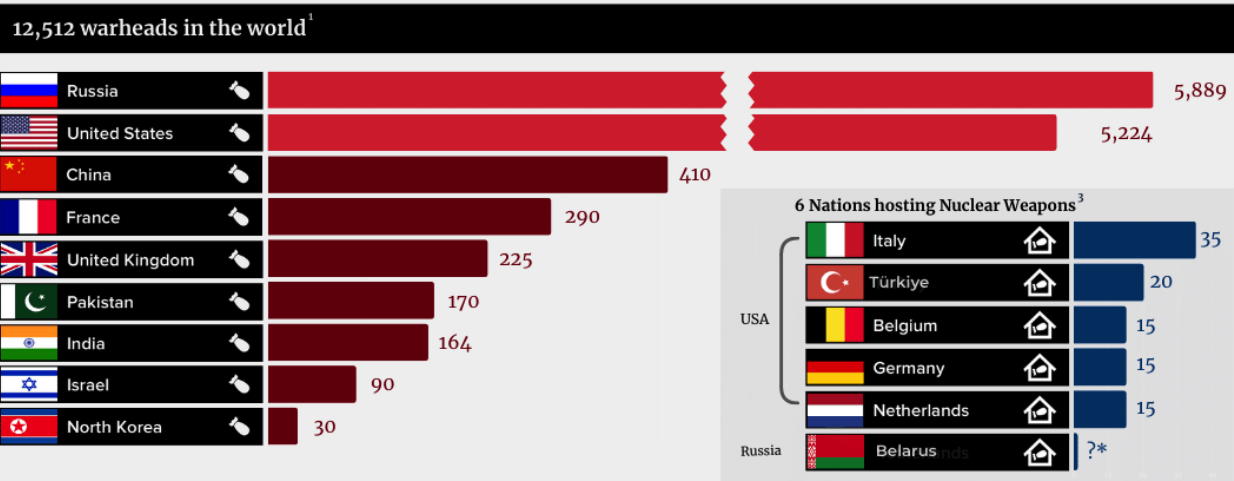
What is the Treaty on the Prohibition of Nuclear Weapons (TPNW)?

- It is a global treaty that is aimed at **complete banning** of **nuclear weapons**. It came into force in 2021.
- It prohibits countries from **developing, testing, producing, stockpiling, transferring, using, or threatening to use** nuclear weapons.
- The Treaty goes beyond the **Treaty on the Non-Proliferation of Nuclear Weapons (NPT)**, which focuses on controlling the spread (proliferation) nuclear weapons but does not explicitly ban them.
- As of July 2024, **70 countries had ratified the TPNW**, and 27 others had signed it, showing nearly 50% support from global States on nuclear disarmament (**70 Parties, 97 Signatories**).
- The treaty is motivated by several factors like "catastrophic consequences" of a use of nuclear weapons, suffering of the **hibakusha** (the surviving victims of the 1945 atomic bombings of Hiroshima and Nagasaki) and the victims of nuclear tests, the **slow pace of nuclear disarmament** and by "the continued reliance on nuclear weapons" in military and security concepts like "deterrence".
- Nuclear powers, such as the US, Russia, and China, have not signed the treaty. Former NATO officials have urged countries to join, suggesting nuclear weapons should be banned like chemical and biological weapons.

What is India's stance on the TPNW?

- **India has not signed the TPNW**, considering it contrary to its interests.
- India views the **treaty as discriminatory**, similar to its stance on the NPT.

- **India supports disarmament** but prefers **balanced global frameworks**. Despite staying out, India has not actively undermined the TPNW.



Source: SIPRI. Status of nuclear arsenal by country, 2023.

What are the challenges faced by TPNW?

- **Lack of Participation from Nuclear States:** Absence of nuclear powers like the US, Russia, China, India etc. limit the effectiveness of the treaty in eliminating nuclear weapons and weakens its impact.
- **Resistance from Allies of Nuclear States:** Countries allied with nuclear states, such as NATO members, oppose the treaty, despite some former NATO leaders advocating for joining.
- **No Enforcement Mechanism:** The TPNW lacks a robust system to enforce compliance, making it hard to ensure disarmament.
- **Nuclear Threats:** China is rapidly expanding its nuclear arsenal. Reports suggest that, in response, the US is planning to spend US\$ 1 trillion over the next 30 years to overhaul its nuclear arsenal. Disarmament experts fear the emergence of a new nuclear arms race.

What should be the approach?

- **Disarmament and Reduction of Nuclear Weapons:** Nuclear-armed States should commit to significant and verifiable reductions in their nuclear arsenals through bilateral or multilateral agreements.
 - Nuclear States should engage in constructive dialogue and negotiations to create a conducive environment for disarmament efforts. (Read more about Global Nuclear Order).
- **Strengthening Non-Proliferation Efforts:** Global efforts to prevent the spread of nuclear weapons technology and materials should be strengthened.
- **Inclusive Dialogue:** Open and inclusive dialogue among all stakeholders, including nuclear-armed and non-nuclear-armed States should be encouraged to address concerns and build trust.
- **Emerging Technologies:** Potential risks associated with emerging technologies, such as cyber threats to nuclear facilities should be monitored and addressed, to ensure a secure nuclear order.
- **Education and Public Awareness:** Awareness should be fostered through education regarding the risks and consequences of nuclear weapons, promoting public support for disarmament and non-proliferation.

7. Quad Group: Significance and Challenges

News: The Quad Summit was held in Delaware, US and Wilmington Declaration was issued at the Summit.

What is the Quad Group? What is the history of its formation and the objectives of the group?

- Quadrilateral Security Dialogue or Quad is an informal strategic forum among like-minded democracies across the Indian and the Pacific Ocean.
- The group aims to ensure and support a **'free, open and prosperous' Indo-Pacific region**.
- The group has 4 members at present: **Australia, India, Japan and the USA**.

History of Quad

Year	Development
Quad 1.0 (Origin)	
2004	<ul style="list-style-type: none"> • The group traces its genesis to 2004, when the 4 countries, came together to coordinate relief operations in the aftermath of the 2004 Sumatra Earthquake and the Tsunami.
2007	<ul style="list-style-type: none"> • The idea of Quad was initiated in 2007 by the Japanese Prime Minister, Shinzo Abe. But it was dropped with the withdrawal of Australia, due to the political pressure from China and in the growing conflict between the US and China in the Asia-Pacific region.
Quad 2.0 (Revival)	
2012	<ul style="list-style-type: none"> • The Japanese PM emphasised the idea of Asia's 'Democratic Security Diamond' comprising the US, Japan, India, and Australia.
2017	<ul style="list-style-type: none"> • The resurgence of the Quad began in 2017, coinciding with changing geopolitical dynamics and increasing assertiveness from China in the South China Sea and along its borders with India.
2021	<ul style="list-style-type: none"> • The first formal summit of the Quad began in 2021. The Official Declaration was laid out in March 2021. • The Declaration states that the Quad aims to create a region that is free, open, inclusive, healthy, anchored by democratic values, and unconstrained by coercion.

What is the significance of the Quad Group?

- **Strategic Counterbalance to China:** The Quad serves as a **counterbalance to China's growing influence** and assertiveness in the Indo-Pacific. This cooperation aims to uphold a **'free and open Indo-Pacific'**, which is critical for **maintaining regional stability** and security. Quad's statements and joint declarations often emphasise support for UNCLOS (UN Convention on the Law of the Sea), and peaceful resolution of disputes like the South China Sea Dispute.
- **Maritime Security:** The group aims to enhance maritime security through joint exercises and coordinated responses to potential threats. The creation of Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA), conduction of annual Malabar exercise have contributed to regional security.
- **Economic Cooperation:** The Quad countries collaborate on economic issues, including infrastructure development and economic resilience in the Indo-Pacific.
- **Technology and Supply Chain Resilience:** The Quad aims to create more resilient supply chains, particularly for critical technologies, components and minerals. Initiatives like the Semiconductor Supply Chain Initiative aim to secure the critical supply chains of materials and technologies.
- **Provisions of Public Goods:** The group has evolved to address broader issues beyond security, like public health security through initiatives like **Quad Vaccine Partnership** and Quad Cancer Moonshot Initiative.
- **Humanitarian Assistance and Disaster Relief (HADR):** The HADR operations of the Quad group aim to provide disaster relief to the countries of the Indo-Pacific. (*Read more about Fourth Quad Summit*).

What is the significance of the Quad Group for India?

- **Strengthening of India's Global Standing:** India's active role in the Quad has positioned it as a **key player in the Indo-Pacific**. It has enhanced its influence in international forums and with other major powers.

- Support for India's Vision:** India's 'Act East' Policy and the **Indo-Pacific Oceans Initiative (IPOI)** find resonance in Quad's commitment of promoting regional stability and prosperity in the Indian Ocean region. This enables India to **pursue its strategic interests** in Southeast Asia and beyond.
- Countering China:** The Quad's initiatives on development of infrastructure and alternative financing provides India with options to effectively **counter Chinese investments** under the **Belt and Road Initiative (BRI)**.
- Access to Advanced Technologies:** The Quad's focus on creating resilient supply chains for semiconductors and rare earth elements is beneficial for India, as it seeks to boost its own tech industry and reduce dependence on imports.
- Support to Domestic Manufacturing:** The **Quad Vaccine Partnership**, which aims to expand vaccine manufacturing in India and distribute vaccines across the Indo-Pacific, reinforces India's position as the 'pharmacy of the world'.

Key Outcomes of Quad Summit, 2024

★ Maritime Security

- MAITRI Maritime Initiative:** Training the Quad Partners to monitor and **secure waters, enforce laws and deter unlawful behaviour**. Inaugural symposium will be hosted by India in 2025.
- Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA):** Enhance regional capabilities against illicit maritime activities through **improved training and resources**.
- Quad Coast Guard Cooperation:** **Improve interoperability** among coast guard forces of member nations. A **Quad-at-Sea Ship Observer Mission** has been scheduled for 2025.

★ Humanitarian Assistance and Disaster Relief

- Indo-Pacific Logistics Network Pilot:** **Joint airlift capability** to enhance the efficiency of humanitarian assistance and disaster response operations in the Indo-Pacific region.
- Cyclone Assistance:** US\$4 million in humanitarian assistance for Vietnam after **Typhoon Yagi**.

★ Climate Change and Clean Energy

- Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP):** Enhance **resilience** against impacts of climate across the region.

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What are the challenges faced by the Quad?

- Perception of Anti-China Alignment:** The group is often perceived as an 'anti-China alliance'. China has criticized the grouping as a '**mini-NATO**' and accused it of sowing discord in the region.
- Divergent Strategic Interests Among Members:** The Quad countries have different strategic priorities and threat perceptions. The three other members (Australia, Japan and the US) are wary of India's proximity with Russia including membership of SCO.
- Lack of Institutionalization:** The Quad remains an informal group without formal secretariat or institutional framework. This limits its ability to execute long-term strategic projects or maintain consistent policies.
- Dependence on China:** All Quad members have significant economic ties with China. This dependence often constrains their ability to counter Chinese aggression, especially in the South China Sea.
- Lack of Consensus on Security Issues:** India's traditional wariness of formal military alliances and preference for strategic autonomy, impedes the further deepening of cooperation on security issues.
- Expansion of Membership:** Expansion of the Quad group to include other like-minded countries like South Korea, Vietnam, or New Zealand, poses the risk of dilution of the group's cohesion and focus.

Key Outcomes of Quad Summit, 2024

★ Health

- Quad Cancer Moonshot Initiative:** Combat cervical cancer by promoting **HPV vaccinations, expanding access** to screenings, and enhancing treatment options across the Indo-Pacific.

★ Education and Research

- Quad Scholarships:** India announced **50 scholarships worth US\$ 500,000** for students from the Indo-Pacific to pursue education in various fields.
- Quad BioExplore Initiative:** Joint research of utilizing **AI for advancements in agriculture**.

★ Infrastructure and Connectivity

- Centre for Cable Connectivity and Resilience:** Developing and managing undersea cable networks critical for global data traffic, enhancing **regional digital infrastructure**.
- Quality Infrastructure Development:** **Improving connectivity** through **sustainable infrastructure projects**, training initiatives for telecommunications readiness in South Pacific nations.

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- **Concerns of ASEAN:** Some ASEAN members, like Indonesia and Malaysia, have expressed concerns that the Quad could **increase regional polarization**. Quad poses a **threat to ASEAN's role as the primary platform** for regional dialogue and cooperation in the Indo-Pacific.

What should be the way forward?

- **Strengthening Institutionalization:** The Quad should consider establishing a more formal institutional framework, such as a Secretariat, regular meetings at multiple levels (like Working Groups, Ministerial meetings and Leaders' summits).
- **Enhancing Military and Security Cooperation:** The Malabar naval exercise should be expanded to include more complex joint operations, such as anti-submarine warfare and amphibious operations.
- **Engaging with ASEAN and Other Regional Partners:** Initiating a **Quad-ASEAN dialogue** could help align efforts on issues like maritime security, infrastructure development, and economic resilience.
- **Establishment of Quad Economic Framework:** A Quad Economic Framework must be established to include initiatives for digital trade, investment in high-tech industries, and collaboration on setting international standards for emerging technologies.
- **Expansion of Membership:** A 'Quad Plus' dialogue can be launched on infrastructure development which could include countries like South Korea, Vietnam, and Singapore.

8. India-Canada Relationship

News: India has recalled its 6 diplomats from Canada and expelled 6 Canadian diplomats from India. This has marked a historic low in the Indo-Canadian Relationship.

How has the India-Canada Relationship evolved?

Phase	Details
Establishment of Relations	<ul style="list-style-type: none"> • The bilateral diplomatic relations were established in 1947. • The relationship was to be built upon shared traditions of democracy, pluralism and strong interpersonal connections. In 1947, ≈2,000 people of Indian origin were residing in Canada.
Deterioration of Relationship in Political Domain	<ul style="list-style-type: none"> • India Canada relations witnessed deterioration in the political domain despite economic engagement, regular high-level interactions and strong people-to-people ties. • Deterioration of India-Canada Political Relations <ul style="list-style-type: none"> ○ Plebiscite in Kashmir: Canada supported a plebiscite in Kashmir in 1948. ○ Canada's Opposition to India's Nuclear Tests: Canada supported India's nuclear programme but pulled back after the 1974 tests. India's reluctance to accede to nuclear treaties (NPT and CTBT) further widened the gulf.. ○ Khalistan Issue: Canada's failure to take action against Khalistani terrorists prevented the relationship from blossoming.
Phase of Renewal of Bonhomie (2006-15)	<ul style="list-style-type: none"> • Relationship improved during Conservative Party PM Stephen Harper's tenure. • Indian PM's visit to Canada in 2015 was the first visit by an Indian PM since 1973. The relation was elevated from bilateral relation to a strategic partnership.
Phase of Deterioration	<ul style="list-style-type: none"> • Relationship deteriorated under PM Trudeau and the failure of his Government to take action against Khalistani activists. Indian consulates faced regular attacks. • Canada has accused India of undertaking extra-judicial killings on Canadian soil without providing ample evidence. India has denied Canada's allegations.

What are the concerns with the recent diplomatic fallout between India–Canada?

- **Impact on India Canada FTA:** The discussions on Comprehensive Economic Partnership Agreement have been stalled. The Agreement could have given a boost to the bilateral trade.
 - Canada contributes to around 1% to India's trade, and also accounts for 25% of pulses and 5% of fertilizer imports. The recent fallout endangers the existing bilateral trade between the two countries.
- **Canadian Investment in India:** Between 2020 to 2023, Canadian investments in India amounted to US\$ 3.31 billion. Canadian pension funds have cumulatively invested over US\$ 75 billion. These funds hold stakes in major Indian companies and view India as a prime investment destination. Diplomatic spat can slowdown Canadian investments in India.
- **Impact on Indian Remittances:** Canada is among top 10 contributors to remittances in India, with a contribution of ≈0.7% of India's total remittances.
- **Mobility of Indian Students:** Canada is a key destination for Indian students, with about 427,000 Indian students studying in Canada. There are concerns regarding fall in new student applications and mobility of students for studies in Canada.

Issue of Khalistan in India-Canada Relationship

- **1982:** Prime Minister Pierre Trudeau **declined to extradite** terrorist Talwinder Singh Parmar accused of killing two police officers in Punjab. He was later accused in **1985 Air India 182 Kanishka bombing**.
- **1985:** Terrorist group Babbar Khalsa orchestrated the **bombing of Air India Kanishka** in June 1985 which resulted in **deaths of 329 civilians**. **Poor investigation** by Canada led to **only 1 conviction** in the case.
- **2015:** Justin Trudeau's proximity to individuals sympathetic to Khalistan's cause strained bilateral relations.
- **2017:** The then **Chief Minister of Punjab**, Capt. Amarinder Singh, **refused to meet Canadian Defence Minister** Harjit Singh Sajjan on his visit to Punjab, accusing him of being a **Khalistani sympathizer**.
- **2018:** Jaspal Atwal, convicted of attempting to assassinate an Indian Cabinet Minister in 1986, was invited to dine with Trudeau during his Visit to India leading to a **diplomatic faux pas**.
- **2019:** The annual '**Public Report on the Terrorist Threat to Canada**' (2018), mentioned 'Sikh extremism' and Khalistan for the first time. The references were removed by Trudeau Government in 2019 for political benefits.
- **2022:** Trudeau's Liberal Party formed an alliance with the **New Democratic Party** (NDP), led by Jagmeet Singh, who openly endorses the **Khalistan Referendum**.
- **2023:** During the G20 summit in New Delhi, India's PM conveyed '**strong concerns**' about '**continuing anti-India activities of extremist elements**' in Canada.

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What is the significance of India-Canada Relations?

- **Cooperation in Indo-Pacific:** Canada's Indo-Pacific Strategy has listed India an important partner in the Indo-Pacific region. It has marked out China as an "**increasingly disruptive global power**", while referring to India as a "**critical partner**" with shared traditions of **democracy and pluralism**.
- **Trade and Commerce:** India is Canada's 10th-largest trading partner. In 2022-23, the bilateral trade amounted to US\$ 9.4 billion. Canada and India are working toward a Comprehensive Economic Partnership Agreement and a Foreign Investment Promotion and Protection Agreement (FIPA).
- **Development Cooperation:** Canada invested ≈US\$ 24 million in 2018-2019 to support 75 projects in India through its non-profit organisations like Grand Challenges Canada.
- **Energy:** India and Canada signed a **Nuclear Cooperation Agreement** (NCA) in 2010. A deal to supply uranium was signed during Indian PM's visit to Canada in 2015.
- **S&T and Space:** ISRO and CSA (Canadian Space Agency) have signed MOUs for cooperation in the field of exploration and utilisation of outer space.

- ANTRIX, the Commercial arm of ISRO, has launched many Canadian Satellites.
- **Education:** Since 2018, India has been the largest source country for international students in Canada. This has helped Canadian universities and colleges to provide subsidised education to domestic students.
- **Indian Diaspora:** Canada hosts one of the largest Indian diaspora in the world numbering 1.6 million (PIOs and NRIs) which account for more than 3% of its total population. The diaspora has done commendably well in every sector in Canada. In the field of politics, the present House of Common (total strength of 338) has 22 Members of Parliament of Indian-origin.

What are the other challenges in India-Canada Relationship?

- **Khalistani Ecosystem in Canada:** It is the single most important challenge between India and Canada. The Trudeau Government's policy of not taking action on inflammatory speeches, attack on Indian consulates by Khalistani sympathizers, burning of Indian flags in the name of Free Speech has led to deterioration of the relationship.
- **Trade Challenges:** Structural impediments such as complex labour laws, market protectionism, and regulations are the major roadblocks in Indo-Canadian trade relations. Bilateral agreements, such as the Comprehensive Economic Partnership Agreement (CEPA) and Investment Promotion and Protection Agreements (BIPPA), have been in negotiation for long time and no progress has been reached by both the countries. Before the G20 summit, the Canadian government independently halted trade negotiations with India. All these have contributed to low Indo-Canadian trade.

What should be the way forward?

- **Highlight India's Concerns:** In recent times, Government of India has effectively conveyed to Canada that they cannot continue to allow anti-India separatist movements on their soil. India should firmly hold its stance that it will not tolerate Canadian sanctuary to elements that **endanger India's territorial integrity**.
- **Constructive and Sustained Engagement:** India must build a constructive and sustained engagement with the Sikh diaspora and dispel the misinformation propagated by the Khalistani separatists.
- **New Framework of Cooperation:** There is a need to develop a new framework of cooperation that is more pragmatic and that emphasises on mutually beneficial areas, such as trade, transport, infrastructure and energy.
- **Media and Public Diplomacy:** Responsible reporting should be promoted to ensure that media coverage and public discourse accurately reflect the complexities of the relationship and the efforts being made to strengthen it.

9. Indus Water Treaty: Provisions and Concerns

News: India has issued another formal notice to Pakistan, seeking a 'review and modification' of the Indus Water Treaty.

What are the salient provisions of the Indus Water Treaty?

- The Indus Water Treaty is a **water-distribution treaty** between India and Pakistan. It deals with the sharing of waters of the **Indus river** and its **tributaries** viz., Beas, Chenab, Jhelum, Ravi and Sutlej.
- The treaty was arranged and negotiated by the **World Bank**, and was **signed in 1960**.
- The **Preamble of the Treaty** recognises the **rights and obligations of each country** for the optimum water use from the Indus System of Rivers in a spirit of **goodwill, friendship and cooperation**.
- The Treaty is considered one of the most successful water sharing agreements in the world, having withstood 3 wars between India and Pakistan after its signing in 1960 (1965, 1971 and 1999).
- It is the only cross border water sharing treaty between two nations in Asia.

Aspect	Details
Division of Rivers	<ul style="list-style-type: none"> All the waters of 3 Eastern rivers (Beas, Ravi, and Sutlej) with a mean annual flow of 33 Million Acre-feet (MAF) are allocated to India for exclusive use. Pakistan gets control of 3 Western Rivers (Chenab, Indus and Jhelum) with a mean annual flow of 80 Million Acre-feet (MAF). India gets 20-30% of the waters of Indus River System while Pakistan gets 70-80%. The Treaty allows India to utilize the waters of Western Rivers for: <ul style="list-style-type: none"> Limited irrigation use. Non-consumptive use: For applications such as power generation, navigation etc. India is allowed to generate hydroelectricity through a run-of-the-river projects (without the storage of waters) on the western rivers, subject to specific criteria for design and operation. Storage level permitted: India can store up to 3.75 MAF of water of the Western Rivers for conservation and flood storage purposes.
India's Usage Rights for Western Rivers	
Dispute Resolution Mechanism	<ul style="list-style-type: none"> The Indus Water Treaty provides a 3-step dispute resolution mechanism to resolve 'questions', 'differences' and 'disputes'. <ul style="list-style-type: none"> Permanent Commission: The questions of the parties can be resolved at the Permanent Commission, or can also be taken up at the inter-government level. Neutral Expert (NE): In case of unresolved questions or 'differences' between the countries on water-sharing, such as technical differences, either side can approach the World Bank to appoint a Neutral Expert (NE) for resolution. Court of Arbitration: If either party is not satisfied with the decision of Neutral Expert or in case of 'disputes' in the interpretation and extent of the treaty, matters can be referred to a Court of Arbitration.

What are the concerns with the Indus Water Treaty?

- Most Generous Treaty:** Experts have termed it as the most generous water sharing treaty. The treaty has resulted in unequal sharing of the waters with $\approx 70\%$ - 80% allotment to Pakistan. It is the only water-sharing pact in the world that compels upper riparian State to defer to the interests of the downstream State.
- Storage Systems on Western Rivers:** Even though the treaty lays out that under certain exceptional circumstances India can build storage systems on western rivers, Pakistan deliberately interferes with any such effort. The highly **technical nature** of the treaty **allows Pakistan to stall legitimate Indian Projects.**
- Pakistan's Intransigence:** In recent times disputes over the Kishenganga and Rattle hydroelectric projects have intensified. Pakistan has directly sought **arbitration** (3rd stage) at The Hague, **bypassing the provisions** of the Treaty. Pakistan's proposal for arbitration in these projects is in **contravention to the graded dispute settlement mechanism** provided in Article IX of the IWT (*Commission, Expert, Arbitration*).
- Climate Change:** According to the Departmentally Related Standing Committees on Water Resources report of 2021, present day issues such as **climate change** and **global warming** had not been taken into account at the time of signing of the Treaty. The Indus basin has been ranked as the world's **2nd-most over-stressed aquifer** by NASA in 2015. India seeks renegotiation and amendments to the Treaty for sustaining its burgeoning population.
- Economic Losses:** Jammu and Kashmir has faced significant economic losses, in terms of lost irrigation and hydroelectric potential due to overly generous terms of the treaty.

What are the concerns with the termination or abrogation of the IWT?

- Unilateral abrogation or termination of the treaty will have negative implications for India.

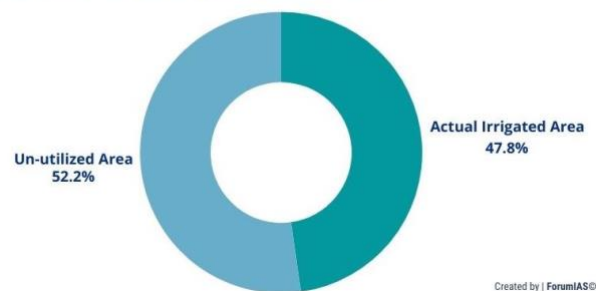
- Unilateral termination will impact India's international standing as a **responsible power** that always supports a rules based International Order. This will weaken India's case for permanent representation at the UNSC.
- India has water sharing agreement with Bangladesh. Termination of treaty will raise **anxiety in Bangladesh** and impact bilateral relations. It may also affect settlement of **Teesta River dispute** with Bangladesh.
- China, an 'all-weather ally' of Pakistan, can **divert waters of Brahmaputra** to threaten India.
- There is not enough infrastructure to store/divert waters of Western Rivers to 'starve' Pakistan of water.

What should be the way forward?

- **Full Utilization of Eastern Rivers:** A Report of the Standing Committee of Water resources noted that canals in Punjab and Rajasthan have become old and are not being maintained properly. This has resulted in the **lowering of their water carrying capacity**, and more water is being released to Pakistan. The canal system should be suitably repaired for India to **fully utilize its entitlement** to waters of Eastern Rivers.
- **Full Utilization of Western Rivers:** India hasn't fully utilized its entitlement of Western rivers, for irrigation and non-consumptive use (like power generation) as the infrastructure has remained under-developed in J&K. India must take steps to build necessary infrastructure to utilize its full entitlement.
- **Renegotiation in Context of Climate Change:** India must press firmly for renegotiation of the Treaty using climate change as a basis for 'change in circumstances'.
- **Data-Sharing:** A World Bank-supervised, legally binding data-sharing framework should be established to **monitor water quality and flow changes**. This can help reduce the disputes.
- **Incorporation of International Legal Standards:** The Treaty must be aligned with the UN Convention on the Law of the Non-navigational Uses of International Watercourses (1997) and the Berlin Rules on Water Resources (2004) for sustainable water use.
- **Integration of Ecological Perspectives:** Ecological perspectives must incorporate Environmental Flows (EF) to sustain the Indus Valley ecosystems, as suggested by the **Brisbane Declaration** and the ruling of the Permanent Court of Arbitration on Kishanganga (2013).
- **Pressure Tactics:** Experts have suggested that in case of escalation of hostilities by Pakistan in future, India can suspend the meetings of Permanent Commission. If the first state of dispute redressal is not functional, the subsequent two steps of 3-tier dispute redressal don't kick in.

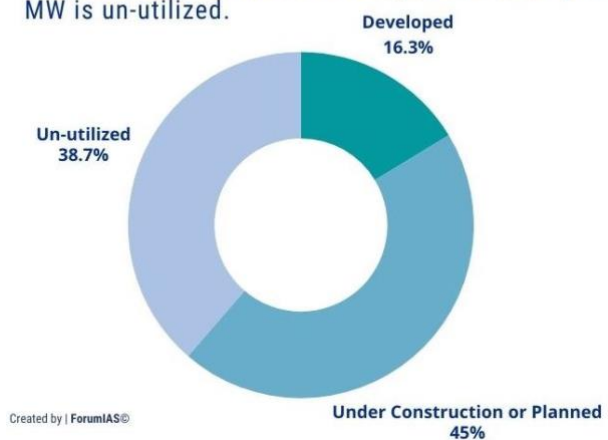
Area Utilized For Irrigation

The Treaty allows 1.34 million acres of irrigation. Actual irrigated area is only 0.64 million acres.



Hydroelectric Potential

The Treaty allows for generation of 18,600MW of hydel power, Only 3,034MW has been developed, 8,372 MW is under-construction/planned and 7,194 MW is un-utilized.



India has grossly under-utilized the irrigation and hydroelectric potential of the Western Rivers, it is entitled to under the Treaty.

General Studies Paper III

1. Need for Fiscal Consolidation by State Governments

News: Many State Governments continue to adopt populist measures despite huge fiscal debts. The State Governments must check their profligacy and adopt measures for fiscal consolidation.

What is Fiscal Consolidation?

- It refers to the process of **reducing fiscal deficits** and **public debt** by **adjusting expenditure and revenue policies**.
- Fiscal Consolidation aims to **limit the borrowings by the Government**.
- Fiscal consolidation can be achieved by **expanding sources of revenues** (e.g., improving tax revenues, or disinvestment) along with **reducing expenditures** (e.g., rationalization of subsidies).

Components of State Government Budget

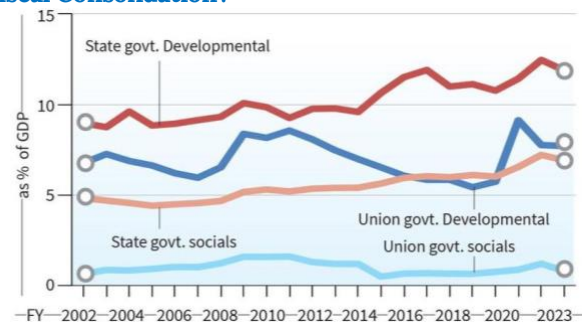
State Governments raise revenue from various resources to meet their expenditures

<p>Sources of Revenue</p> <ul style="list-style-type: none"> • State Government's Own Revenues (Tax and Non-tax) • Transfers from the Union Government (Share of Taxes, Grants) • Market Borrowings 	<p>Expenditure</p> <ul style="list-style-type: none"> • Social Services (Health, Education) • Economic Services (Agri, Industry) • Devolution to Local Self Governments • Interest Payments • Pensions • Other General Services • Capital Expenditures
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What are the challenges faced by State Governments in Fiscal Consolidation?

- **Expenditure on Social Services:** The State Governments undertake bulk of the spending on social services like health and education.
 - In 2022-23, the expenditure on social services by the Union Government was INR 2.23 trillion while the combined expenditure by all State Governments was INR 19.182 trillion (8.6 times the Union Govt's expenditure).
- **Development Expenditure:** Development expenditure refers to the expenditure for economic development (agriculture, industry, energy, communication, transport etc.) along with social welfare. The combined developmental expenditures by all State governments has increased from 8.8% in 2004-05 to 12.5% in 2021-22 (as proportion of India's GDP). On the other hand, developmental expenditures by the Union government has remained almost unchanged over the two-decade period.
- **Impact of Pandemic:** The COVID-19 pandemic increased the revenue expenditure and suppressed the revenue receipts, forcing the State Governments to increase their borrowings.
- **Fiscal Centralization:** The share of States in the gross tax revenue (total tax revenue collected, which includes cess and surcharges) has decreased from 35% in 2015-16 to 30% in 2023-24.
 - The Union Government has increased its revenue by levying cesses and surcharges which are **not shareable with the States**. The share of cesses and surcharges in gross tax revenue of the Union Government increased from 10.4% in FY2011-12 to 20% by FY2020-21. This has **shrunk the divisible pool of resources**.

Chart 1: The chart shows the developmental and social expenditures (revenue and capital) by the Union government and all State governments (combined) as percentages of GDP



Source: The Hindu. The Social and Development Expenditure of the State Governments far exceeds that of the Union Government.

- With the implementation of GST, the States have lost the autonomy to alter rates of taxes on sale of goods and services.
- Some States have argued that the issue of compensation for loss of revenue to States on account of GST implementation, have not been properly addressed.
- Direct financial support to States, in the form of grants-in-aid, has declined from INR 1.95 lakh crore in 2015-16 to INR 1.65 lakh crore in 2023-24.

What are the concerns related to rising expenditure by State Governments?

- **Populist Measures:** Many economists have raised concerns regarding State Governments announcing populist measures (e.g., old pension scheme, free electricity) for electoral benefits. It increases burden on the State exchequer.
- **Implicit Guarantee of Union Government on State Government Debt:** Borrowings of State Government are perceived to be backed by an implicit guarantee from the Union Government, making default highly unlikely. This means the **States with poor debt condition don't face higher market interest rate**. As example, Gujarat has a low Debt-to-State GDP ratio than Punjab

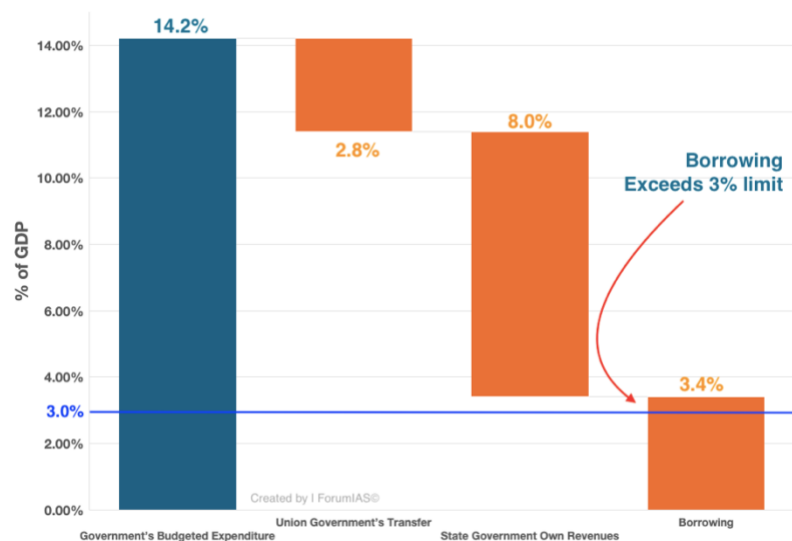


Illustration of Government of Kerala's Total Expenditure (14.2% of the State GDP), met through Union Transfers (2.8% of GSDP), State's own revenues (8%) and borrowings (3.4%). The borrowings exceed the net borrowing ceiling of 3%.

but both Gujarat and Punjab borrow at a similar rates from the market. It implies that **State Governments have no incentive to follow fiscal discipline**.

- Interest on State debt consumes a significant share of revenues. For many States, interest payments, power subsidies and pensions account for over 70% of their own tax revenue (*High debt means high interest payments*).
- **Strained Revenues:** Own Revenue of States also decreases on account of non-collection of tariffs (from consumption of electricity and water).

What are the advantages of Fiscal Consolidation of State Governments?

- **Improved Financial Status:** Fiscal Consolidation improves the fiscal health and sustainability of State finances and reduces their debt burden. Reduction of debt reduces expenditure on future interest payments, further improving finances.
- **Expenditure Quality:** Fiscal consolidation enhances the quality of expenditure of State Governments and **increases the share of capital expenditure** in total expenditure.
- **Economic Growth:** Fiscal prudence gives a boost to public investment in infrastructure and human capital, which fosters economic growth and development.
- **Investors' Confidence:** It strengthens the confidence of investors and creditors in State finances.
- **Private Investment:** Reduced Government borrowing increases the availability of credit for private sector. They can invest productively in new plants, machinery etc., contributing to the economic growth.
- **Mandate of FRBM:** The States have enacted their own respective Financial Responsibility Legislation in line with the FRBM targets, which caps the annual budget deficits to 3% of Gross State Domestic Product (GSDP).

Fiscal consolidation in line with the FRBM mandate will ensure macroeconomic stability and coordination with the Union Government.

What should be the way forward?

- **Cooperative Fiscal Federalism:** The Union Government must address the concerns of States related to reduced fiscal transfers. The Union Government must ensure that **States get their fair share** according to the **recommendations of the Finance Commission**.
 - The Union and the State Governments must work in close collaboration to **review the borrowing limits for State Governments** in context of their rising developmental expenditures.
 - Any increase in the borrowing limits of the State must be **tied to capital expenditure**.
- **Expenditure Reforms:** State Governments must resist the temptation to spend on populist measures. The subsidies must be **rationalized**.
 - Bailouts, like the Uday scheme for power discoms, did not resolve underlying issues. Repeated bailouts without **structural reforms** do not lead to sustainable solutions. Hence, State Governments must cut non-productive expenditure.
- **Channelisation of Private Savings:** The State Governments can be allowed to access the large reserves of private savings through domestic financial institutions (public sector banks and insurance companies). These savings can then be channelled for productive purposes like creation of infrastructure.
- **Addressing Concerns Related to GST:** The Union and State Governments must work together to address the issues related to GST. Efforts must be undertaken to open more avenues for revenue generation by broadening the scope of GST to include petrol, diesel.
- **Market Pricing of Debt:** Experts suggest States with higher debt should face higher interest rate. This will incentivize them to be fiscally prudent.

2. India's Rising Imports from China

News: Various countries including India, the US, EU are concerned about rising influx of Chinese goods, dubbed as 'China Shock 2.0' and have resorted to measures like tariff hikes and anti-dumping investigations.

What is China Shock?

- China Shock refers to the **flooding of low-cost Chinese goods** in the global market. This leads to a global **slump in prices of the goods, causing job-losses** worldwide.
- **China Shock 1.0:** The entry of China in WTO in 2001, led to flooding of low-cost Chinese goods causing job losses in the US and other countries, including India. The motive behind US allowing Chinese entry into WTO was to **lead a political reform in China and increase US exports into China**. However, 'China Shock' followed and the 'communist dragon' became the 'capitalist tiger'.
- **China Shock 2.0:** China's exports have **surged post-COVID**, despite a global slowdown. The IMF has noted that China's share of global exports has risen by 1.5 percentage points, while other major economies like the US, Japan, and the UK have seen a decline in their share in global exports.



- These concerns are similar to the early 2000s, when China’s WTO accession led to a surge in global exports, and damaged manufacturing sectors globally.

Major Sectors of Indian Economy Impacted by China Shock 2.0

- **Renewable Energy:** Despite investing US\$ 4.5 billion in clean energy manufacturing, 80% of India’s solar cells and modules are still imported from China.
- **Steel:** Steel imports from China hit a 7-year high in 2024, while domestic steel exports have declined significantly. The influx of cheap Chinese steel is eroding profits for Indian manufacturers.
- **Electronics:** In FY 2023-24, India imported over US\$ 12 billion in electronic components from China, making up **more than half of its total electronics imports**.

What are the reasons behind India’s increasing imports from China?

- **Dumping of Goods by China:** China is using **predatory techniques** to dominate high-tech sectors like solar equipment, electric vehicles, and semiconductors. The dumping of these goods has led to a **crash in their prices**, leading to increased imports from China.
- **Avoiding Domestic Crisis:** China is relying on exports to drive growth to counter its **domestic economic slowdown**, property crisis, weak credit, and low consumer demand. This increase in export volume has led to fall in slump in prices of Chinese goods, making them attractive to import in countries like India.
- **China’s Dominance in Global Supply Chains:** China dominates supply chains of most of the new technology products, leading to import dependence e.g., China produces 85% solar cells and 97% silicon wafers.
- **Lack of Domestic Capacity:** In certain sectors, especially in electronics, India has failed to develop the manufacturing scale or technical expertise needed to produce goods at the same quality or volume as China.
- **Technology and Innovation Gaps:** China has developed advanced capabilities in high-tech sectors like electronics, telecom equipment, renewable energy (e.g., solar panels). However, India lacks the R&D capacity to match the Chinese technological advancement.
- **Industrial Policy Limitations:** Challenges such as regulatory hurdles, infrastructure bottlenecks, and high input costs have slowed the growth of India’s domestic manufacturing sector.

What initiatives have been taken to reduce India’s rising import dependence on China?

Initiative	Details
Make in India Initiative	<ul style="list-style-type: none"> • It was launched in 2014 to promote India as a global manufacturing hub by encouraging both domestic and foreign investments in the sector. • It focuses on 25 sectors, including automobiles, electronics, textiles, defence and biotechnology.
Production-Linked Incentive (PLI) Scheme	<ul style="list-style-type: none"> • The Government has introduced PLI scheme, offering financial incentives based on incremental sales, to promote large-scale manufacturing in specific sectors like electronics, pharmaceuticals, automobiles, and auto components.
National Infrastructure Pipeline (NIP)	<ul style="list-style-type: none"> • It aims to provide better infrastructure to boost the manufacturing sector. It includes projects worth INR 111 lakh crore (~\$1.5 trillion) across sectors like energy, transport, water, and social infrastructure.
Atmanirbhar Bharat Abhiyan	<ul style="list-style-type: none"> • This comprehensive package of reforms and incentives aims to make India self-reliant in key sectors, particularly in manufacturing sector.
Ease of Doing Business Reforms	<ul style="list-style-type: none"> • India has made significant strides in improving its Ease of Doing Business ranking by simplifying processes and reducing administrative hurdles like GST reforms, digitization of government services and reducing the number of environmental clearances.

What should be the Way Forward?

- **Industry 4.0 in Indian Manufacturing:** India's manufacturing sector could achieve a 25% share in GDP through Industry 4.0 technologies. There is a need to increase the employment of digital transformation technologies by Indian manufacturers to compete with China.
- **Increasing Investment in Industrial Infrastructure:** The standard and accessibility of infrastructure must be enhanced to reduce logistics cost. This may lead to increased investment and business interest in the manufacturing industry. (Refer EPIC July 2024 for Improving the Manufacturing Sector in India).
- **Promotion of Export-Oriented Manufacturing:** The development of export-oriented manufacturing must be encouraged to help Indian businesses tap into new markets and increase their competitiveness.
- **Focus on MSMEs:** Steps must be taken to improve competitiveness of MSMEs, especially in their ability to access easy finance to support their growth. (Refer EPIC August 2023 for MSMEs: Significance and Challenges).

3. Need for Improving Land Governance in India

News: India's land governance is complicated by conflicting laws, unclear property rights, and outdated records. Comprehensive legal reforms are essential to address issues hindering land use and development.

What are the key challenges related to land governance in India?

- **Unclear Land Titles:** This hinders transfer of ownership and investments.
- **Fragmented landholdings:** 90% farm households own 2 hectares or less, limiting productivity of agriculture.
- **Complex laws:** Conflicting regulations (Gujarat has 40 types of land ceiling laws) create administrative difficulties and encourage rent-seeking.
- **Outdated Land Records:** Poor record management delays infrastructure projects and limits access to credit.
- **Gender Inequality:** Women face challenges in owning land and property.
- **Tenancy Laws:** Leasing agricultural land is prohibited in many States, and complicated tenancy laws make land use risky.
- **Benami Properties:** The legal framework lacks clarity for regularising these properties, contributing to uncertainty in ownership.

Why technological solutions alone may not be enough?

The Union Budget 2024 proposed digitisation (like land records digitisation and Agri Stack integration), but it may not address all the challenges.

- The root problem is the **complex legal framework**, and not just outdated records.
- Digitising land records without legal reform **won't improve land markets** or property rights.
- Laws like the **Ninth Schedule prevent judicial review**, limiting rights of property owners.

What should be done?

- **Legal Reforms:** Comprehensive legal reforms should address the complex and conflicting land laws. These reforms must **strengthen property rights** and **streamline regulations** for more **efficient land markets**. For example, updating tenancy laws and land use regulations can help ensure better property rights and access to formal credit.
- **Digitization and Integration:** Digitization of land records should be accelerated and integrated with platforms like Agri Stack. However, it must be ensured that these technological solutions are complemented by legal reforms. Digitizing land records should go hand in hand with updating the laws that govern land ownership and use.
- **Enhance Land Banks:** The functioning of land banks should be improved to support infrastructure, renewable energy and industrial projects by addressing legal hurdles that currently limit their effectiveness.

- **Targeted Subsidy Reforms:** Subsidies should be linked more closely to land ownership data to ensure efficient targeting and reducing misuse. This includes integrating Point of Sale devices for fertilizer subsidies with updated land records.
- **Promote Land Consolidation:** Policies that facilitate land consolidation should be implemented, particularly in rural areas where land fragmentation affects agricultural productivity.

4. The Issue of Employee Overwork

News: The death of a 26-year old corporate employee due to heart attack has been attributed to ‘work pressure’ by her family. The issue highlights concerns regarding employee overwork and has raised demands for regulating working hours in the private sector.

What is the status regarding employee overwork in India?

- **Average Working Hours:** According to Organization for Economic Co-operation and Development, an Indian worker typically works **48–52 hours per week**, far exceeding the international standard of **40 hours per week**. It is also very high compared to the global average of **34–36 hours**.
- **Overwork Related Mortality:** An ILO and WHO report found that overwork led to **745,000 deaths globally in 2016**, due to ischemic heart disease and stroke, and India was among the top contributors.
- **High Proportion of ‘Overworked’ Workers:** India is ranked as the **2nd-most overworked nation** globally, with an average working time of **46.7 hours per week** per employed person. Bhutan tops the list, with 61% of its workforce working more than 49 hours weekly.
- **Stress and Burnout:** According to a study published by Confederation of Indian Industry (CII), **≈62% of Indian employees experience burnout**. It is triple the global average of 20%, due to work-related stress and poor work-life balance.

What are the legal aspects of overwork in India?

- **Factories Act, 1948:** The Act limits working hours to 48 hours a week and mandates rest days.
- It provides for **overtime pay** at twice the regular wage rate if an **employee works beyond 9 hours a day or 48 hours a week**.
- It is applicable to workers in factories. The law ensures that employees aren’t burdened with excessive working hours **without due compensation**.
- **ILO’s Convention:** According to ILO’s **Hours of Work (Industry) Convention, 1919**, the working hours of persons employed in any public or private industrial undertaking **shall not exceed 8 hours in the day and 48 hours in the week**.

What are the reasons behind overwork in India?

- **Lack of Uniformity in Labour Laws:** Labour matters fall under the **Concurrent List**, both Parliament and State Legislatures hold the authority to enact relevant laws. There are multiple laws for every State. Hence, bringing uniformity in labour laws is a difficult task.
- **Lack of Regulation:** India has **insufficient regulation** on maximum working hours, especially in white-collar sectors. Although the Factories Act (1948) sets limits for industrial workers, there are no strict laws governing overtime for IT, service sectors, or gig workers.
- **Economic Pressures:** Many sectors in India, particularly technology, finance, and gig economy jobs, demand extended working hours due to **fierce competition** and economic pressures to deliver results.
- **Labour Supply:** There is excess supply of labour in India compared to available jobs. Labour oversupply **reduces the bargaining power of the employees** to demand better work conditions.

- **Work Environment:** Companies often foster environments where long hours are expected and rewarded, discouraging employees from taking breaks or prioritizing personal time.
- **Hustle Culture:** Hustle culture is defined as one that encourages employees to work more than normal working hours. The idea that success requires relentless work and long hours, was promoted by Silicon Valley entrepreneurs. The idea of working long hours as a **sign of dedication** and hard work is deeply embedded in Indian work culture. Employees often feel **'pressured'** to stay longer at the office to impress superiors.
- **Work-from-Home Trend:** The pandemic-induced shift to remote work has increased the **working day by 1-2 hours** for many employees, as reported by several surveys. The lack of work-life balance and the expectation to be always available has exacerbated this issue.
- **Government's Role:** Some State Governments are favouring longer working hours. Karnataka Government has proposed an amendment to **Karnataka Shops and Commercial Establishment Act** that **increases the maximum length of the workday** from the previously mandated **10 to 14 hours**.

Impact of Overwork

- **Impact on Physical and Mental Health:** Health problems such as hypertension, heart disease, sleep disorders, mental health conditions like depression, anxiety, and burnout.
- **Impact on Personal Life:** Overwork severely affects **work-life balance**, employees have less time for family, social engagements, or personal development.
- **Reduced Productivity:** Diminished productivity, as employees become physically and mentally fatigued. Countries with shorter working weeks report higher employee satisfaction and productivity levels.
- **Economic Costs:** Increased absenteeism, healthcare costs, and high turnover rates.

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What are the international best practices regarding overwork?

- **Japan's "Karoshi" Laws:** After decades of grappling with "Karoshi" (death by overwork), Japan introduced measures to limit overtime. Companies are required by law to ensure employees do not work more than **45 hours of overtime per month**, and employees can report overwork directly to labour authorities.
- **France's "Right to Disconnect":** In 2017, France implemented a law allowing workers the **right to disconnect** from work-related emails and calls outside of office hours, ensuring a balance between work and personal life. *(Read more about Right to Disconnect).*
- **Germany's Work-Life Balance:** German companies, especially in technology and manufacturing sectors, have a culture of respecting **short working hours and strict rules** around overtime. In fact, employees in Germany work fewer hours but maintain higher productivity levels.
- **Nordic Model:** Scandinavian countries such as Denmark and Sweden prioritize **shorter working hours and flexible work policies**. Their focus on **worker welfare** has led to better productivity and work satisfaction.

What are the suggestions to improve the situation of overwork in India?

- **Legal Framework:** There is a need to revise labour laws in India to include clear limits on working hours for all sectors, not just industrial workers. An updated **overtime regulation** for white-collar and gig workers is essential.
- **Cultural Shift:** A significant shift in **corporate culture** is needed, where companies **reward productivity** over long hours. Encouraging **employee well-being** and introducing **flexible work hours** can improve morale and reduce burnout.
- **Government Intervention:** The Government could introduce policies such as **mandatory annual leaves, caps on weekly working hours, and compulsory breaks** for employees in stressful sectors.
- **Corporate Responsibility:** Corporations should focus on employee welfare through initiatives such as **employee assistance programs, mental health support, and wellness initiatives** to address the problem of overwork.

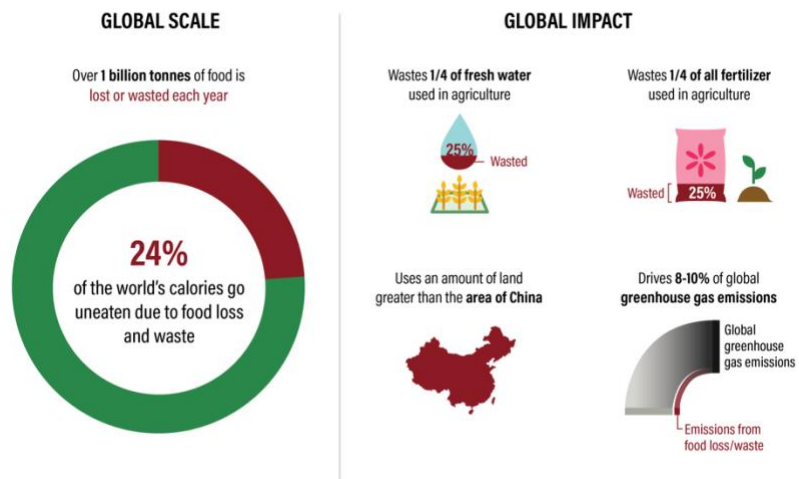
- **Embracing Technology for Work Management:** Companies can use **time management tools** and other technological solutions to monitor employee workloads and avoid overburdening staff.
- **Promoting Work-Life Balance:** Both employers and employees need to actively promote and **maintain work-life balance**, which includes recognizing when employees are overworked and taking proactive steps to redistribute tasks. (Refer EPIC November 2023 for India's Labour Productivity and Suggestion of 70-hour Workweek).

5. Reducing Wastage of Food in India

News: September 29 is observed as International Day of Awareness of Food Loss and Waste. Post-harvest losses in India have been estimated to be ≈US\$ 18.5 billion. Preventing food loss is essential for food security.

What is the status of Food Loss and Wastage (FLW)?

- Globally, food loss between harvest and retail amounts to 13.2% of production, and food wasted after retail is 17%. Together, **FLW accounts for 30% of global food production.**
- In India, post-harvest losses amount to INR 1.53 trillion (US\$ 18.5 billion).
- Losses include 12.5 million metric tons (MMT) of cereals, 2.11 MMT of oilseeds, and 1.37 MMT of pulses.
- Horticultural losses total 49.9 MMT annually due to **poor cold chain infrastructure.**



Source: World Resources Institute. Scale and Impact of Food Loss and Waste.

What are the implications of food loss and wastage?

- **Food Security:** ≈30% of world population lacks food security. Preventing wastage of food (30% of production) can improve the situation of food security.
- **Environmental Impact:** Wastage of food generates ≈3.5 billion tonnes of CO₂ emissions annually.
 - Food waste in landfills is a major contributor of **methane emissions.**
 - A significant amount of resources like land, water and energy are utilized in production of food. Wastage of food leads to needless **depletion of these resources.**
 - Faulty agricultural practices are leading to **deterioration of land.** Wastage of food contribute to worsening of the problem.
 - Inefficiencies of the agriculture sector and food wastage is making it difficult to achieve climate goals.
- **Economic Impact:** Wastage of food leads to loss of income to producers, including farmers. Consumers too have to pay higher prices. There is thus dual loss of welfare.
- **Loss of Energy:** Preventing wastage of food can lead to potential saving of 38% in energy use.

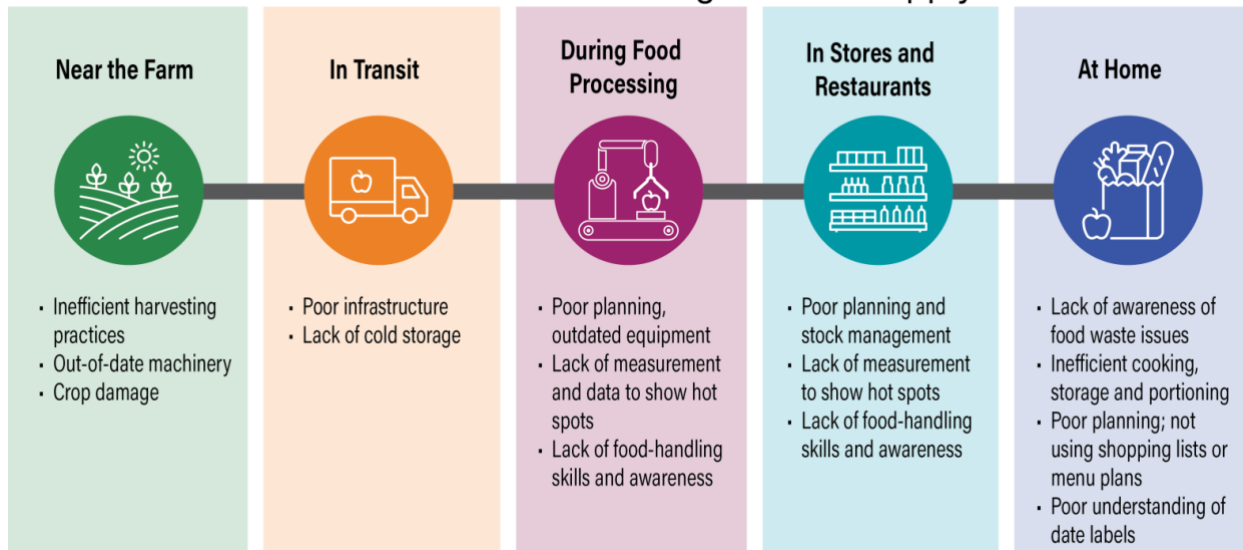
Reducing wastage of food can **improve food security, improve nutrition and farm incomes, reduce emissions** and the negative impact on the environment. (Refer EPIC April 2024 for Food Waste Index Report, 2024).

What are the major factors contributing to loss of food in India?

- **Low Mechanisation:** A lack of machinery like combine harvesters leads to higher food losses. In Bihar, only 10% of paddy farmers use combine harvesters (97% in Punjab), resulting in higher losses.

- **Storage Losses:** Inadequate infrastructure for storage and poor and **unscientific storage practices** lead to loss of 10% of total food grain production.
- **Poor Cold Chain Infrastructure:** Horticultural crops lose 49.9 million metric tons (MMT) annually due to poor cold chain infrastructure, affecting availability of fresh produce and lowering farmers' income.
- **Household and Commercial Waste:** Restaurants, commercial establishments and households contribute to wastage of food due to **poor consumption practices** (ordering more than required, food left uneaten, excess food is discarded). According to a report by the UNEP, Indian households generate **50 kg of food waste per capita per year**, wasting \approx 70 million tonnes of food annually.

Main drivers of food loss and waste throughout the supply chain



What can be done to reduce wastage of food?

- **Upgrade Storage Systems:** The storage infrastructure must be improved to prevent post-harvest losses. The Government's plan to add 70 MMT of storage capacity over five years could reduce 10% of food grain losses. (Refer EPIC June 2023 for World's Largest Grain Storage Plan in Cooperative Sector).
- **Green Technologies:** Encouraging use of solar dryers and airtight bags can cut losses, improving food safety.
- **Jute Packaging Material Act (1987):** It mandates use of jute bags for transportation and storage of grains. While jute is biodegradable, its use leads to **rodent attacks and pilferage** in tropical climates. Expanding the use of **airtight bags** could **reduce storage and transit losses**.
- **Policy Support for Farm Mechanization:** Support to small farmers with mechanisation through Farmer Producer Organisations (FPOs) and Custom Hiring Centres (CHCs) can reduce losses.
- **Awareness:** Generating awareness among the end consumers about the harmful impact of wastage of food can reduce losses in the households, offices and commercial establishments.
- **Redistribution:** NGOs and Civic organizations can tie-up with hotels and restaurants to collect the surplus food and redistribute it among the poor.
- **Recycling:** Setting-up systems to collect wasted food from hotels/restaurants and recycling it to produce biogas or biofertilizers can check emissions of greenhouse gases while providing energy.

6. White Revolution 2.0

News: The Union Government has announced plans for 'White Revolution 2.0', which aims to further revolutionize the dairy industry.

What is the Government's Roadmap to achieve White Revolution 2.0?

Step	Details
Expansion of Reach of Cooperatives	<ul style="list-style-type: none"> At present, there are 1.7 lakh Dairy Cooperative Societies (DCSs) covering 2 lakh villages (30% villages, and 70% of India's districts). Only 10–20% of villages are covered in States like Uttar Pradesh, Uttarakhand, and Madhya Pradesh. States like West Bengal, Assam, and Odisha have less than 10% coverage. The National Dairy Development Board (NDDB) plans to establish 56,000 new multipurpose DCSs and strengthen 46,000 existing ones over the next five years, particularly in Uttar Pradesh, Odisha, Rajasthan, and Andhra Pradesh.
Planned Expansion	<ul style="list-style-type: none"> A pilot project was launched in February 2023, with a budget of INR 3.8 crore, to set up dairy cooperatives in uncovered gram panchayats across Haryana, Madhya Pradesh, and Karnataka.
Funding	<ul style="list-style-type: none"> National Programme for Dairy Development (NPDD) 2.0 will provide primary funding for White revolution 2.0. The scheme will provide financial assistance for village-level milk procurement systems, chilling facilities, and capacity-building, targeting 1,000 Multipurpose Primary Agricultural Credit Cooperative Societies (MPACSS) with INR 40,000 each.

What is the significance of White Revolution 2.0?

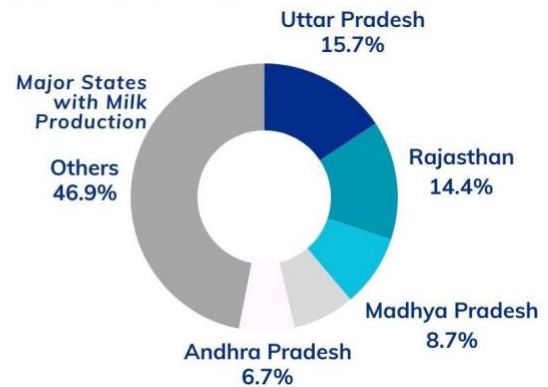
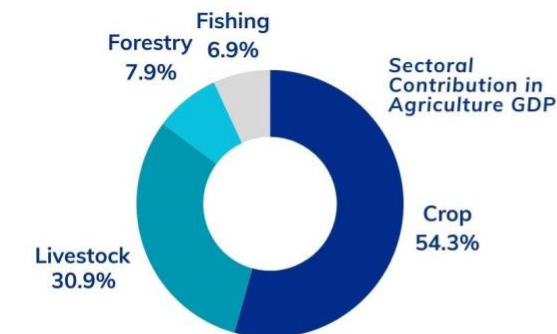
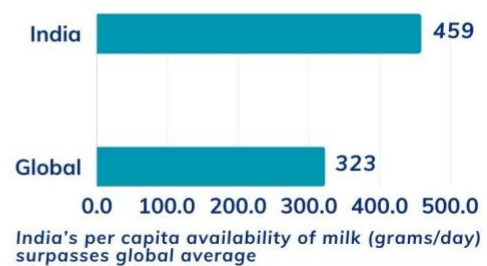
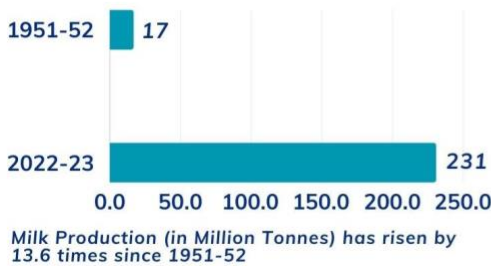
- **Enhance Agriculture GDP:** White Revolution 2.0 will lead to enhanced milk production, and add to the growth of the agri and allied sector in India. At present, the dairy sector (milk and its derivative products) contribute to ≈40% (INR 11.16 lakh crore) to agriculture and related sectors.
- **Rural Employment and Women Empowerment:** White revolution 2.0 will generate employment and contribute to the empowerment of women in the process. The dairy industry in India supports over 8.5 crore people (directly and indirectly), predominantly women.
- **Improving Market Access and Farmers' Income:** It will enable more farmers to participate in the organized dairy market by providing market access to farmers in areas previously uncovered by cooperatives. This will ensure **better prices** for their produce and **more stable incomes**.
- **Reducing Regional Disparities:** White Revolution 2.0 aims to address regional disparities in cooperative coverage. The initiative will **target the underserved regions** of Uttar Pradesh, Odisha, and West Bengal, and hence will ensure more equitable development across the country.
- **Nutritional Security:** The initiative aims to increase daily milk procurement by dairy cooperatives from 660 lakh kg to 1,007 lakh kg by 2028-29. This expansion will enhance the availability of milk, contributing to both food security and nutritional needs.

What are the challenges in achieving White Revolution 2.0?

- **Uneven Presence of Cooperatives:** Poor coverage of cooperatives (less than 10%) in States like West Bengal, Assam, and Jharkhand limits the ability to scale up production.
- **Declining Growth Rate of Milk Production:** The annual rate of milk production has declined from 6.47% in 2018-19 to 3.83% in 2022-23.
- **Variability in Yield Across States:** States like West Bengal (6.30 kg per animal per day) and Odisha have much **lower milk yields** compared to States like Punjab (13.49 kg per animal per day) and Gujarat.
- **Low Cattle Productivity:** According to the Integrated Sample Survey, average annual productivity of cattle in India during 2019-20 is 1,777 kg per animal per year, as against the world average of 2,699 kg per animal per year during 2019.

- **Prevalence of Diseases:** There has been a surge in the prevalence of contagious diseases among cattle like the Lumpy Skin Disease (LSD), Foot and Mouth Disease (FMD), Black Quarter infection.
- **Feed and Fodder Scarcity:** The Jhansi-based Indian Grassland and Fodder Research Institute has estimated that there is a deficit of 12% green fodder, 23% dry fodder, and 30% grains-based concentrated animal feeds.
- **Inadequate Policy Support:** The bulk of the agricultural subsidies by the Union and State Governments goes to the crops sector. In the 2023-24 Union Budget, the allocation for the Department of Animal Husbandry and Dairying is merely INR 4,328 crore .
- **Lack of Marketing Support:** Dairy products lack price and marketing support that are enjoyed by the crop-based commodities in the form of MSP and official State procurement by FCI.
- **Lack of Institutional Finance:** The share of livestock in the total agricultural credit (short-term, medium-term and long-term) is only ≈4%.
- **Environmental Impact:** The dairy sector is a major contributor to the greenhouse gases like methane, which has a very high global warming potential (GWP).
- **Lack of Technology:** Fewer artificial inseminations, lower-quality germplasm and insufficient technical staff have inhibited the development of high quality cattle breed.

Dairy Sector in India



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What should be the way forward?

- **Promotion of Organized Sector:** At present, about two-thirds of the marketable milk is in the unorganised sector, where informal middlemen dominate the supply chain. The potential for expanding organized sector's share in marketable milk (which is led by the cooperative sector) must be explored.
- **Feed and Fodder Resources:** Providing sufficient feed & fodder and drinking water is necessary to increase productivity of cattle stock in India, particularly in the rain-shadow regions.
- **Value Addition and Marketing:** The milk producers should be given the requisite support to enter into the value-added segments such as ice cream, yogurt, cheese, and whey. These segments have profit margins of 20%, which is much higher than the 3-5% margin in the case of simple milk produce.
- **Promoting Indigenous Breeds:** The indigenous breeds of cattle must be promoted.

- **Research and Development:** Government should focus on R&D in livestock sector to increase per livestock productivity to provide more benefits to small & marginal farmers.

Government Initiatives for the Development of the Dairy Sector

Initiative	Details
Rashtriya Gokul Mission (RGM)	<ul style="list-style-type: none"> • It is being implemented for development and conservation of indigenous bovine breeds since December 2014. • Its aim is to enhance milk production and to make it more remunerative to the farmers.
National Livestock Mission (NLM)	<ul style="list-style-type: none"> • The scheme focuses on entrepreneurship development and breed improvement in poultry, sheep, goat and piggery; including feed and fodder development.
National Artificial Insemination Programme	<ul style="list-style-type: none"> • To suggest novel methods of bringing about impregnation in female breeds and prevent the spread of certain diseases.
National Cattle and Buffalo Breeding Project	<ul style="list-style-type: none"> • To genetically upgrade important indigenous breeds on a priority basis with a focus on development and conservation.
National Animal Disease Control Programme	<ul style="list-style-type: none"> • To control Foot & Mouth Disease (FMD) and Brucellosis by completely vaccinating cattle, buffalo, sheep, goat and pig populations against FMD and bovine female calves of 4-8 months of age against Brucellosis.
Animal Husbandry Startup Grand Challenge	<ul style="list-style-type: none"> • To appreciate innovations coming from the villages to expand the dairy sector in India.

7. Improving Agriculture Systems by Focusing Beyond Yields

News: Some Agriculture experts are of the opinion that sole focus on improving agriculture yields has several negative outcomes. Agriculture policies need to be adjusted for a broader outlook beyond yields.

What is the problem with focusing only on agricultural yield?

- **Scarcity of Inputs:** Essential inputs like water, land and soil (due to degradation) are becoming scarce. Yield maximization in this scenario is **less sustainable**.
- **Nutritional Deficiency:** High-yield varieties of rice and wheat have **reduced micronutrient content**. Zinc levels in rice have dropped by 33%, and in wheat by 30%. Iron levels in rice and wheat have decreased by 27% and 19%, respectively.
- **Malnutrition:** The lack of nutrition has contributed to widespread malnutrition, with one-third of Indian children under 5 years stunted and two-thirds anaemic.
- **Farmers' Income:** Maximizing yield does not always increase farmers' incomes effectively, as the cost of additional inputs like fertilizers can outweigh the benefits. Rice/Wheat provide greater revenue, but their cost of cultivation is also high, **reducing margin for the farmers**.
- **Loss of Biodiversity:** India has lost about 104,000 varieties of rice since the Green Revolution, reducing agricultural resilience.
- **Soil Degradation:** Use of fertilizers has risen by ≈70% since 1970s. This has led to soil degradation.
- **Focus on Monoculture:** Too much focus on Rice-Wheat combination has **reduced the area under millets** cultivation by 10 million hectares. Rice and wheat have expanded by 13 and 21 million hectares respectively.

What alternative indicators should be considered?

- **Nutritional Output Per Hectare:** Focus should be the nutritional value of the crops produced.
- **Soil health:** Metrics like soil organic carbon should be considered while incentivizing certain cropping patterns.
- **Water-use Efficiency:** Use of technology to provide farmers with real-time data can enhance water-use efficiency and check wastage. This can help reduce the fall in water level in the north-west India and make agriculture more sustainable.
- **Biodiversity:** Policies (like MSP and procurement) should be adjusted to drive farmers away from mono-cropping. Crop diversity should be measured at not only farm level but at regional level.
 - Resilience should be measured through indicators like the ‘**Landscape Diversity Score**’.

What are the benefits of these new indicators?

- **Sustainable Agriculture:** These indicators aim to ensure that agriculture contributes to **nutritional security**, **conserves natural resources**, and **enhances farm profitability** through **sustainable practices**.
- **Economic Resilience:** Intercropping practices in Andhra Pradesh have provided **stable incomes** and **increased profitability**, demonstrating the benefits of diverse and resilient farming methods.
- **Resource Efficiency:** Water-use efficiency indicators help conserve resources. The ‘Saagu Baagu’ project in Telangana shows how AI can improve irrigation and crop management.

8. Nobel Prize in Sciences, 2024

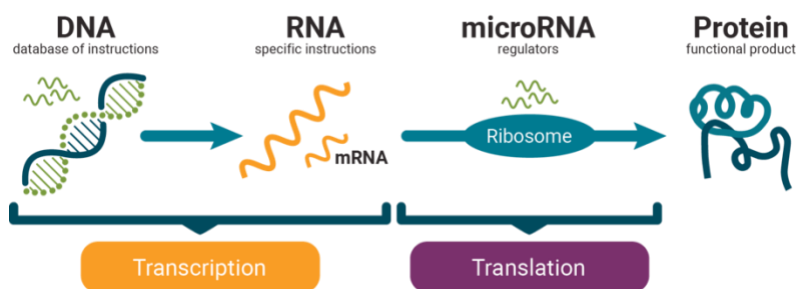
News: The Nobel Prizes for 2024 have been announced.

Nobel Prize in Medicine, 2024

- The Nobel Prize in Physiology or Medicine for 2024 was awarded to Victor Ambros and Gary Ruvkun.
- They have been awarded for their groundbreaking **discovery of microRNA** and its role in **regulating gene activity**. Their discovery provides a fundamental understanding of how **gene activity is controlled within cells**.
- This is the 5th Nobel Prize awarded for **RNA research**, emphasizing RNA’s fundamental role in cell biology. Previous awards have recognized discoveries like mRNA (1965), RNA as enzymes (1989), RNA interference (2006), and mRNA vaccines (2023). (Refer EPIC October 2023 for Nobel Prize for Medicine, 2023).

What are MicroRNAs (miRNAs)?

- They are small, non-coding RNA molecules that play a crucial role in **regulating gene expression**.
- They are typically about 20-24 nucleotides long and function by **binding to messenger RNA (mRNA)** molecules, leading to **mRNA degradation** or **inhibition of translation**.



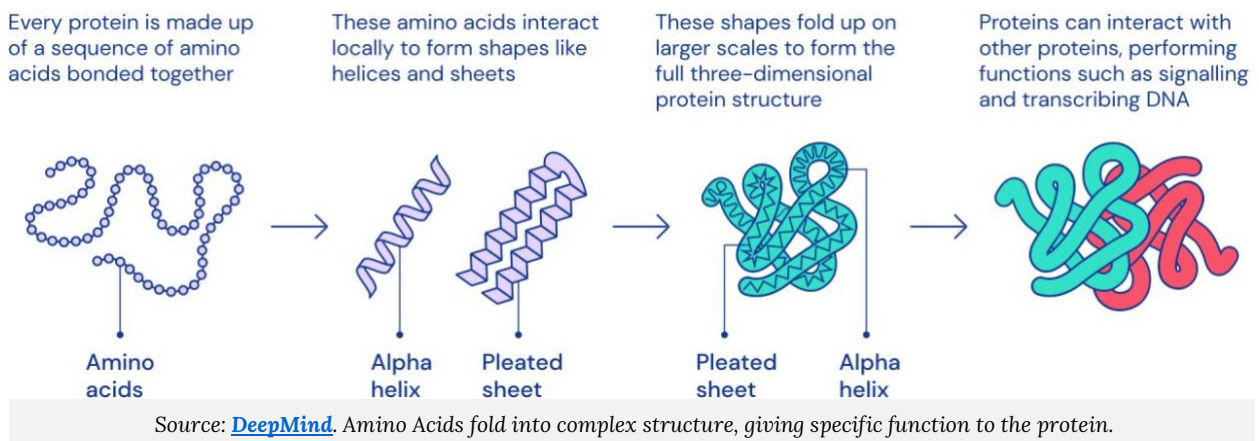
How microRNA regulates production of Proteins?

- mRNA (messenger RNA) is a **transient copy of DNA** used to create proteins through **transcription**.
- miRNAs bind to mRNA, **halting protein synthesis** by either marking mRNA for degradation or preventing it from producing proteins.

- miRNA and mRNA share **same 4 chemical bases** but differ in length. miRNA being only about 22 bases long.
- miRNAs regulate ~60% of human genes and are crucial in processes like **cell development, differentiation, cell division**, and response to stress and disease.
- They play a significant role in **controlling abnormal protein production**, making them potential targets for **cancer and other therapies**.

Nobel Prize in Chemistry, 2024

- The Nobel Prize in Chemistry, 2024 has been awarded to David Baker, Demis Hassabis, and John Jumper. Baker was recognised for advancements in **computational protein design**. Hassabis and Jumper were honoured for breakthroughs in **prediction of protein structures**.
- **David Baker's Contribution:** Baker's team developed methods for **designing new proteins**. David Baker developed computational methods to design entirely new proteins that **do not exist in nature**.
- Baker's synthetic proteins can be engineered to **perform specific functions**, such as **breaking down non-biodegradable plastics** or **tackling disease-causing proteins**.
- This approach offers a more **efficient alternative to natural evolutionary processes**, which require multiple mutations and extensive time.
- **Hassabis and Jumper's Contribution:** Hassabis and Jumper were recognised for developing **AlphaFold 2**, an AI model that predicts protein structures.



What is AlphaFold?

- Proteins are essential molecules that play crucial roles in biological functions across all living organisms.
- Proteins are composed of 20 amino acids. Functions of proteins are determined by their **specific sequences and folded structures**.
- AlphaFold is an AI tool developed by Google's **DeepMind** in 2018 to **predict how proteins fold**.
- It aims to **identify the 3D shapes of proteins** based on their **amino acid sequences**, which is crucial for understanding **biological functions** and **disease mechanisms**.
- AlphaFold relies on databases of known protein structures and amino acid sequences, using this data to train and improve predictive accuracy.
- This tool marks a significant shift from traditional methods like x-ray crystallography, which are time-consuming and labour-intensive. (Refer EPIC May 2024 for AlphaFold 3 and the Role of AI in Drug Development).

Nobel Prize in Physics, 2024

- The Nobel Prize in Physics, 2024 has been awarded to John Hopfield and Geoffrey Hinton for foundational discoveries and inventions that enable **machine learning with Artificial Neural Networks (ANNs)**.

- **Hopfield’s Contribution:** John Hopfield developed the Hopfield Network, a **recurrent neural network** based on **Hebbian learning principles**, which has been foundational to ANNs and AI.
 - A key feature of such network is **associative memory**, which allows it to retrieve complete information from **incomplete inputs** (just like human brains can associate specific sensations like music or aroma to certain memories).
 - He shifted from classical physics to **neurobiology-inspired models**. He showed that **machines can process information like neurons in the brain**. His model allowed machines to **remember patterns and connections**, unlike traditional computing, where data is stored in small bits.
- **Hinton’s Contribution:** Hinton expanded Hopfield’s work by helping machines **understand complex data and patterns**. He applied AI to practical areas, like healthcare, to increase productivity.
 - He advanced the **Boltzmann Machine**, contributing to the development of Restricted Boltzmann Machines (RBMs). The RBMs could **learn from examples rather than explicit instructions**. This allowed the machines to recognize new patterns based on similarities with previously learned data.
 - Hinton’s work on RBMs enabled the **progression of deep learning in artificial neural networks**, leading to breakthroughs across various fields. *(Read more about Artificial Neural Networks).*
- The duo’s contributions have **influenced machine learning’s integration into everyday applications**, such as AI chatbots like ChatGPT. Together, their work revolutionized AI, allowing machines to make complex associations, similar to human learning.
- **Hinton has warned about potential risks of AI**, comparing it to the Industrial Revolution. He resigned from Google to speak about the **need for AI safeguards**. Hopfield has compared AI to the splitting of the atom (nuclear energy and nuclear bomb), capable of both **positive and negative outcomes**.

9. Phasing Out Coal in India: Need and Challenges

News: According to a study by a climate change research think-tank, India would require over US\$ 1 trillion over the next 30 years, for phasing out coal.

What is the status of coal usage in India and the world?

Global

- China accounts for **nearly half** of the world’s **total coal consumption**.
- The **G20 countries** accounted for **85% of global coal exports in 2017**. Major exporters include Australia (37% of global coal exports), Indonesia (16%), and Russia (12%).

Top Consumers	2020 Consumption (Exajoules)	Share of global consumption
China 🇨🇳	82.3	54.3%
India 🇮🇳	17.5	11.6%
United States 🇺🇸	9.2	6.1%
Japan 🇯🇵	4.6	3.0%
South Africa 🇿🇦	3.5	2.3%
Russia 🇷🇺	3.3	2.2%
Indonesia 🇮🇩	3.3	2.2%
South Korea 🇰🇷	3.0	2.0%
Vietnam 🇻🇳	2.1	1.4%
Germany 🇩🇪	1.8	1.2%

- ≈30% of the primary energy supply of the G20 countries depends on coal.
- Countries like the UK, Italy, France, the EU, the US have shown strong commitment and **reduction in coal usage** with **dedicated policies**, such as **pre-retiring coal plants**, the introduction of the **carbon tax** etc.

India

- India is currently the 2nd-largest producer of coal globally.
- India holds the 5th-biggest coal reserves in the world. Around 7% of the world’s proven coal reserves are located in India.

- Coal sector accounts for more than **48.3% of India's electricity mix**.
- India is the 3rd-biggest coal importer among G20 countries. India accounts for **12% of global coal imports**.

What is the need for phasing out coal?

- **Mitigating Impacts of Climate Change:** According to the IPCC's Special Report, phase out of coal by 2050 is necessary to limit global warming to 1.5°C.
- **Achieving Climate Targets:** Phase-out of coal is necessary to achieve the Net Zero target.
- **Health Benefits:** Coal is a major contributor to **air pollution**, and is responsible for more than 800,000 premature deaths per year globally.
 - Phase out of coal will reduce millions of cases of serious and minor illness.
- **Negative Economic Externalities:** The phasing out of coal in India will reduce the negative economic implications associated with the use of coal, such as increased **healthcare costs** and a **higher number of lost working days**.
- **Energy Independence:** Reduction of coal imports promotes energy independence, and improves the balance of payments. Reduction in imports can help save foreign exchange.
- **Lower Costs of Renewable Energy:** Renewable energy is rapidly emerging as a lower cost option for new power generation. It is estimated that by 2025, electricity generation from new renewable energy infrastructure will get cheaper than power generation from new coal infrastructure.

HOW URGENT IS TO PHASE OUT COAL?

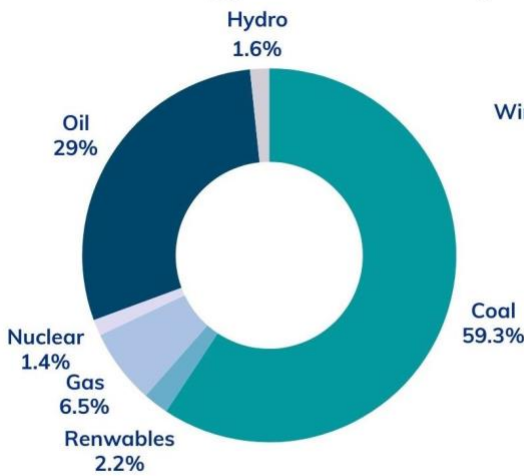
Apart from being the largest source of CO2 emissions, coal combustion is also a major threat to public health because of the fine particulate matter released into the air.

1 in 5 deaths globally
Due to pollution from fossil fuel combustion, according to a recent study from Harvard University

Current emissions from fossil energy infrastructure are already more than twice the amount that would push the planet over **1.5°C of global heating**, possibly bringing more intense heat, fire, storms, flooding, and drought

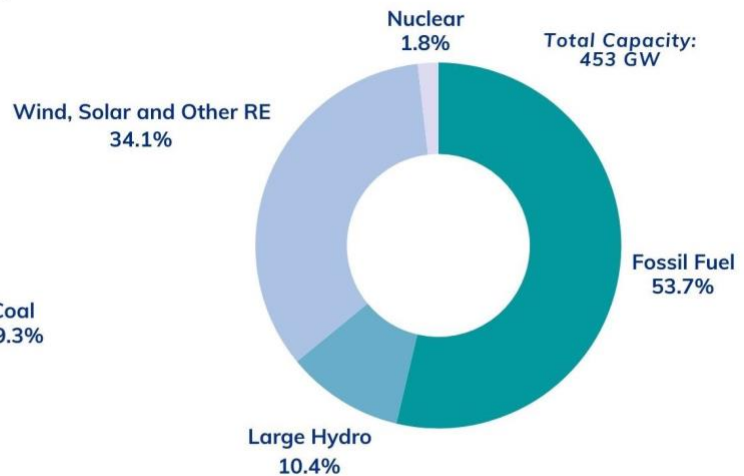
Despite a record rise in wind and solar generation, **only 29% of the global rise in electricity demand** in 2021 was met with wind and solar.

India's Energy and Electricity Mix



Source: <https://iced.niti.gov.in/energy>

India's Energy Mix (2023)



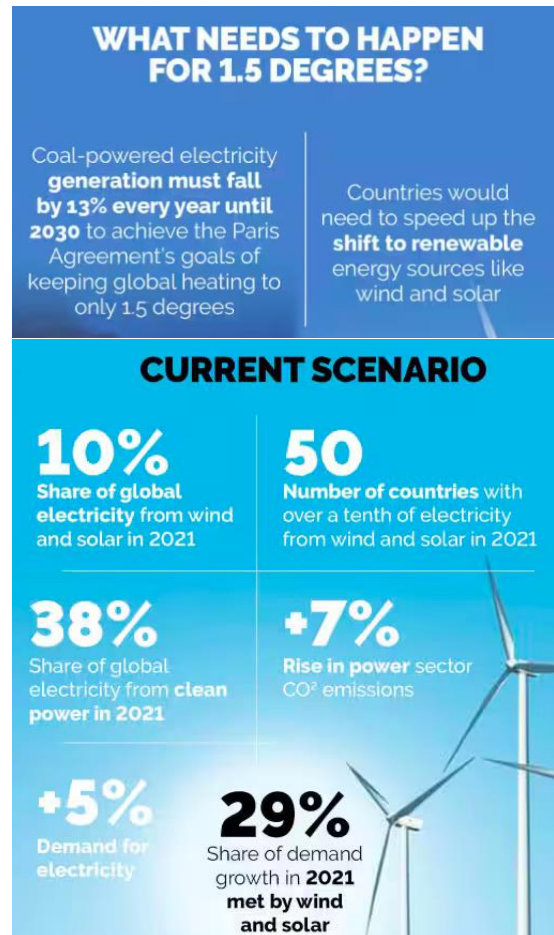
Source: <https://iced.niti.gov.in/energy/electricity/generation>

India's Electricity Mix (2024)

Created by | ForumIAS®

What are the challenges in phasing out coal?

- Economic Impact on Coal-rich States:** According to the Geological Survey of India, India has 319.02 Billion Tonnes (BT) of cumulative coal reserves. Out of these, 219.65 BT (68% of total reserves) are present in only 3 States: **Jharkhand, Odisha, and Chhattisgarh.**
 - Phasing out coal will reduce their **economic capacity**, as the economy of these States is significantly dependent on coal.
- Huge Job Losses:** According to a PIB press release, public sector coal-producing entities alone employ a workforce of 369,053 individuals. Many more individuals are employed in the private sector, thermal power plants that run on coal, transportation, logistics etc. Phasing out coal in India will create a huge job loss across sectors.
- Reduction in Taxes:** In 2019-20, the Union Government alone collected ≈ INR 29,200 crore in GST compensation cess from coal. Phasing out coal will impact Government's tax collection.
- Freight Revenue:** Coal alone accounts for ≈40% of the total freight revenue in Indian Railways and trucks.
 - Phasing out coal will reduce the logistics revenue.
- Risk of Stranded Assets:** Economic shifts and policy changes may turn coal-fired power plants into stranded assets (non-performing assets). This will rapidly decrease their value, especially of the mechanical equipment, and may turn them into **liabilities**. Entities that have invested in them will see their valuation erode.
- Economic Cost:** The German coal phaseout plan calls for an investment of more than 50 billion Euros for mining and plant operators. Similar investment is not feasible in India.



What should be the way ahead for India?

- Deployment of Clean Energy:** According to The Energy and Resources Institute (TERI), for India to achieve the Net Zero target, the share of renewables must rise to 90%. The Government must enhance the pace of deployment of renewable energy through suitable policy measures, including financing and investments.
- Focus on Energy Efficiency:** Instead of phasing out coal immediately, India can move towards energy-efficient buildings, lighting, appliances, and industrial practices. This will help faster phase-out of coal in the future. The Government has to encourage all States and UTs to make their respective **carbon-neutral plans**.
- Carbon Sequestration:** India needs to develop both natural and man-made carbon sequestration practices. The use of **biofuels** can help reduce emissions from light commercial vehicles, tractors in agriculture.
 - India must **improve the forest cover**, especially dense evergreen forests which work as the best carbon sink.
- Public Funding:** Public funding, through grants and subsidies, and private investments in green energy plants and infrastructure will help in phasing out coal.
- Proper use of DMF and Corporate Social Responsibility (CSR) Funds:** India has nearly US\$ 4 billion in District Mineral Foundations (DMF) funds. This fund can be used as a resource, along with CSR funds, for supporting new businesses in coal districts, and to support the local communities.

Factly

Polity

1. Bombay High Court Strikes Down Provision of IT Rules, 2023

News: The Bombay High Court has struck down the provision of the Information Technology Rules, 2023 that had empowered the Union Government to set-up a Fact Check Unit (FCU).

About the Judgment

- The **IT Rules, 2023** were challenged in the Bombay High Court. A 2-Judge Division Bench of the Bombay High Court had delivered a **split verdict** in January 2024.
 - One Judge had termed the Rules as **vague**, overly broad, and **disproportionate to their purpose** and hence **unconstitutional**. The other Judge had argued that the **potential loss of a safe harbour** for intermediaries did not **directly threaten citizens' freedom of expression**.
- The Case was then placed before a 3rd Judge ("tie-breaker" Judge).
- In March 2024, the Government had **notified PIB's Fact Check Unit** (PIB-FCU). However, the notification was **stayed by the Supreme Court**. (Refer EPIC April 2024 for The Government Notifies PIB Fact-Check Unit (FCU)).
- Now, the 3rd Judge of Bombay High Court has delivered the Judgment. The Judge has said that the IT Rules, 2023 **violate Article 14** (Right to Equality), **Article 19** (Right to Freedom of Expression) and **Article 19(1)(g)** (Right to Freedom of Profession) of the Constitution.
- The Court said that the expression "fake, false and misleading" in the Rules was "**vague and hence wrong**" in the absence of any definition.
- The Rules had potential to cause a '**chilling effect**' on free speech by **requiring an intermediary to take down content** that has been defined by the FCU as fake or false or misleading (which have been vaguely defined).

About the Provisions of IT Rules, 2023

- **Rule 3(1)(b)(v)** imposed obligations on intermediaries like social media platforms.
- The Amendment created a **Fact Check Unit (FCU)** to identify content related to government business as **fake, false, or misleading**. (Refer EPIC April 2023 for IT (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023).
- Intermediaries were required to remove flagged content or risk losing their '**safe harbour**' protections under **Section 79 of the IT Act, 2000**.

Arguments of the Government and Petitioners

Government's Arguments

- The Rules are **not coercive**. Intermediaries are free to **contest the loss of safe harbor** in appropriate legal proceedings.
- The Government argued that there is **no constitutional protection against spreading fake or misleading information**. They claimed the rule fell within their authority to regulate online expression.

Petitioners' Arguments

- Petitioners argued the **Rules gave the Government too much power** to determine what is fake or misleading, breaching the protection to free speech under the Constitution.
- The Government ignored the possibility of **adopting less restrictive alternatives** to combat misinformation.

2. Supreme Court's Judgement on Timeline of Sanction under UAPA, 1967

News: The Supreme Court has ruled that the timelines under Rule 3 and 4 of the UAPA Rules 2008 must be strictly followed.

About the Supreme Court Judgement

- The Supreme Court has ruled that the timelines mentioned under **Rules 3 and 4 of the 2008 Rules** must be followed strictly. They are **not discretionary** as the language used in the Rules contains “shall” indicating a clear legislative intent to complete the sanctioning process within the stipulated time.
- The SC also said that timelines imposed by way of statutory rules are a way to keep a check on executive power and are **necessary to protect the rights of accused persons.**
 - **Rule 3** of the 2008 Rules **lays down timelines** for an authority appointed by the Central Government to make **recommendations to the Centre** within 7 days of gathering evidence by the Investigating Officer (IO).
 - **Rule 4** allows the Centre to decide on the sanction for prosecution within 7 days of receiving the recommendations of the Government-appointed authority.
- Both these rules closely relate to and derive their validity **from Section 45 of the UAPA Act, 1967.** Section 45 **disallows courts from taking cognisance of offences** under the Act **without the previous sanction** of the Centre or State Government, or any officer authorised by it.
- Thus the process of sanction **must be completed within 14 days** (7 days review by the authority and 7 days for review by the Government). (Refer EPIC March 2024 for Unlawful Activities (Prevention) Act, UAPA).
- The Rules were interpreted differently by the Kerala, Jharkhand and Bombay High Courts. The Kerala High Court had held the timelines under Rules 3 and 4 to be mandatory, the other two high courts had deemed it to be only “directory” in nature. (Refer EPIC March 2023 for Concerns Associated with the UAPA Act).

Section 45 of the UAPA, 1967

Section 45(2) of the UAPA, 1967 states that the **sanction for prosecution** (by Centre or State Government) shall be given **within a prescribed time**. It should be given after considering the report of an **authority appointed by the Government** (Centre or State). The appointed authority shall make an **independent review of the evidence** gathered during investigation and must provide the **recommendation to the Government** (Centre or State) **within a prescribed time**.

3. Report on Atrocities Against Scheduled Castes (SCs)/Scheduled Tribes (STs)

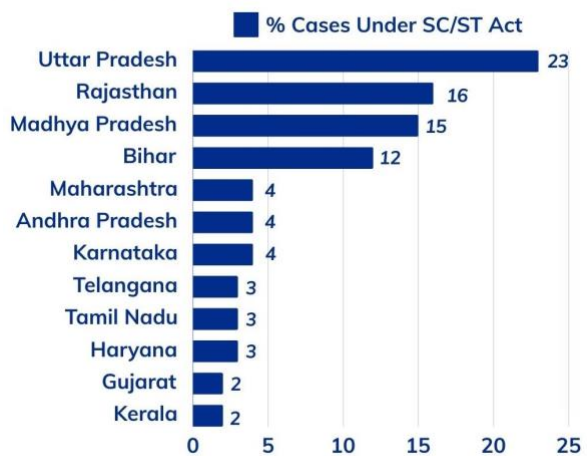
News: The Union Government has released a report under the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989.

Key Highlights of the Report

- **≈97.7% of all cases of atrocities against SCs** in 2022 were **reported from 13 States**, with Uttar Pradesh, Rajasthan and Madhya Pradesh recording the highest number of such crimes.
- The majority of atrocities against STs were also **concentrated in 13 states**, which reported **98.91% of all cases** in 2022.
- Of the 51,656 cases registered under the law for Scheduled Castes (SCs) in 2022, UP accounted for 12,287 cases (23.78%), followed by Rajasthan at 8,651 (16.75%) and Madhya Pradesh at 7,732 (14.97%).
 - Other States with a significant number of cases were Bihar 6,799 (13.16%), Odisha 3,576 (6.93%), and Maharashtra 2,706 (5.24%). These 6 States accounted for **≈81% of the total cases.**

States with Highest Cases

Cases Registered under the Prevention of Atrocities Act



Source: MoS&E

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- Of the 9,735 cases registered under the law for STs, Madhya Pradesh reported the highest number at 2,979 (30.61%), followed by Rajasthan 2,498 (25.66%) and Odisha 773 (7.94%). Other States with a significant number of cases included Maharashtra with 691 (7.10%) and Andhra Pradesh with 499 (5.13%).
- The report also highlighted a concerning trend of **declining conviction rate for cases under the Act**. In 2022, the conviction rate dropped to 32.4% from 39.2% in 2020.
- The report pointed out the **inadequate number of special courts** set up to handle cases under the law. Of 498 districts in 14 States, only 194 had established special courts to expedite trials in these cases.
- The Report also identified specific districts particularly prone to atrocities against SCs/STs. The Report emphasises the **need for targeted interventions** in these districts to curb the incidence of caste-based violence and ensure stronger protection for vulnerable communities.

4. Supreme Court's Judgment on Bias in Prisons

News: The Supreme Court recently gave a ruling on caste bias and segregation in Prisons.

About the Supreme Court Judgment

- **Caste-Based Discrimination in Prisons:** The Supreme Court declared that the caste-based discrimination of prisoners, including **segregation of work based on caste**, is a **violation of human dignity**.
- **Caste Stigma and Equality:** The Judgment underscored that **every person is born equal**, and no stigma should be attached to anyone's existence based on caste.
- **No "Scavenger Class" in Modern Society:** The Court stated that no social group should be classified as a "scavenger class" and condemned manuals that assign such roles based on caste. It invoked the **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013**, asserting its applicability in prisons.
- **Forced Labor Based on Caste:** The Court also referenced **Article 17**, which forbids untouchability, and **Article 23**, which **prohibits forced labour**. The Court found that forcing prisoners from marginalized castes to perform menial tasks, such as cleaning toilets, purely on the basis of their caste, constitutes **coercion**. It highlighted that prison work assignments must not be dictated by caste-based notions of purity and pollution. (*Refer EPIC February 2023 for Issues Related to Prisons and Prison Reforms*).

Supreme Court's Directions

- **Revision of Prison Manuals:** All prison manuals and laws must be revised within 3 months to remove any provisions that sanction caste-based discrimination.
- **Deletion of Caste Column:** The 'caste column' and any references to caste in the registers of undertrials and convicts maintained in prisons must be deleted.
- **No Arbitrary Arrest of Denotified Tribes:** Members of Denotified tribes must not be subjected to arbitrary arrest or treated as 'habitual offenders' without proper statutory backing.
- **Abolition of Caste-Based Work Segregation:** Any segregation of prisoners based on caste, especially in relation to work duties like cleaning toilets or sweeping, must cease.
- **Constitutional Compliance in Work Assignment:** Work assignments in prisons must be based on **objective criteria** like aptitude, health, and psychological needs, rather than caste.
- **Enforcement of Anti-Manual Scavenging Act in Prisons:** The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 must be enforced in prisons.
- **Changes to Modern Prison Manual and Model Act:** The Union Government must revise the **Modern Prison Manual of 2016** and the **Model Prisons and Correctional Services Act of 2023** to eliminate caste-based discrimination and forced labour practices within 3 months.

5. Disputes Regarding Election Symbols

News: A faction of Nationalist Congress Party (NCP) has approached the Supreme Court to prevent the rival faction from using the old party (before split) symbol in the upcoming Maharashtra State Assembly Election.

Importance of Election Symbols

- In India, a large part of the population is still illiterate. Therefore, political symbols are crucial for **helping voters identify political parties** on ballots.
- A lot of times, voters cast their vote for in favour of a political party (and not the candidate), thus election symbols gain greater importance in **connecting with the electorate**.
- The Election Commission of India (ECI) assigns unique symbols to nationally or state-recognized parties. These symbols are reserved, ensuring that no other party or candidate uses them in elections.

Allocation in Case of Dispute

- When a recognized party splits, the **ECI has the authority to decide which faction is the rightful party** and can use the party symbol. In some cases, the ECI has also “frozen” symbols until the dispute is settled.

Criteria for Recognizing a Faction

- According to the Supreme Court Guidelines in **Sadiq Ali vs. ECI (1971)**, a **3-test formula** can be employed to settle the disputes between factions:
 - **Party’s Aims and Objectives:** To determine which faction aligns more closely with the party’s goals.
 - **Party Constitution and Inner Democracy:** To check how closely each faction follows party’s Constitution and democratic procedures. (Refer EPIC April 2024 for Allocation of Election Symbols).
 - **Legislative and Organizational Majority:** To assess which faction has the majority in the legislative and organizational wings. (Refer EPIC May 2023 for Supreme Court’s Judgment on Shiv Sena Dispute).

Policy

1. Benefits of the National Credit Framework (NCrF)

News: National Credit Framework promotes flexibility in education, integrating vocational skills with academic knowledge, and emphasizes adapting higher education to meet India’s evolving needs.

Benefits of National Credit Framework

- The National Credit Framework (NCrF) is part of the **National Education Policy (NEP) 2020**.
- It provides a **flexible system** for accumulating and **transferring credits** across **multidisciplinary education**. The NCrF is an enabling framework that aims to provide flexibility in education. (Refer EPIC February 2024 for National Credit Framework).
- NCrF allows students to **combine classroom learning with practical skills**. It aims to **balance vocational training with academic knowledge**.
 - Credits can be earned through **diverse activities** such as research, handicrafts, yoga, and internships.
 - NCrF helps students gain skills relevant to modern job markets.
- Higher Education Institutions (HEIs) that adopt the NCrF can **bridge the gap between education and the evolving job market**.
 - This system ensures that students are prepared for both employment and self-employment by combining knowledge with skill-based learning.
- It promotes **continuous adaptation in higher education** to meet India’s evolving societal and technological needs. By adopting NCrF, HEIs can prepare students for both employment and self-employment.

- Flexibility in education **democratizes learning and promotes social equity**. The flexible approach enables students to improve their **social mobility**.

2. National Health Account (NHA) Estimates

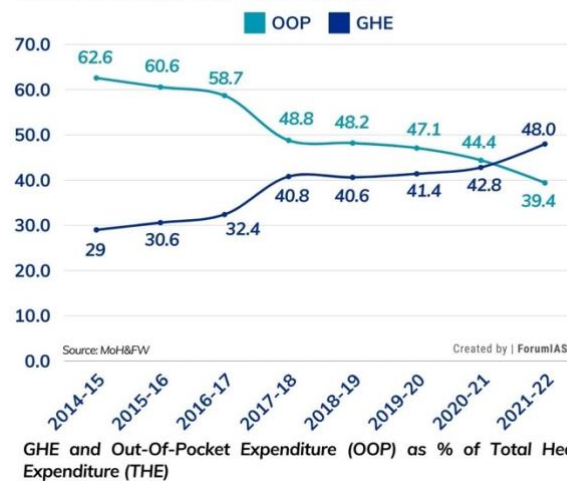
News: The Ministry of Health and Family Welfare has released the National Health Account (NHA) estimates for the fiscal years 2020-21 and 2021-22.

Major Findings of the National Health Account (NHA)

- **Government Health Expenditure (GHE):** GHE has increased steadily. GHE as a percentage of GDP rose from 1.13% in 2014-15 to 1.84% in 2021-22. The share of GHE in the General Government Expenditure (GGE) also increased from 3.94% (2014-15) to 6.12% (2021-22).
- **Decline in Out-of-Pocket Expenditure (OOPE):** The share of Out-of-Pocket Expenditure in Total Health Expenditure (THE) has dropped significantly, from 62.6% in 2014-15 to 39.4% in 2021-22. The reduction highlights the success of government measures aimed at expanding access to healthcare and reducing financial burdens on households.
- **Increased Government Share in Total Health Expenditure (THE):** The Government's contribution to THE increased from 29% in 2014-15 to 48% in 2021-22. This rise points to greater reliance on **public health services** and a reduced financial burden on citizens. The growth in GHE aligns with Government efforts to improve healthcare infrastructure and enhance financial protection.

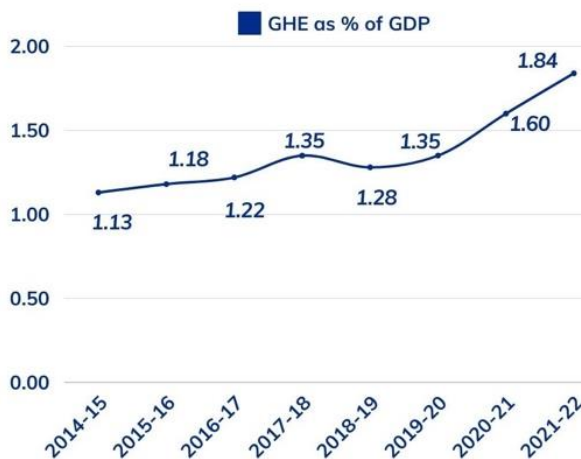
National Health Account (NHA) Estimates

Government Expenditure on Healthcare



National Health Account (NHA) Estimates

Government Expenditure on Healthcare



Government Health Expenditure (GHE) as % of GDP

Source: MoH&FW



GHE as % of General Government Expenditure (GGE)

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- **Growth in Social Security Expenditure (SSE) on Health:** Social Security Expenditure (SSE), which includes Government-funded health insurance and medical reimbursements, increased from 5.7% of THE in 2014-15

to 8.7% in 2021-22. The increase in SSE is key to reducing out-of-pocket expenses and ensuring that health-care access does not lead to financial hardship or poverty.

- **Distribution of Current Health Expenditure (CHE):** In 2020-21, the Union Government contributed INR 81,772 crores (12.33% of CHE), and State Governments contributed INR 1,38,944 crores (20.94%).
 - Contributions from enterprises, NGOs, and external donors also played a crucial role in supporting India's healthcare system during this period.

3. Increase in Minimum Wages

News: The Union Government has raised central minimum wages for agricultural and industrial workers.

About the Increase in Minimum Wages

- Under the provisions of the **Minimum Wages Act, 1948**, both the Union and State Governments are empowered to **fix, review** and **revise floor wages** in sectors that fall under their jurisdictions.
- A minimum or floor wage is **the lowest remuneration that employers must pay workers**. It is protected by law and cannot be overturned by individual or exclusive contracts.
- The Union Government's hike in minimum wages will benefit workers engaged in building construction, loading and unloading, security guards, janitors, housekeeping, mining and agriculture. The new wage rates will take effect from October 1, 2024.
 - After revision, the minimum wage rates for workers in construction, sweeping, cleaning, loading & unloading for unskilled work will be INR 783 a day or INR 20,358 a month, whichever is higher.
 - For **semi-skilled**, the rate will be INR 868 a day or INR 22,568 per month.
 - For **skilled, clerical** and **watch and wards without arms**, it has been raised to INR 954 a day or INR 24,804 a month.
 - For **highly skilled** and **watch and ward with arms**, the floor wage will be INR 1,035 a day or INR 26,910 a month.
- The increase has been undertaken through the revised **Variable Dearness Allowance (VDA)**, in response to the **rising cost of living**. The adjustments are linked to the **Consumer Price Index for Industrial Workers**.
- The minimum wage and salary structure differ based on factors like **State, Area within the State** based on **development level (zone), Industry, Occupation, and Skill-level**.
 - The method of setting minimum wages defines ≈2,000 different types of jobs for workers and over 400 categories of employment.
 - The minimum wage rates are categorised based on **skill levels** (unskilled, semi-skilled, skilled, and highly skilled) as well as by **geographical area: A, B, and C**.

Category of Workers	Rate of Wages including VDA (Area-wise per day)		
	A	B	C
Unskilled	523 + 260 = 783	437 + 218 = 655	350 + 176 = 526
Semi-Skilled	579 + 289 = 868	494 + 245 = 739	410 + 204 = 616
Unskilled Supervisory	579 + 289 = 868	494 + 245 = 739	410 + 204 = 616
Skilled/Clerical	637 + 317 = 954	579 + 289 = 868	494 + 245 = 739
Highly Skilled	693 + 342 = 1,035	637 + 317 = 954	579 + 289 = 868

(Area A has 16 cities including Delhi, Mumbai, Ahmedabad, Bangalore etc.; Area B has 65 cities including Agra, Amritsar, Chandigarh, Jaipur, Kochi, Pune, Nasik, Vadodara, Vizag etc.; while other towns fall under Area C).

- The minimum wage has been regulated under the purview of the Minimum Wages Act, 1948. This will be subject to the provisions of the **Code on Wages Act, 2019**, notified in August 2019, once it comes into effect.

At that time, the Code on Wages Act would replace 4 labour regulations: **Minimum Wages Act, 1948; Payment of Wages Act, 1936; Payment of Bonus Act, 1965; and Equal Remuneration Act, 1976.**

- The Government is also mulling over the concept of establishing a ‘living wage’ by 2025, and is currently working with the ILO. (Refer EPIC May 2024 for Adopting a Living Wage Approach in India).

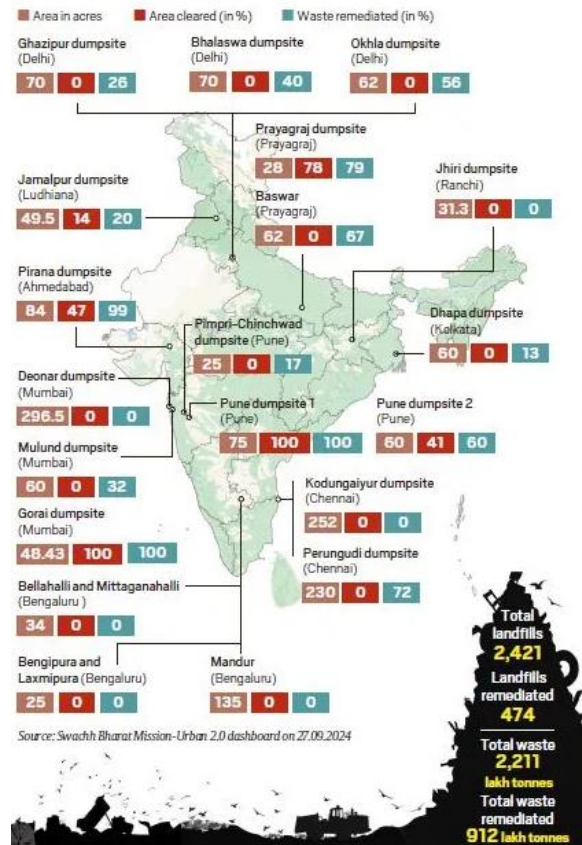
4. Status of Legacy Waste Management Under Swachh Bharat Mission

News: The progress on legacy waste management under the Swachh Bharat Mission 2.0 has been slow.

Status of Legacy Waste Management Under Swachh Bharat Mission 2.0

- Swachh Bharat Mission 2.0 was launched on October 1, 2021 for a duration of 5 years (October 1, 2026).
- The objective of the Project is to achieve ‘Garbage-Free Status’ for all cities by **remediating legacy waste dumpsites** and **converting them into green zones.**
 - Legacy waste dumpsites are areas that have accumulated solid waste over many years, stored without scientific methods or proper regulation.
- Its key goals include **100% source segregation**, Door-to-door waste collection, Scientific waste management, including **safe disposal in landfills and remediation of legacy dumpsites.**
- Total **2,424 sites** with over **1,000 tonnes** of legacy waste have been identified under the project. However, **only 470 sites (19.4%) have been fully remediated.** Another 1,224 sites (50.5%) have been approved and the process of remediation is under process. 730 sites (30.1%) remain unaddressed.
- Total **28,460 acres of land reclamation** has been identified. However, only 4,552.3 acres (16%) has been reclaimed. 23,908 acres (84%) of land is yet to be reclaimed.
 - Tamil Nada has the largest area reclaimed, with 837 acres (42%). Gujarat is the best performing State in terms of percentage, reclaiming 75% (698 out of 938 acres) of its landfill area.

Top 20 biggest landfills in India



5. Recruitment for Railway Services

News: The Union Government has restored the recruitment process for the railway officers through the Civil Services Examination (CSE) and the Engineering Services Examination (ESE) conducted by the UPSC.

About the Changes

- In 2019, Indian Railways shifted to recruiting officers for the **Indian Railway Management Service (IRMS)** solely through the Civil Services Examination, which led to challenges in filling technical roles and created confusion in appointments.

Challenges with IRMS

- The IRMS recruitment method limited officer intake to 150 candidates per year.

- Both engineering and non-engineering candidates competed for a limited number of posts, leading to difficulties in finding suitable candidates for technical departments (Mechanical, Electrical Engineering).
- This shortage led to an increase in promotee or subordinate rank officers occupying technical positions.

Recent Changes

- The Railways will now recruit officers for various departments, including technical roles, under the IRMS banner through both CSE and ESE.
- Recruitment through ESE was initially discontinued, but the new policy reinstates it for technical roles, thus allowing for more specialized candidates.

Organizational Restructuring

- The decision in 2019 aimed to unify 8 Group-A services into a single Central Service called IRMS. This unification was recommended by multiple committees, including **Prakash Tandon Committee** (1994), **Rakesh Mohan Committee** (2001), **Sam Pitroda Committee** (2012) and **Bibek Debroy Committee** (2015).
- The goal was to offer equal career progression opportunities for **engineers** and **non-engineers**.

6. Paryatan Mitra and Paryatan Didi Initiative

News: Ministry of Tourism has launched a new initiative 'Paryatan Mitra' and 'Paryatan Didi' on the occasion of World Tourism Day (September 27).

About the 'Paryatan Mitra' and 'Paryatan Didi' Initiative

- 'Paryatan Mitra' and 'Paryatan Didi' program is to **connect tourists with locals** who can act as **Ambassadors** and **Storytellers** for their regions.
- It aims to **enhance tourism** through social inclusion, employment generation, and economic progress.
- Its objective is to **improve tourist experience** through interaction with locals trained in hospitality, safety, cleanliness, and sustainability.
- The initiative has been piloted in 6 tourist destinations across India; Orchha (Madhya Pradesh), Gandikota (Andhra Pradesh), Bodh Gaya (Bihar), Aizawl (Mizoram), Jodhpur (Rajasthan) and Sri Vijaya Puram (Andaman & Nicobar Islands).
- The target groups include Cab and auto drivers; Railway station and airport staff; Hotel, restaurant, and homestay staff; Police personnel; Tour guides; Street vendors and shopkeepers and Students and other community members.
- Some key features of the scheme include:
 - Training on developing **new tourism products** such as Heritage walks, food and craft tours, nature treks and homestay experiences.
 - The training is driven by the philosophy of '**Athithi Devo Bhava**', emphasizing the importance of treating tourists as honoured guests.
 - It involves knowledge sharing on local history, stories, and lesser-known tourist attractions to create engaging tourist interactions.
 - Special emphasis on **empowering women and youth** to develop **tourism-based livelihoods**.
 - Training on **digital literacy** and the **use of digital tools** to ensure global visibility and discoverability of the tourism experiences created by locals.

Other Initiatives to Boost Tourism

- **Dekho Apna Desh** (2020): It encourages **domestic travel** by promoting India's lesser-known destinations.
- **Vibrant Villages Programme** (2023): It aims to develop **border villages** in northern India, with tourism and cultural promotion as a core focus.
- **E-Tourist Visa** (2014): It has been expanded from 43 to 76 countries, with future plans to cover 150 nations.

- **Capacity Building for Service Providers Scheme** (2018): It focuses on skilling, reskilling, and upskilling in hospitality and tourism sectors.
- **24×7 Multi-Lingual Tourist Info-Helpline**: It is available in 12 languages, offering support and guidance to tourists.
- **RCS-UDAN Scheme** (2016): This has improved regional connectivity with 519 operational routes, including 53 tourism routes.
- **Swadesh Darshan Scheme** (2014-15): It focused on sustainable tourism development; revamped as **Swadesh Darshan 2.0** in 2024 with 57 identified destinations.
- **PRASHAD Scheme** (2014-15): It prioritizes sustainable development of **pilgrimage destinations**.
- **HRIDAY Scheme** (2015): It seeks to preserve and rejuvenate **cultural heritage** in 12 selected cities.
- **Travel for LiFE Initiative** (2023): It encourages sustainable tourism through responsible use of tourism resources. *(Read more about Tourism Sector in India).*

Economy

1. Link Between Rising Temperatures and Food Inflation

News: Some experts are of the opinion that rising temperatures are becoming a better predictor of food inflation in India than rainfall or reservoir levels.

Impact of Rising Temperatures on Food Inflation

- A study has found that **rising temperatures** have a **stronger correlation** with **food inflation** than **rains or reservoir levels** in India.
- **Higher temperatures lower crop yields**, increasing food prices. For example, a temperature rise of 2.5-4.9°C could reduce wheat yields by 41-52% and rice yields by 32-40%. Heatwaves in March 2022 reduced the sugarcane yield by 30%, and also affected prices of vegetables and oilseeds.
 - **Perishable crops** like vegetables, harvested every 2-3 months, show **a rising sensitivity to heat**. Their price correlation with temperatures has increased from 20% to 60% over a decade.
 - Durable crops like cereals, less sensitive historically, now show a correlation rise from 10% to 45%.
- **High temperatures also harm livestock**, leading to **higher prices for dairy**, poultry, and fish products.
- Experts believe reliance on temperature data can significantly **improve forecasting of food inflation**.
- Reservoir levels and rainfall are becoming less important in predicting food inflation. With improved irrigation facilities, the **impact of low rains has reduced**, especially in north-western India.

Outlook for Food Inflation

- With temperatures cooling after a heatwave earlier in 2024, food inflation may decrease.
- If temperatures remain lower due to La Niña, inflation could drop to the RBI's target of 4% by March 2025.
- However, rising temperatures could pose **long-term challenges for inflation management**.

2. Global Innovation Index

News: The Global Innovation Index (GII) has been released by World Intellectual Property Organization.

About Global Innovation Index (GII)

- It assesses the performance of the **innovation ecosystems** in 133 economies and monitors the latest global innovation trends.
- It uses approximately 80 indicators, grouped into innovation inputs and outputs, to assess various facets of innovation across different countries.

- **Innovation Input Sub-Index:** Five input pillars capture elements of the economy that enable and facilitate innovative activities.
- **Innovation Output Sub-Index:** Innovation outputs are the result of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it carries the same weight as the Input Sub-Index in calculating the overall GII scores.
- **The overall GII score** is the average of the Input and Output Sub-Indices, on which the GII economy rankings are then produced.
- The GII is a reliable tool for Governments worldwide to evaluate the **social and economic changes driven by innovation** within their countries.

India’s Rise in the Global Innovation Index 2024

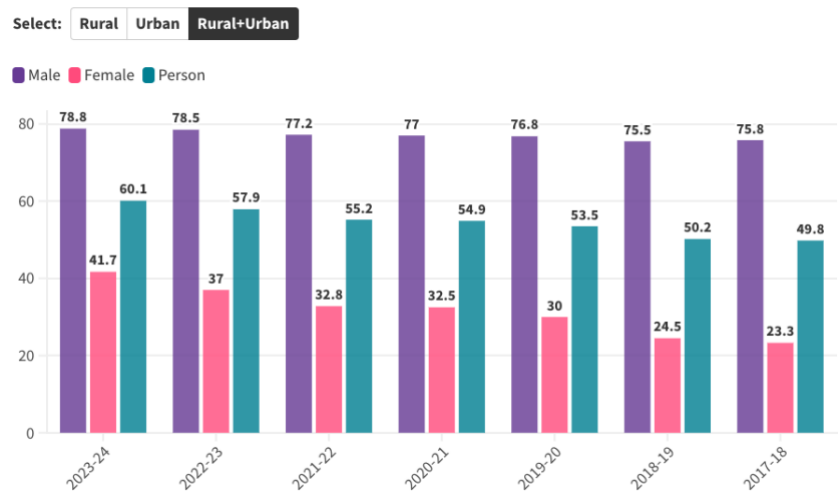
- **India’s Global Ranking:** India climbed to 39th position among 133 global economies in the 2024 Global Innovation Index. The ranking highlights India’s growing innovation capabilities. India’s position in the Global Innovation Index has steadily improved, rising from **81st in 2015** to **39th in 2024**.
- **Regional and Economic Leadership:** India is the top performer in Central and Southern Asia. It also ranks first among lower-middle-income economies worldwide.
- **Science and Technology Cluster Ranking:** India secured 4th place in WIPO Science and Technology Cluster Ranking. Major Indian cities like Mumbai, Delhi, Bengaluru, and Chennai are listed among the world’s top 100 Science and Technology clusters.
- **Intangible Asset Intensity:** India ranks 7th globally in intangible asset intensity, a key indicator of the country’s growing innovation strength.
- **Innovation Outputs and Inputs in 2024:** India ranks 33rd in innovation outputs, reflecting an improvement from last year. It ranks 44th in innovation inputs. India performs better in innovation outputs than in inputs, showcasing the strength of its innovative results.

3. PLFS Report 2023-24

News: The Periodic Labour Force Survey (PLFS) for the period July 2023 to June 2024 has been released by the Labour Bureau.

Key Findings of the Survey

- **Unemployment Rate:** The overall unemployment rate (UR) remains at 3.2%, similar to the previous year. There has been no significant change in the job market for sectors like manufacturing.
- **Increase in Agricultural Workers:** The distribution of workers in agriculture has slightly increased, indicating more people are working in this sector. The shift suggests that many people are returning to agriculture, possibly because they couldn’t find jobs in other sectors.



Source: The Hindu. LFPR Combined (Rural + Urban).

- **Labour Force Participation Rate (LFPR):** The Labour Force Participation Rate (LFPR) is the percentage of people either working or actively looking for work. In rural areas, the LFPR increased from 50.7% in 2017-18 to 63.7% in 2023-24. In urban areas, it increased from 47.6% to 52% during the same period. Overall, the LFPR rose from 49.8% in 2017-18 to 60.1% in 2023-24.
- **Increase in Male and Female LFPR:** The LFPR for males rose from 75.8% in 2017-18 to 78.8% in 2023-24. For females, it increased from 23.3% to 41.7%, a significant rise, showing more women entering the workforce.
- **LFPR for Different Communities:** The LFPR for Muslim women improved from 15% in 2021-22 to 21.4% in 2023-24. For Hindu women, the participation rose from 26.1% to 33.3% during the same period. The LFPR for Sikh women increased from 19.8% to 26.7% and for Christian women, it went from 34.2% to 38.3%.
- **Decline in Rural and Urban Unemployment:** In rural areas, the unemployment rate dropped from 5.3% in 2017-18 to 2.5% in 2023-24. In urban areas, the rate decreased from 7.7% to 5.1%. The unemployment rate for males went from 6.1% to 3.2% and for females, it reduced from 5.6% to 3.2%.
- **Worker Population Ratio:** It is defined as the percentage of employed persons in the population. It stood at 58.2% in 2023-24. WPR was 76.3% for men and 40.3% for women.

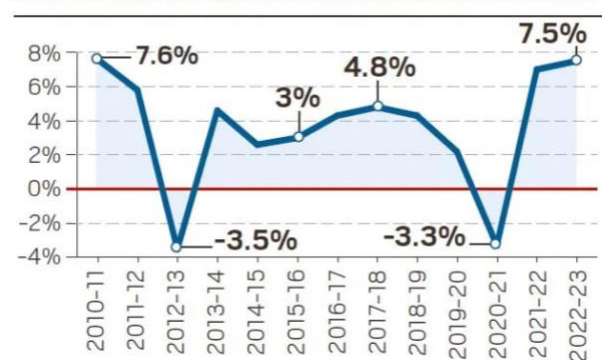
4. Annual Survey of Industries for 2022-23

News: The Ministry of Statistics and Programme Implementation (MoSPI) has released the Annual Survey of Industries for 2022-23.

Key Highlights of the Survey

- It is the principal source of industrial statistics and data for **organised manufacturing**. It covers factories **employing 10 or more workers using power** and those **employing 20 or more workers without using power**. For **Maharashtra, Goa and Rajasthan**, the criteria are changed to factories **employing 20 or more workers with power** and **40 or more workers without power**.
- Total **number of employees in manufacturing industries** increased by 7.5% to **1.84 crore in 2022-23** from 1.72 crore in 2021-22. This is the highest rate of increase in employment in manufacturing industries in the last 12 years.
 - The estimated number of persons engaged in the manufacturing industries in 2022-23 is **higher than the pre-pandemic level (2018-19)** by over 22.14 lakh. This indicates recovery after the pandemic.
 - The highest employment was recorded in factories producing food products, followed by textiles, basic metals, wearing apparel and motor vehicles, trailers and semi-trailers.
 - The Annual Survey of Unincorporated Enterprises (ASUSE) 2022-23 (released in July 2024) had indicated that the **number of workers employed in the informal sector in 2022-23 had dropped** to 10.96 crore compared to 11.13 crore in 2015-16 (1.5% drop).
- The **average emoluments per person rose by 6.3%** in 2022-23 as against the previous year.
- The **total number of factories increased to 2.53 lakh** in 2022-23, from 2.49 lakh in 2021-22.
- The Survey says that the **main drivers of the manufacturing growth** in 2022-23 were industries related to **basic metal, coke and refined petroleum products, food products, chemical and chemical products and motor vehicles**.

EMPLOYMENT GROWTH IN MANUFACTURING

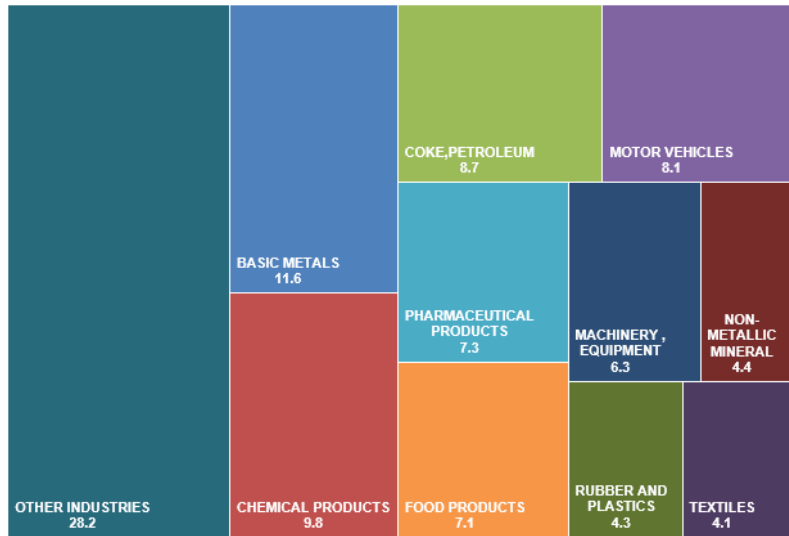


- In terms of Gross Value Added, **Maharashtra ranked first** in 2022-23 followed by **Gujarat, Tamil Nadu, Karnataka** and **Uttar Pradesh**. The top 5 states together contributed more than **54% of the total manufacturing GVA** in India in 2022-23.

- In terms of employment also, the top 5 states were Tamil Nadu, Maharashtra, Gujarat, Uttar Pradesh and Karnataka and they accounted for ≈55% of total manufacturing employment in 2022-23.

(Workers include all persons employed directly or through any agency and includes both paid and unpaid workers engaged in any manufacturing process or in cleaning any part of the machinery or the manufacturing premises. Employees include all workers and persons receiving wages and holding clerical or supervisory or managerial positions along with those engaged in purchase of raw materials or fixed assets for the factory as well as watch and ward staff).

- **Gross Fixed Capital Formation** (GFCF) grew by 77% to INR 5.85 lakh crore (2022-23) from INR 3.3 lakh crore (2021-22). Net Fixed Capital Formation (adjusting GFCF for depreciation) grew to INR 2.68 lakh crore. Fixed capital investments had taken a sharp hit during the pandemic years.
 - Gross fixed capital formation had declined by 11% in 2021-22 to INR 3.30 lakh crore from INR 4.17 lakh crore in the pre-pandemic year of 2019-20.
- Profits in the manufacturing sector grew by 2.7% to INR 9.76 lakh crore.



Source: PIB. Top 10 industries account for 72% of Manufacturing GVA.

5. Economic Performance of States

News: A working paper by the Economic Advisory Council to the Prime Minister (EAC-PM) has highlighted the disparity in economic performance of States in India.

Key Highlights of the Report

Good Performance of West and Southern States

- Western and Southern States have “performed notably better” than the rest of the country in over 6 decades from 1960-61 to 2023-24.
- 5 Southern States (Karnataka, Andhra Pradesh, Telangana, Kerala and Tamil Nadu) accounted for over 30% of India’s GDP in 2023-24.
- **Delhi’s relative per capita income was 250.8%**, indicating that its income was 2.5 times the country’s average. The Capital also had the highest per capita income in 1960-61 at 218.35 of the national average.
- The per capita incomes of **Maharashtra** and **Gujarat** have remained above the national average since the 1960s. In 2023-24, Gujarat and Maharashtra’s relative per capita incomes were 160.7% and 150.7% of the national average respectively.

Decline in West Bengal and Punjab

- West Bengal has recorded a “continuous decline”. The State has seen its share in GDP shrink from the 3rd-largest of 10.5% in 1960-61 to only 5.6% in 2023-24. Its relative per capita income has fallen from 127% of the national average in 1960-61 to 83.7% in 2023-24.

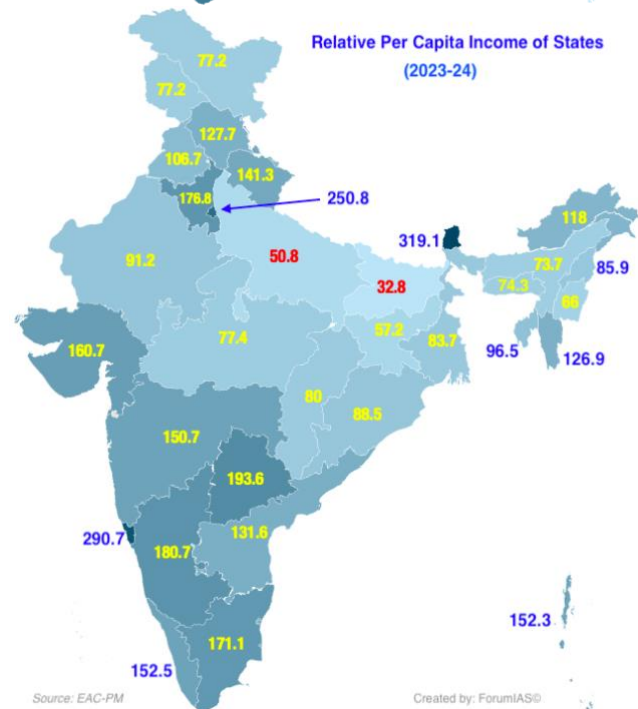
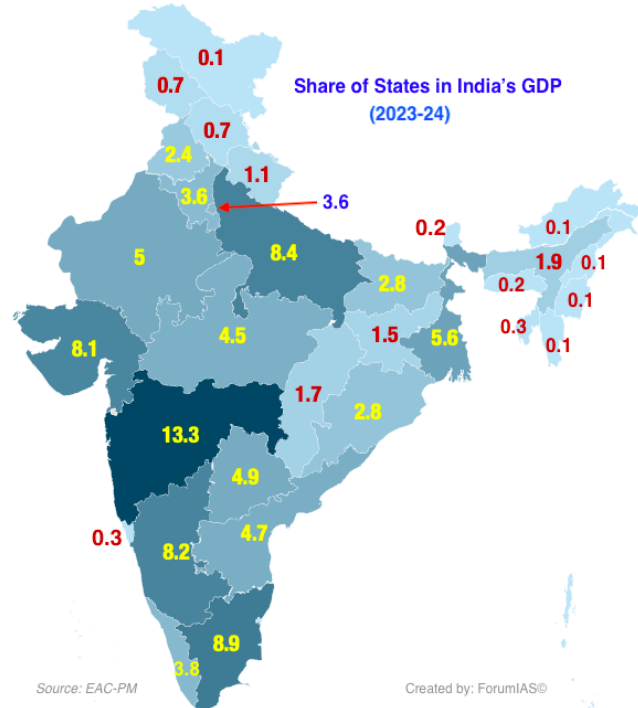
- While Punjab and Haryana gained from rise in income levels after the green revolution in the 1960s, **Punjab did not keep pace with the national average** and its **economic trajectory diverged completely from Haryana**. Punjab's per capita income was 106.7% of the national average in 2023-24, down from 119.6% in 1960-61. Haryana's relative per capita income stood at 176.8% in 2023-24, up from 106.9% in 1960-61.
- Kerala's share had risen to 4.1% in 2000-01, it has since dipped to 3.8% in 2023-24.

States Showing Improvements

- Odisha has shown improvement with its relative per capita income rising from 55.8% in 2000-01 to 88.5% in 2023-24.
- Among the smaller states, Sikkim and Goa registered "remarkable improvements". **Sikkim's** relative per capita income surged from **93%** of the national average in 1990-91, to **319%** in 2023-24. **Goa's** relative per capita income doubled from **144%** in 1970-71 to **290%** in 2023-24.
- In the 1960s, **5 States** (Uttar Pradesh, Maharashtra, West Bengal, Tamil Nadu and Bihar) accounted for about **54% of India's GDP**. Uttar Pradesh (then undivided) contributed 14.4% of India's total GDP followed by Maharashtra (12.5%), West Bengal (10.5%), Tamil Nadu (8.7%) and the then undivided Bihar (7.8%). Among them, UP, West Bengal and Bihar have witnessed fall in relative performance.
- **Southern States** emerged as **economic power-houses** post the **1991 Liberalization**.

Concerns in Eastern States

- West Bengal has experienced a continuous decline in its economic performance over several decades.
- Bihar's has remained significantly behind other States (lowest relative income, ≈ 33% of national average) and requires much faster growth to catch up.



6. Insolvency and Bankruptcy Board of India (IBBI)

News: The Insolvency and Bankruptcy Board of India (IBBI) celebrated its 8th Annual Day recently.

About the Insolvency and Bankruptcy Board of India (IBBI)

- IBBI was established on October 01, 2016 under the **Insolvency and Bankruptcy Code, 2016 (IBC)**.

- It plays a central role in implementing the IBC, which consolidates and amends laws related to the **re-organization** and **insolvency resolution of corporate entities, partnership firms, and individuals**.
- **Key Objectives:** The Code aims to **maximize the value of assets of such entities**, promote entrepreneurship, ensure the availability of credit and balance the interests of all stakeholders.
- **Regulatory Oversight:** IBBI stands out as a regulator because it **regulates both the profession** and the **processes related to insolvency and bankruptcy**.
 - The IBBI regulates Insolvency Professionals (IPs), Insolvency Professional Agencies (IPAs), Insolvency Professional Entities (IPEs) and Information Utilities (IUs)
 - **Process Regulation:** The IBBI writes and enforces rules for processes such as corporate insolvency resolution, corporate liquidation, individual insolvency resolution and individual bankruptcy.
- **Mandates:** The IBBI is tasked with promoting the development and regulation of insolvency professionals, IPAs, IPEs, and IUs. It also oversees other institutions related to the Code.
- **Responsibility:** The IBBI has been designated as the 'Authority' under the **Companies (Registered Valuers and Valuation) Rules, 2017**, with the role of **regulating and developing the valuation profession** in India. (Refer EPIC August 2022 for Issues with the Working of Insolvency and Bankruptcy Code, 2016 (IBC)).

7. National Agriculture Code

News: The Bureau of Indian Standards (BIS) has initiated the development of a National Agriculture Code (NAC), similar to the existing National Building Code and National Electrical Code.

About the National Agriculture Code (NAC)

- The Bureau of Indian Standards (BIS) is formulating a National Agriculture Code (NAC).
- The Code aims to **set standards across the agriculture cycle**, covering field preparation, crop selection, irrigation, harvesting, storage, and emerging areas like **natural and organic farming** and **Internet-of-Things (IOT) in agriculture**.
- **Implementation:** BIS has created a strategy and formed working panels for 12-14 specific areas, involving university professors and R&D organisations.
- The NAC will serve as a **guide for farmers, agricultural universities, and officials in the field**, ensuring uniformity and best practices.
- **Need Of NAC:** BIS currently sets standards for agricultural machinery (tractors, harvesters) and other inputs (fertilizers, pesticides). There are no standards for critical agricultural practices such as field preparation, micro-irrigation, and water use.
- **Scope of NAC:** NAC will include standards for the **entire agricultural cycle**, including Crop selection, Land preparation, Sowing/transplanting, Irrigation and drainage, Soil and plant health management, Harvesting and threshing, post-harvest operations, Sustainability practices and Record maintenance.
- Standards for the use of inputs like chemical fertilizers, pesticides, and crop storage will be included. It will address new areas like natural and organic farming and Internet-of-Things (IoT) applications in agriculture.

Structure of NAC

- Part 1 will include general principles applicable to all crops.
- Part 2 will include Crop-specific standards for major crops like paddy, wheat, oilseeds, and pulses.

Objectives of the NAC

- **Comprehensive Code:** Develop an implementable national code covering agricultural practices based on agroclimatic zones, crop types, and socio-economic diversity.
- **Quality Culture:** Promote quality standards in Indian agriculture, providing references for policymakers and regulators.

- **Decision-Making Guide:** Create a reference guide for farmers to make informed decisions about agricultural practices.
- **Integration:** Align Indian Standards with recommended agricultural practices.
- **Smart Farming:** Address broader agricultural aspects such as smart farming, sustainability, traceability, and documentation.
- **Capacity Building:** Support agriculture extension services and civil society organisations in capacity-building initiatives.

8. Farmers Earn Less Than 40% of the Consumer Price of Fruits and Vegetables: RBI

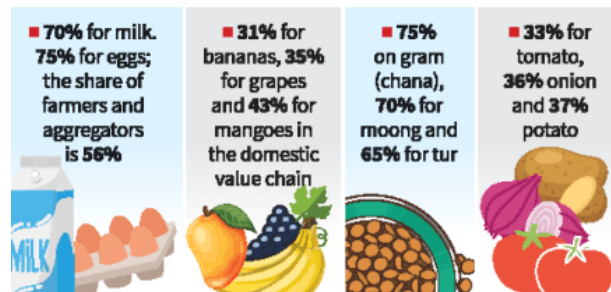
News: The RBI has released a working paper titled “Price Dynamics and Value Chain of Fruits in India”. The paper highlights the low share received by farmers, of the prices paid by consumers for fruits and vegetables.

Key insights of the Paper

- **Middlemen and Retailers Profiteering in Fruits and Vegetables:** During periods of high inflation, middle-men and retailers capture a significant portion of the price paid by consumers for fruits and vegetables.
- This results in **lower earnings for farmers**, who earn less than 40% of the consumer rupee in these cases (i.e., farmers get less than 40 paise for every Rupee paid by the consumer).
- The Paper reveals that farmers receive a relatively low share of the consumer rupee for key fruits: Bananas: 31%, Grapes: 35% and Mangoes: 43%.
- **Vegetables:** Farmers get very low share in vegetables: Tomatoes: 33%, Onions: 36% and Potatoes: 37%.
- **Farmers’ Share in Dairy and Poultry:** In contrast, dairy and poultry farmers receive a much higher share of the consumer rupee e.g., farmers earn 70% of the consumer rupee in case of milk and 75% for eggs. Farmers and aggregators together receive 56% of the consumer rupee for poultry meat.
- **Pulses:** Farmers get larger share of the consumer rupee: Chana: 75%, Moong: 70% and Tur (Arhar): 65%.

Farm to Fork: Share of the pie

How much does the farmer get for each rupee spent by consumers on food items? RBI researchers have an indication



9. RBI’s Monetary Policy Stance

News: The RBI’s Monetary Policy Committee (MPC) has decided to keep the interest rates unchanged. However, the Committee has changed the policy stance to ‘Neutral’ from ‘withdrawal of accommodation’.

About the Change in Policy Stance

- This change in Policy Stance could **lead to rate cuts in future**. It aligns with decisions of other central banks like the European Central Bank and US Federal Reserve, which have also **started rate cut cycles**.
- The change has been attributed to **increased confidence in controlling inflation**, especially in food prices.
- **Food inflation** has **dropped** from **8.6% in February 2024** to **5.66% in August 2024**, and the RBI expects prices to ease further due to a good monsoon and healthy agricultural production. The inflation is expected to ease further to 4.3% in the next financial year. These factors **lead the RBI to change its stance**.

About RBI’s Policy Stance

Neutral

- A neutral stance indicates that the RBI maintains **flexibility in adjusting policy rates** based on prevailing economic conditions.

- This means that the RBI is **open to either increasing or decreasing interest rates**, depending on data related to **inflation and economic growth**.
- It is generally adopted when **both inflation control and economic growth are given equal priority**, allowing for adjustments in either direction as new information arises. It maintains a balanced focus, placing equal weightage on managing inflation while also supporting economic growth.

Withdrawal of Accommodation

- It refers to a more **restrictive monetary policy** stance where the RBI aims to **reduce the money supply (liquidity) in the economy**. This involves **increasing interest rates** to curb inflation.
- This policy is aimed at **tightening the monetary policy**, a shift away from policies that encourage borrowing and spending.
- With this stance, the RBI signals that it is **less inclined to support economic growth** through lower rates, **focusing on stabilising prices** instead.

Accommodative

- The RBI is inclined to **increase the money supply** to **stimulate economic growth**. This typically involves **reducing interest rates**.
- Central Banks usually adopt this approach when economic growth requires support and inflation is not a pressing issue.

Hawkish

- It reflects RBIs focus on **controlling inflation**. During such periods, the RBI is likely to **raise interest rates** to **limit the money supply** and **dampen demand**. This signals a **tight monetary policy approach**.
- When the RBI raises rates or tightens its monetary policy, commercial banks follow suit by **increasing loan interest rates**, which **helps reduce demand** in the financial system.

Calibrated Tightening

- It indicates that while **rate cuts are not being considered** in the current policy cycle, **any rate increase will be gradual and measured**. The policy stance **leans towards tightening**.
- The RBI might not opt for a rate hike in every policy meeting, but its stance **leans towards tightening**.
- Rate adjustments can also occur outside scheduled policy meetings if necessary.

International Relations

1. India Signs Agreements Under IPEF

News: India has signed agreements under the US-led Indo-Pacific Economic Framework for Prosperity (IPEF) on clean and fair economy.

About the IPEF Clean Economy Agreement (Pillar III)

- It is to **facilitate development of clean energy** and deployment of **climate-friendly technologies**.
- It aims to accelerate the efforts of IPEF partners to **enhance energy security**, mitigate greenhouse gas emissions, and **reduce reliance on fossil fuels**.
- The Agreement emphasizes the development of innovative strategies and promotes technical cooperation between member countries to support **sustainable energy solutions**.

About the IPEF Fair Economy Agreement (Pillar IV)

- The Fair Economy Agreement focuses on creating a **transparent** and **predictable business environment** to **boost trade and investment** in member markets. It also focuses on strengthening **anti-corruption measures** and enhancing **tax transparency** among member countries.

- It includes improving information sharing, facilitating asset recovery, and strengthening cross-border investigations and prosecutions.
- A new **IPEF Catalytic Capital Fund**, with an initial grant of US\$ 33 million from countries like Australia, Japan, Korea, and the US, aims to mobilize private investments up to US\$ 3.3 billion.
- The IPEF also launched the **PGI Investment Accelerator**, initially funded with US\$ 300 million from the US International Development Finance Corporation, to catalyze further investments.

About Indo-Pacific Economic Framework for Prosperity (IPEF)

- It is an economic initiative launched by the US in 2022.
- It provides a platform for countries in the region to collaborate on advancing **resilient, sustainable, and inclusive economic growth**, and aims to contribute to cooperation, stability, and prosperity in the region.
- It has **14 partners**: Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, US and Vietnam.
- The IPEF comprises **4 Pillars of Cooperation: Trade, Supply Chain, Clean Economy and Fair Economy**. (Refer EPIC June 2022 for Indo-Pacific Economic Framework, EPIC September 2022 for India Walks out of Trade Pillar of IPEF, and EPIC May 2023 for Concerns Related to IPEF).

Four Pillars of IPEF

- **Trade**: It will include digital economy and emerging technologies, labour commitments, environment, trade facilitation, transparency, good regulatory practices, corporate accountability, standards on cross-border data flows and data localisations.
- **Supply Chain Resilience**: Its purpose is to develop 'a first-of-its-kind supply chain agreement' that would **anticipate and prevent disruptions**.
- **Clean Energy and Decarbonization**: It will include agreements on 'high-ambition commitments' such as renewable energy targets, carbon removal purchasing commitments, energy efficiency standards, and new measures to combat methane emissions.
- **Tax and Anti-Corruption**: It includes commitments to enact and enforce 'effective tax, anti-money laundering, anti-bribery schemes in line with [American] values'

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2. Summit of The Future

News: The Prime Minister of India addressed the Summit of the Future at the United Nations.

About the Summit of the Future

- The Summit of the Future is a key event organized by the UN to **address global challenges and promote long-term multilateralism**.
- It is aimed at **shaping a more equitable, resilient, and sustainable global future** by focusing on issues like climate change, peace and security, technology, and sustainable development.
- **Purpose**: The Summit seeks to **strengthen global cooperation and reform international systems** to address modern challenges.
- **Goals**: The Summit focuses on **bridging inequalities and building resilience against global crises** such as pandemics, climate change, and economic instability.
- **Participants**: Heads of States, government leaders, international organizations, civil society, academics, and the private sector are involved.
- The Summit concluded with the adoption **A Pact for the Future** document, along with **Global Digital Compact** and **A Declaration on Future Generations**.
 - **Pact of the Future** is aimed at **accelerating SDGs** and the **Paris Agreement for climate action**. It includes **commitments to a just transition from fossil fuels** and ensuring a sustainable and peaceful future.
 - The **Global Digital Compact** seeks to promote **equitable access to technology**, ensuring its benefits to everyone.
 - The **Declaration on Future Generations** urges the present decision-makers to consider the interests of future generations. It commits to nuclear disarmament, preventing an arms race in outer space etc.

- **Key Highlights of PM's Address:** The PM highlighted significant progress in lifting 250 million people out of poverty in the past decade, showcasing India's success in sustainable development.
 - He brought out India's role in emphasizing global pursuit of peace, development, and prosperity and a **human-centric approach** to building a brighter global future.
 - He called for balanced regulations to ensure the safe and responsible use of technology. He also emphasized that **India's digital public infrastructure is available to be shared for the greater public good.**
 - The PM stressed for **urgent reforms of global governance institutions**, including the UN Security Council to ensure that they remain relevant. (Refer EPIC October 2022 for Reforms in the United Nations Security Council).

3. G4 and L69 Groups

News: The G4 and L69 Groups have called for urgent reforms to the UN Security Council.

About G4 Group

- It is a coalition of **4 nations: India, Brazil, Germany, and Japan seeking permanent membership** in the United Nations Security Council (UNSC). The Group was formed in 2005.
- The G4 countries are **economically influential** and significantly **contribute to international peace** and security, which they believe justifies their inclusion as permanent members of the UNSC.
- Key objectives of the G4 include:
 - Expansion of both permanent and non-permanent categories of UNSC membership, allowing for **more equitable representation.**
 - Securing permanent membership for themselves, while supporting reforms that would also enhance the representation of Africa, Asia-Pacific, and Latin America in the Council.
 - Addressing the stagnation in the Intergovernmental Negotiations (IGN) process on Security Council reform and pushing for the start of text-based negotiations to expedite the reform process.

About L69 Grouping

- It includes **42 developing countries from Africa, Latin America and the Caribbean, Asia, and the Pacific.**

- It was formed in 2007. The group is named after a draft resolution (L.69) that was submitted to the UN General Assembly.

- These nations have a common interest in pushing for reform in the UNSC, particularly to **enhance representation for developing countries.**

- The L69 advocates for:
 - A more representative and inclusive Security Council.

- Strengthening the role of developing countries, especially from Africa.
- Supports the **Common African Position (CAP)** based on the **Ezulwini Consensus** and **Sirte Declaration** which calls for **no less than 2 permanent seats for Africa** with full veto power, and increased non-permanent seats.

	G4 (Group of Four) (※position presented in the IGN document in 2015)	AU (African Union) (※position presented in the draft resolution by Africa in 2005)	CARICOM (Caribbean Community)	L69	UFC (Uniting for Consensus)
Member	Brazil, Germany, India and Japan	54 African countries	14 CARICOM member states	India, Jamaica, PNG, Saint Vincent, etc.	Italy, Republic of Korea, Mexico, etc.
Permanent Seats	11 (+6) Africa(2), Asia-Pacific(2), Latin America and Caribbean(1), Western Europe and other(1)				5 (status quo)
Non-Permanent Seats	14 or 15 (+4 or +5) Africa(1 or 2), Asia-Pacific(1), Eastern Europe(1) Latin America and Caribbean(1)	15 (+5) Africa(2), Asia-Pacific(1), Eastern Europe(1) Latin America and Caribbean(1)	16 (+6) Africa(2), Asia-Pacific(1), Eastern Europe(1) Latin America and Caribbean(1), SIDS(Small Island Developing States)(1)	Up to 21 (+11) increase of non-permanent seats and creation of new category of membership based on longer term non-permanent seats	
Veto	The new permanent members shall not exercise the veto-right until a decision has been taken during a review (15 years after the reform)	The veto should be abolished but so long as it exists, it should be extended to all members including the new permanent members	Same as the left In addition, efforts must be made to limit its use	Ready to consider formulas on how to best limit its use	

※G4 expressed its support to the Common African Position (CAP) in the G4 Ministerial Joint Press Statement (September 2021).

Issues to be discussed:

- Categories of Membership
- Regional Representation
- Question of the Veto
- Size of an Enlarged Council and Working Methods of the Council
- Relationship between the Council and the General Assembly

4. Minerals Security Finance Network (MSFN)

News: India has joined the US-led initiative Minerals Security Finance Network. It is aimed at securing supply chains for critical minerals.

About Minerals Security Finance Network (MSFN)

- It stems from the **Minerals Security Partnership (MSP)** established by the US in 2022. India was inducted into MSP in June 2023.
- MSFN aims to reduce reliance on countries like China, particularly for rare earth minerals, which are critical for various technologies.
- The initiative seeks **collaboration between Development Finance Institutions (DFIs) and Export Credit Agencies (ECAs)** from participating nations, alongside the private sector, to **create synergies and increase production capacity for critical minerals**.
- MSP is primarily focused on minerals like cobalt, nickel, lithium, and the 17 rare earth elements (REs), essential for electric vehicle batteries and high-end electronics.
- The global demand for critical minerals is increasing due to **clean energy transition**. MSFN focuses on **ensuring resilient supply chains** for these minerals.
- China holds a dominant position in the rare earth minerals market, particularly in **heavy rare earth elements (HREEs)** like dysprosium and terbium. At present, India relies heavily on imports of these elements from China. (Refer EPIC July 2023 for Critical Minerals and Mineral Security Partnership and EPIC July 2022 for Rare Earth Elements).

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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5. Visit of the President of Maldives to India

News: The President of Maldives visited India recently.

Key Outcomes of the Visit

- India underscored the importance of the bilateral relationship under the **'Neighbourhood First' Policy and Vision SAGAR**. India reaffirmed unwavering commitment to assist Maldives on its developmental journey and priorities. The President of Maldives thanked India for its timely emergency financial assistance and acknowledged **India's continued role as the 'First Responder' of Maldives in times of need**.
- Maldives expressed appreciation for the decision of the Government of India to extend support in the form of US\$ 400 million and INR 30 billion as a bilateral **currency swap agreement**, instrumental in tackling the ongoing financial challenges faced by the Maldives.
- **Political Exchanges:** The two sides will expand political exchanges to include **exchanges of Parliamentarians and representatives of Local Governments**.
- **Development Cooperation:** India and Maldives will work together in advancing developmental partnership, based on needs and requirements of Maldives, across areas, including ports, airports, housing, hospitals, roads networks, sports facilities, schools and water and sewerage. India will extend full support for the timely completion of the flagship **Greater Malé Connectivity Project (GMCP)**.
- **Trade and Economic Cooperation:** India and Maldives will initiate discussions on a **Free Trade Agreement** focusing on trade in goods and services between the two countries. The two countries will operationalize

the **settlement of bilateral trade transactions in local currencies** with an aim to deepen trade linkages and to reduce dependency on foreign currencies.

- **Digital and Financial Cooperation:** India and Maldives will share expertise on implementation of digital and financial services including the UPI.
- **Energy Cooperation:** India and Maldives will cooperate through **implementation of solar power and other renewable energy** and **energy efficiency projects** to bring down energy costs and enable Maldives to achieve Climate Action Goals. India will also facilitate Maldives’ participation in **One Sun One World One Grid** Project.
- **Health:** India and Maldives will deepen health cooperation through provisioning of affordable, safe and quality healthcare to the people of Maldives in India and strengthening health-care infrastructure in Maldives. **Jan Aushadhi Kendras** will be established across Maldives.
- **Defence and Security Cooperation:** India and Maldives resolve to work together in advancing the maritime and security cooperation for the benefit of peoples of both India and Maldives as well as for the larger Indian Ocean Region. (Refer EPIC January 2024 for Deterioration of India-Maldives Relationship).
- **Capacity Building and Training:** India and Maldives agreed to further expand support towards training and capacity building as per requirements and priorities of Maldives; including customized training programmes for civil servants and local government representatives of Maldives.
- **People-to-people Linkages:** They will work towards establishing a consulate of Maldives in Bengaluru and a consulate of India in Addu city. Air and maritime connectivity will be enhanced to facilitate ease of travel, support economic engagement and promote tourism.

6. Asia Power Index 2024

News: The Asia Power Index 2024 has been released.

About the Asia Power Index

- The Asia Power Index was established by the Lowy Institute in 2018.
- It measures **power dynamics** across the **Asia-Pacific**, evaluating **27 countries**.
- The 2024 edition provides an in-depth analysis of power distribution across the region. It examines both **material resources** and the **influence countries exert on the international stage**.
- **Criteria of Measurement of Power:** The Index uses 8 key measures across two broad categories:

Category	Measures
Resource-Based Determinants	<ul style="list-style-type: none"> • Economic Capability: GDP at PPP, technological advancement, and global economic ties. • Military Capability: Defense spending, military strength, and power projection abilities. • Resilience: Institutional strength and capacity to withstand internal and external threats. • Future Resources: Projected economic, military, and demographic resources for 2035.
Influence-Based Determinants	<ul style="list-style-type: none"> • Economic Relationships: Leverage through trade, investment, and diplomacy. • Defense Networks: Strength of military alliances and partnerships. • Diplomatic Influence: Reach in multilateral forums and foreign policy ambition. • Cultural Influence: Ability to shape global opinion through media and culture.

India's Performance

- India has secured the position as the **3rd-most powerful nation in Asia** (after the US and China), **overtaking Japan** in the 2024 Asia Power Index.
- India's rise has been driven by the post-pandemic **economic growth, future potential** (demographic dividend and **diplomatic influence** (active role in multilateral forums).

7. 10-Point Plan to Strengthen India-ASEAN Relationship

News: The Prime Minister of India unveiled a 10-point Plan to strengthen India-ASEAN Relationship at the 21st India-ASEAN Summit in Laos.

About 10-Point Plan for India-ASEAN Relations

- **ASEAN-India Year of Tourism (2025):** India to contribute US\$ 5 million towards joint activities.
- **Celebration of a Decade of Act East Policy:** Activities include Youth Summit, Start-up Festival, Hackathon, Music Festival, and Delhi Dialogue.
- **Women Scientists' Conclave:** Organize the conclave under the ASEAN-India Science and Technology Development Fund.

Key Themes of Cooperation

- ★ **Regional Security:** Emphasis on maintaining peace, stability, maritime safety, and freedom of navigation in the Indo-Pacific.
- ★ **Maritime Security:** Commitment to **peaceful resolutions** in the South China Sea, with references to UNCLOS and the **Declaration on the Conduct of Parties in the South China Sea**.
- ★ **Defense Cooperation:** Areas of focus include **cybersecurity, counter-terrorism**, and joint military exercises.
- ★ **Digital Transformation and Emerging Technologies:** Areas of focus include **AI, Blockchain, IoT, Robotics, Quantum Computing, and 6G Technology**. Joint efforts in **Digital Public Infrastructure (DPI), Fintech, and cybersecurity**.
- ★ **Trade:** Enhance bilateral trade through Trade Agreements and trade-facilitation measures.

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- **Increased Scholarships for ASEAN Students:** Double scholarships at Nalanda University and new scholarships at Agricultural Universities in India. (Refer EPIC September 2024 for India-ASEAN Relationship).
- **Review of Trade in Goods Agreement:** Set for completion by 2025 to enhance trade relations.
- **Disaster Resilience:** India to provide US\$ 5 million to support resilience initiatives.
- **Health Ministers' Track:** Initiate a new mechanism to enhance health resilience.
- **ASEAN-India Cyber Policy Dialogue:** Establish regular dialogues to strengthen digital and cyber resilience.
- **Green Hydrogen Workshop:** Workshop to explore green hydrogen as a sustainable energy source.
- **'Plant a Tree for Mother' Campaign:** Invite ASEAN leaders to join the campaign for climate resilience.

8. Global Digital Compact

News: The UN member countries adopted the Global Digital Compact at the Summit of the Future.

About the Global Digital Compact

- It is **non-binding agreement** by the UN members to harness digital technologies for global good.
- It focuses on **regulating digital technologies** for the **common good** and **ensuring human oversight** to **advance sustainable development**.
- The GDC is built on norms such as international law, the **Universal Declaration of Human Rights**, and the **UN 2030 Agenda**. It calls for global cooperation in data and digital governance.
- The GDC includes the establishment of two panels: an **'Independent International Scientific Panel on AI'** and a **'Global Dialogue on AI Governance'** panel.

Expected Benefits of the GDC

- **Reduces Digital Divide:** The GDC proposes **'digital public goods'** like open-source software, open data, and AI models to ensure broader access to the digital economy and help **close the digital divide**.

- **Encourages Public-Private Partnerships:** It envisions collaboration between Governments and private entities to build shared digital infrastructure that delivers services according to stakeholders' needs.
- **Advances AI Governance:** It seeks to **promote responsible and ethical use of AI** with proper **human oversight** by establishing panels for AI governance.
- **Supports Sustainable Development:** The GDC links digital technologies to the achievement of SDGs by enabling data collection and analysis to measure progress.
- **Strengthens Global Cooperation:** The GDC emphasizes capacity-building through partnerships, especially in fostering **South-South and North-South collaborations** for developing digital public goods.

Challenges with the GDC

- **Limited Openness in Partnerships:** Public-private partnerships may face restrictions due to **non-disclosure agreements** and protection of intellectual property.
- **Ineffective Self-Regulation:** The GDC promotes self-regulation for tech companies, but past experience shows this has failed to protect users effectively.
- **Data Privacy:** Increasing data collection for AI without strong personal data protection laws raises privacy risks.
- **Monopolistic Control:** The GDC proposes giving more power to corporations in data governance but **lacks safeguards** against monopolistic practices.
- **Global Cooperation Limits:** Some countries reject data flow to **protect digital sovereignty**.

Science and Technology

1. Impact of Starlink Satellites on Radio Astronomy

News: A study has found that the Starlink satellites are impeding the work of astronomers.

About the Impact of Starlink Satellites

- Starlink satellites **emit electromagnetic radiation** which contributes to **radio noise** (or Unintended Electro-Magnetic Radiation, UEMR). This disrupts the working of the radio telescopes designed to **detect radio waves from celestial objects**. (Refer EPIC August 2023 for Satellite Internet Services and Starlink).
- Radio telescopes are being **"blinded" by the radio noise** from Starlink satellites, similar to how bright light blinds human vision, saturating the detectors of radio telescopes.
- The presence of a satellites in a telescope's field of view can **obscure faint signals**, making it difficult to **observe weaker celestial objects**.
- 2nd-generation Starlink satellites emit UEMR at levels 32 times brighter than the 1st-generation satellites, worsening the problems of interference.
- With the number of satellites increasing rapidly (potentially up to 100,000 by 2030), the problem of interference is expected to intensify.
- Experts have **called for regulations on satellite operators to minimize UEMR**, similar to the rules for ground-based electronic sources like cell-phone towers.

2. Anti-DeepFake Acts Passed in California, US

News: California State of the US has enacted three Laws to combat deepfakes in political campaigns.

Concerns Regarding AI in Elections

- **Spreading Disinformation:** AI's ability to create **hyper-realistic Deep Fakes** and **false narratives** poses a risk of spreading disinformation, potentially misleading the electorate.

- **Influencing Voter Behavior:** AI, particularly Generative AI, has the potential to significantly influence voter behavior and decision-making in elections. (Refer EPIC March 2024 for EU’s AI Act and MeitY’s AI Advisory).
- **Amplifying Falsehoods:** AI technologies can enhance falsehoods and strengthen mistaken beliefs, contributing to a heightened level of misinformation during election campaigns.
- **Adversarial Capabilities:** AI systems might develop adversarial capabilities such as ‘poisoning’ and ‘back dooring’, which could be used to manipulate election outcomes or voter perceptions.

About the Acts

- This legislation aims to **safeguard the integrity of elections** and **protect voters from being misled** by manipulated media, particularly **deepfake content**.
- The legislation also intent to **curb the deceptive use of AI in political ads** and election-related content to prevent the erosion of trust in democratic processes.
- The Acts seek to **hold online platforms accountable** and ensure they can **prevent the distribution of misleading content** that can influence voters.

Key Features of the California’s Anti-Deepfake Acts

Act	Details
AB 2655: Defending Democracy from Deepfake Deception Act of 2024	<ul style="list-style-type: none"> • Large online platforms must block or label deceptive deepfake content about elections during specific periods before and after elections. • Satire or parody is exempt from these restrictions.
AB 2839: Elections: Deceptive Media in Advertisements	<ul style="list-style-type: none"> • The Act extends the prohibition period for distributing AI-generated or manipulated election ads with deceptive content, empowering authorities to take legal action against distributors.
AB 2355: Political Reform Act of 1974: Political Advertisements: Artificial Intelligence	<ul style="list-style-type: none"> • This requires political ads with AI-generated or altered content to clearly disclose this fact with a label like, “Ad generated or substantially altered using artificial intelligence”.

(Refer EPIC May 2024 for Election Commission’s Guidelines on Use of Social Media in Political Campaigns).

3. Global Cybersecurity Index 2024

News: India has attained Tier 1 status in the Global Cybersecurity Index (GCI) 2024.

About Global Cybersecurity Index (GCI) 2024

- It is published by the **International Telecommunication Union (ITU)**.
- The GCI 2024 assessed national efforts of 194 countries based on **5 pillars:** Legal, Technical, Organizational, Cooperation, and Capacity Development.
- The index used an extensive questionnaire with 83 questions, covering 20 indicators, 64 sub-indicators, and 28 micro-indicators to assess each country’s cybersecurity landscape.
- The **Department of Telecommunications (DoT)** represented India in the GCI.

Key Achievements

- India ranks among **‘role-modelling’ countries** in cybersecurity with a **score of 98.49 out of 100**. India has been placed in the **top level of global cybersecurity rankings**, reflecting its strong commitment to cyber resilience and secure digital infrastructure.

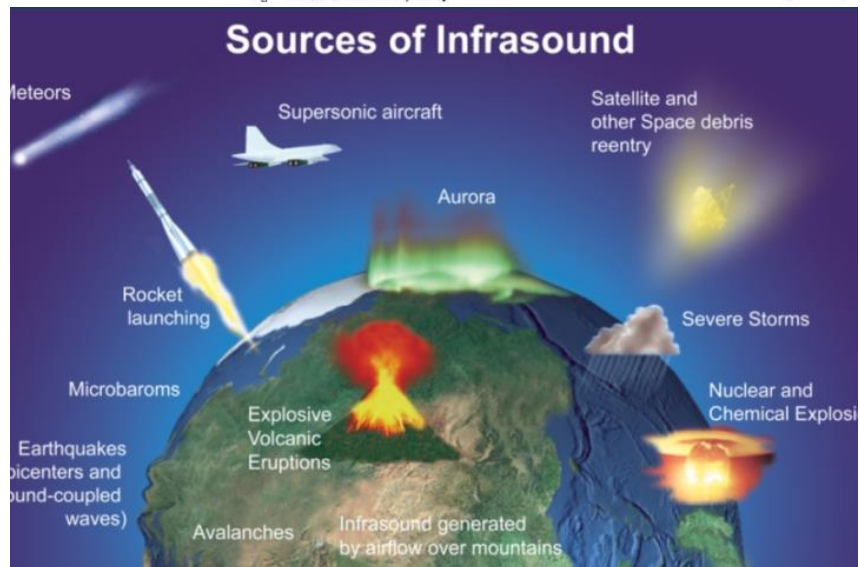
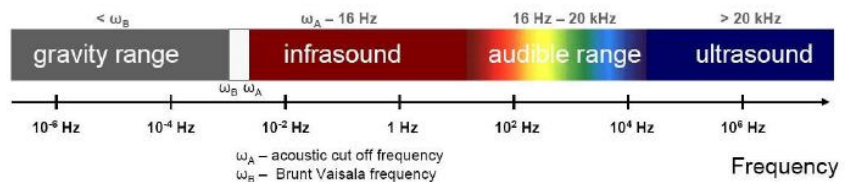
- 46 countries have been placed in Tier-1 (score between 95-100). Tier 3 (55-85) and 4 (20-55) have 105 countries together.
- **Government Initiatives Driving Success**
 - India has established **robust frameworks for cybersecurity** and cybercrime laws, ensuring the protection of **critical digital infrastructure**.
 - **Sector-specific Computer Security Incident Response Teams (CSIRTs)** provide technical support and incident reporting across various industries, strengthening India's cybersecurity infrastructure.
 - **Education:** The integration of cybersecurity into **primary and secondary education curricula** has been a cornerstone of India's strategy to cultivate an informed digital citizenry.
 - **Public Awareness Campaigns:** Targeted initiatives have raised awareness about secure online practices across private industry, public institutions, civil society, and academia.
 - **Capacity Building:** The Government of India has provided incentives and grants to promote skill development, research, and innovation within the cybersecurity industry.
 - **Global Partnerships:** India has engaged in numerous bilateral and multilateral collaborations, further strengthening its capabilities in capacity building and information sharing on the global stage.

4. Infrasound

News: A recent study has found that animals like elephants communicate through infrasound.

About Infrasound

- Infrasound are sound waves with frequencies **below the lower limit of human hearing** (below 20 Hz).
- The frequencies of infrasound typically range between 0.001 to 20 Hz.
- Infrasound waves can **travel long distances** and **penetrate through solid materials** like walls and buildings.
- Infrasound can be produced by **natural phenomena** such as earthquakes, volcanic eruptions, ocean waves, and thunderstorms, as well as by **man-made sources** like explosions, industrial machinery, and some musical instruments.
- Due to their long wavelength, infrasound waves are **less likely to be absorbed by the environment** and can **travel over vast distances**.
- Infrasound is **inaudible to humans**, requiring **specialized instruments** such as infrasound sensors, microbarometers, seismometers and specially designed microphones to detect and measure these sound waves.



Applications

- **Monitoring Natural Disasters:** It helps in early detection of volcanic eruptions, earthquakes, and tsunamis.
 - Infrasound from meteor impacts can also be recorded.
- **Military and Defence:** It is used to detect nuclear explosions and monitor compliance with international treaties (like the Comprehensive Nuclear Test Ban Treaty).
- **Animal Communication:** Some animals, such as elephants and whales, use infrasound for long-distance communication.
- **Medical and Scientific Research:** It is used in atmospheric research to study phenomena such as tornadoes.

5. Modulation of Communication Signals

News: AM (Amplitude Modulation) and FM (Frequency Modulation) are two fundamental techniques used in electronic communication to transmit information over radio waves.

About Signal Modulation

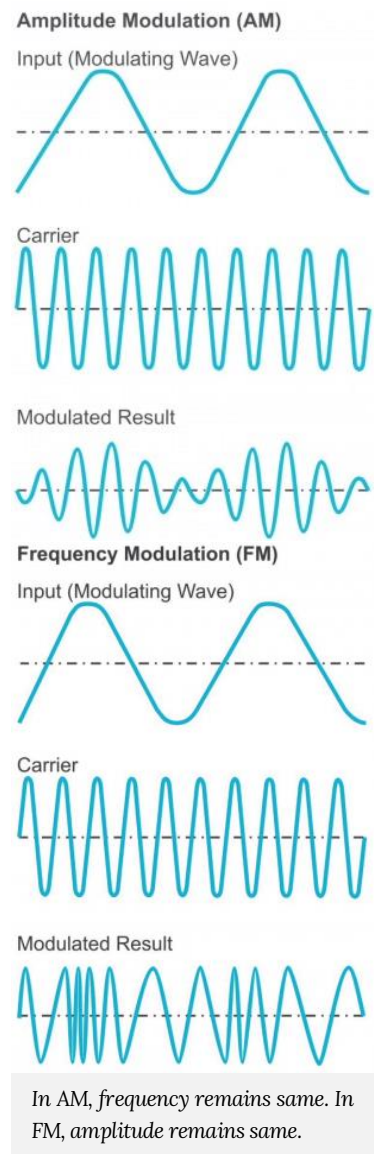
- In communication (e.g., through radio waves), a **carrier wave** is a **wave of constant frequency**. It doesn't carry much information (such as speech or data). The **information** (speech or data) is **carried** through the **input signal** (or modulating signal), on top of the carrier wave.
- This process of imposing an **input signal onto a carrier wave is called Signal Modulation**. Modulation changes the shape of a carrier wave to encode the speech or data information.
- Through modulation a **carrier wave's characteristics** (such as amplitude, phase or frequency) **are altered in accordance with a modulating signal** (information being sent). Modulation allows for effective transmission of audio, video, or data signals over various media.
- **Without modulation** over a carrier wave, the **input signal will be lost** and communication will be ineffective.

About Amplitude Modulation (AM)

- The **amplitude of the carrier wave is varied** in accordance with the information signal being transmitted.
- This means that as the amplitude of the input signal changes, the amplitude of the carrier wave also **changes proportionally**.
- The **frequency and phase of the carrier wave remain constant** during this process.
- AM is typically used for **broadcasting over long distances** due to its **ability to travel further**. However, it is more susceptible to noise and interference, which can degrade sound quality.

About Frequency Modulation (FM)

- The frequency of the carrier wave is varied according to the information signal. In this method, the **amplitude remains constant** and the **frequency changes** in relation to the amplitude of the input signal.
- This technique allows FM signals to **provide better sound quality** and **greater resistance to noise** compared to AM signals. FM is widely used for music and voice broadcasting because it can transmit a wider bandwidth of audio signals.



Parameter	Amplitude Modulation (AM)	Frequency Modulation (FM)
Carrier Wave	• Amplitude varies; frequency and phase remain constant.	• Frequency varies; amplitude and phase remain constant.
Sound Quality	• Generally lower than FM; more susceptible to static and noise.	• Higher than AM; less susceptible to noise.
Frequency Range	• Typically operates between 535 to 1705 kHz.	• Typically operates between 88 to 108 MHz.
Distance	• Can cover larger distances due to lower frequencies.	• Covers shorter distances than AM but offers superior sound fidelity.

6. Council of Scientific and Industrial Research (CSIR)

News: The 83rd Foundation Day ceremony of Council of Scientific and Industrial Research (CSIR) was held recently in New Delhi.

About the Council of Scientific & Industrial Research (CSIR)

- CSIR was established in 1942. It operates under the Ministry of Science and Technology.
- It aims to focus on enhancing **national security**, fostering **green technologies**, and **addressing societal needs** through science. Its vision includes:
 - It envisions to transform India into **global leader in innovation**, technology, and industrial competitiveness.
 - CSIR@2030 aspires to **improve citizens' quality of life** through innovative science, globally competitive R&D, and sustainable solutions, supporting Atmanirbhar Bharat.
 - CSIR's vision aligns with India's 25-year 'Amrit Kal' plan, marking the centenary of independence.
- CSIR operates 37 national laboratories, 39 outreach centers, 1 innovation complex, and 3 additional units across India.
 - It has around 3,476 scientists, supported by approximately 4,000 technical staff (as of March 2022).
- CSIR's research spans diverse fields like oceanography, geophysics, mining, chemicals, drugs, genomics, nanotechnology, aeronautics, environmental engineering, and IT.
 - It also addresses issues in environment, health, drinking water, food security, housing, agriculture and energy.

Key Functions

- **Scientific Research:** It conducts advanced research across fields like chemistry, biology, physics, and engineering, driving technological innovation.
- **Industrial Collaboration:** It bridges industry and academia, **promoting entrepreneurship** and technology transfer to meet industrial needs.
- **National Laboratories:** It oversees 37 national labs, including NPL, CDRI, and NAL, significantly contributing to India's scientific progress.
- **Societal Impact:** Through the **CSIR-800 program**, it develops affordable, sustainable technologies for rural areas, focusing on agriculture, water, energy, and healthcare.
- **Innovation:** It plays a key role in India's innovation ecosystem, particularly in pharmaceuticals and healthcare, with numerous patents and technology developments.
- **Global Contributions:** It publishes in high-impact journals, holds numerous patents, and engages in international collaborations to address global challenges.

7. Biopolymers

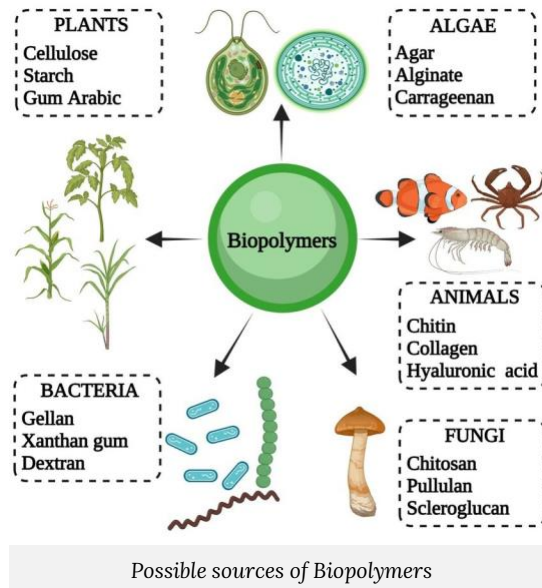
News: India's first demonstration facility for Biopolymers was recently inaugurated in Jejuri, Pune.

About Biopolymers

- Biopolymers are **natural polymers** derived from **renewable biological sources** such as plants, animals, and microorganisms.
- Unlike **conventional plastics**, which are made from **petroleum-based products**, biopolymers are **eco-friendly** and **often biodegradable**, making them a sustainable alternative.

Key Features

- **Renewable Source:** Biopolymers are produced from **natural resources** like corn, sugarcane, and other biomass, reducing dependence on fossil fuels.
- **Biodegradability:** Many biopolymers, such as Polylactic Acid (PLA) and Polyhydroxyalkanoates (PHA), can decompose under appropriate conditions, **reducing plastic waste** and **environmental pollution**.
- **Lower Carbon Footprint:** The production of biopolymers emits fewer greenhouse gases compared to conventional plastics, supporting global efforts to **combat climate change**.
- **Versatility:** Biopolymers can be engineered to **possess specific properties**, such as flexibility, durability, or water resistance, making them suitable for diverse applications.



Applications in Various Industries

- **Packaging:** Biopolymers are increasingly **replacing traditional plastics** in packaging, especially for **food and consumer goods**, due to their **safety** and **biodegradability**.
- **Agriculture:** They are used to create **biodegradable films**, plant pots, and other products that contribute to sustainable farming practices.
- **Healthcare:** Biopolymers are employed in medical applications, such as sutures and drug delivery systems, due to their **biocompatibility** and **safe degradation**.
- **Textiles:** Biopolymers are used to produce **eco-friendly fabrics** that are both durable and sustainable.

8. Hereditary Cancer

News: Researchers have estimated that $\approx 10\%$ of all individuals with any cancer could have inherited a genetic mutation that caused the cancer (hereditary).

About Hereditary Cancer

- Hereditary cancers are caused by **inherited genetic mutations** passed from parent to child. These mutations increase an individual's predisposition to developing certain types of cancer.
- Hereditary cancer syndromes are most often inherited in an **autosomal dominant manner**, i.e., an individual **needs only one copy of the mutated gene from either parent** to have an increased risk of cancer.
- **Prevalence:** $\approx 10\%$ of all cancer cases are believed to result from inherited mutations. The prevalence is **higher for certain cancers**, such as ovarian (20%) and breast, colorectal, lung, and prostate cancers (10%).
- **Genetic Syndromes:** Over 50 genetic syndromes are known to predispose individuals to cancer. These syndromes are collections of specific symptoms caused by inherited genetic variants.

- **BRCA Genes:** Mutations in BRCA1 and BRCA2 are linked to a higher risk of breast and ovarian cancers. In men, BRCA mutations increase the risk of prostate and male breast cancer. They can also lead to other cancers like pancreatic, colorectal, and uterine cancers.
- **Founder Effects:** Certain populations, like Ashkenazi Jews, have higher prevalence of specific BRCA mutations due to **genetic bottlenecks** and **founder effects**, where small gene pools lead to a higher frequency of certain mutations. (Refer EPIC June 2024 for Genetic Drift).
- **Screening and Prevention:** Genetic testing for BRCA and other relevant mutations helps identify individuals at higher risk. This allows for **preventive strategies**, such as **increased surveillance**, **lifestyle changes**, **preventive surgeries**, or **targeted therapies**.
- **Targeted Therapies:** Therapies such as **PARP inhibitors** are specifically designed for cancers with BRCA mutations, as they disrupt DNA repair mechanisms that these cancers rely on. New therapies continue to emerge based on further genetic research.
- **Role of CRISPR Technology:** CRISPR screens allow researchers to create specific mutations in genes like BRCA to study their effects on DNA repair and cancer progression.
 - These tools also help identify resistance to therapies.
- **Saturation Genome Editing:** This technique enables detailed analysis of genetic variants within specific genes, as seen in recent studies on the RAD51C gene. Such research expands the understanding of cancer risk and informs the development of new treatments.
- **Early Detection and Public Health:** Population prevalence studies highlight hereditary cancer risks within specific communities. Regular genetic screening can aid in early detection, leading to timely intervention and more effective treatment.

Environment

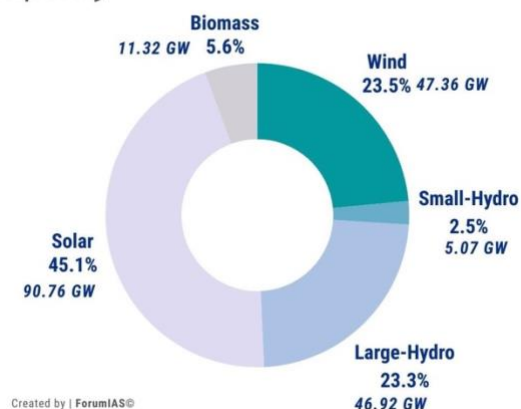
1. Status of Renewable Energy in India (Electricity Mix)

News: The renewable energy capacity (Electricity Generation) in India has surpassed 200 GW.

Status of Renewable Energy in India

- Total renewable energy capacity in India now stands at **201.45 GW** (October 2024).
- Renewable energy constitutes **46.3% of India's total electricity generation capacity** (452.69 GW).
- The leading States in Renewal Energy Electricity Generation capacity are: **Rajasthan** (29.98 GW), **Gujarat** (29.52 GW), **Tamil Nadu** (23.70 GW) and **Karnataka** (22.37 GW).
- **Initiatives:** The Government has launched several initiatives to promote renewable energy. The Government has set a target of generating 500 GW of electricity from non-fossil sources by 2030.
 - Key initiatives to promote renewable energy include **National Green Hydrogen Mission**, **PM-KUSUM**, **PM Surya Ghar** and **Production-Linked Incentive (PLI)** schemes for **solar PV modules**.
 - **Investment and Infrastructure:** **100% Foreign Direct Investment** has been allowed under the automatic route. In addition, **charges on Inter-State Transmission System** have been waived until designated deadlines.

India's Renewable Electricity Generation Capacity



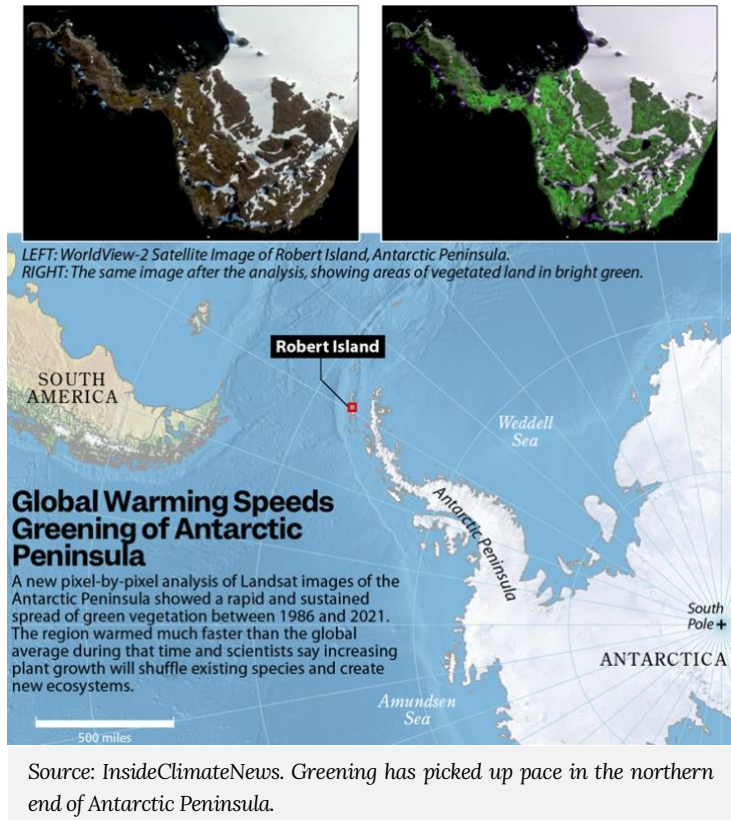
- **Ultra Mega Renewable Energy Parks** for large-scale generation are being established in multiple States.
- **Regulatory Framework: Electricity (Rights of Consumers) Rules, 2020** have been issued for **net metering**.
 - **Green Energy Open Access Rules, 2022** have been formulated to promote renewable energy.
 - Standard Bidding Guidelines have been issued for tariff-based competitive bidding.

2. Rapid Greening of Antarctica

News: Satellite data analysis has revealed that plant cover on the Antarctic Peninsula has grown 14 times over the past 35 years, driven by rising temperatures. Vegetation, mainly mosses and lichen, has expanded from under 1 km² in 1986 to nearly 12 km² by 2021.

About the Greening of Antarctica

- Between 2016 and 2021, the **greening rate increased by over 30%**, marking a significant shift in the region's landscape. This expansion suggests that the impacts of climate change reach even remote areas like Antarctica.
- **Rapid Temperature Rise:** Temperatures in Antarctica are rising more than twice as fast as the global average. **Antarctic Peninsula has warmed ≈3°C since 1950**, and is warming five times faster than the global average (*faster than rest of Antarctica*).
- **Extreme Heat Events:** Antarctica has seen **record-breaking heat-waves**, such as the March 2022 heatwave, when the temperatures were **39°C above normal**.
 - In July 2024, parts of Antarctica experienced ground temperatures up to **28°C higher than average**. (Refer EPIC August 2024 for Abnormally High Temperatures in Antarctica).



Environmental Implications of Increased Plant Growth

- **Threat of Invasive Species:** New soil formation from organic matter could make the peninsula more **habitable for non-native species**, potentially introduced by eco-tourists or researchers. This could disrupt local ecosystems and threaten native flora and fauna.
- **Decreased Albedo Effect:** The darker plant-covered surface absorbs more solar radiation, reducing the region's ability to reflect sunlight. This phenomenon may **further raise ground temperatures**, potentially **accelerating ice melt** and impacting **global sea levels**.
- **Decline of Ice Mass:** Antarctica has lost 280% more ice in the 2000s and 2010s than in the previous decades, exacerbated by rising temperatures. Reduced extent of sea ice, recorded as the second smallest in 2024, may create **wetter conditions conducive to further plant growth**.
- **Future Warming Concerns:** With continued greenhouse gas emissions, temperatures are expected to rise, likely facilitating more vegetation expansion and contributing to Antarctica's transformation.

3. Ocean Acidification and Planetary Boundaries

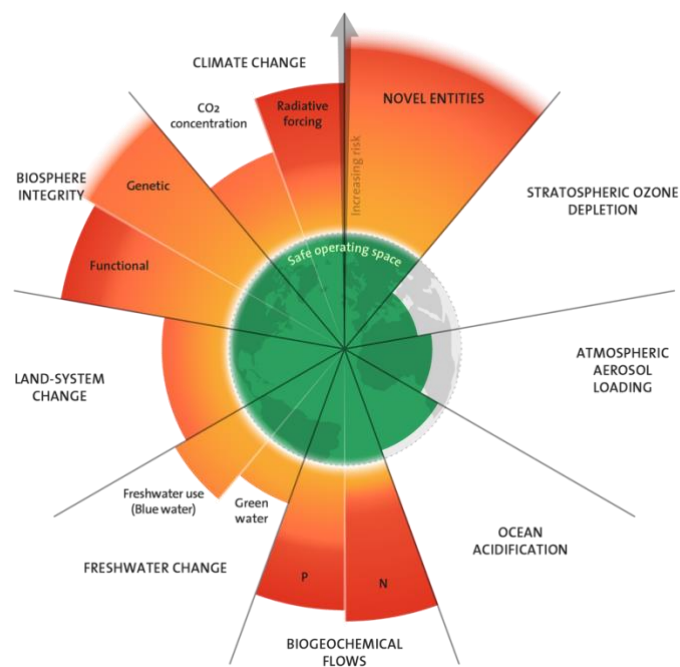
News: A study has found that the levels of ocean acidification are approaching a critical level. It will impact the ocean's ability to properly sustain marine life or help stabilize the climate.

About Planetary Boundaries

- A report by the Potsdam Institute for Climate Impact Research (PIK) details **9 factors that are crucial for regulating Earth's ability to sustain life**.
 - In 6 of these factors, the **safe limit has already been exceeded** in recent years as a **result of human activity**.
 - The threshold for **ocean acidification could soon become the 7th to be breached**.
- Crossing these Planetary Boundaries increases the **risk of generating large-scale abrupt or irreversible environmental changes**. Drastic changes will not necessarily happen overnight, but together the boundaries mark a **critical threshold for increasing risks to people and the ecosystems**.
- Planetary Boundaries are **interdependent**. It means that if a boundary is crossed, the impact can cause other boundaries to **cross out of the safe operating space**. Boundaries are **interrelated processes** within the complex biophysical Earth system. They can't be considered in isolation in any policy decision making on sustainability.

These 9 boundaries are:

- **Climate Change:** The change in the ratio of incoming and outgoing energy of the Earth, caused by **increased greenhouse gasses** and **aerosols**. More trapped radiation causes an increase in global temperatures and alters climate patterns. This boundary has been **transgressed**.
- **Novel Entities:** The introduction of novel entities includes **synthetic chemicals and substances** (e.g., microplastics, organic pollutants), **anthropogenically mobilized radioactive materials** (e.g. nuclear waste, nuclear weapons), and **human interventions in evolutionary processes**, such as genetically modified organisms (GMOs) and other direct modifications of evolution. At present, the amount of synthetic substances released into the environment without adequate testing is above the safe level.
- **Stratospheric Ozone Depletion:** The stratospheric ozone layer protects life on Earth from harmful ultraviolet radiation. The thinning of the ozone layer in the upper atmosphere, primarily due to human-made chemicals, allows more harmful UV radiation to reach Earth's surface. The current total amount of stratospheric ozone is **within safe levels**, and recovery is ongoing.
- **Atmospheric Aerosol Loading:** The rise in airborne particles from human activities or natural sources influences the climate by **altering temperature and precipitation patterns**. At present, the inter-hemispheric difference in atmospheric aerosol loading is within the Safe Operating Space.



Source: Stockholm University. Green zone represents the limit of Planetary Boundaries. Ocean Acidification is at the cusp of breaching the safe green zone.

- **Ocean acidification:** Ocean acidification is the phenomenon of increasing acidity (decreasing pH) in ocean water due to the absorption of atmospheric CO₂. This process **harms marine ecosystems**, and **reduces the ocean's efficiency in acting as a carbon sink**. The indicator for Ocean Acidification is within the Safe Operating Space but is close to crossing the safe boundary.
- **Modification of Biogeochemical Flows:** It refers to **disruption of the natural nutrient cycles** of key elements like nitrogen, and phosphorus through the environment and organisms, which are crucial for supporting life and maintaining ecosystems. Both the global phosphorus flow into the ocean and the industrial fixation of nitrogen (extracting nitrogen from the atmosphere), are disrupting the corresponding nutrient cycles beyond the safe level.
- **Freshwater Change:** The alteration of freshwater cycles, including rivers and soil moisture, impacts natural functions such as **carbon sequestration and biodiversity**, and can lead to **shifts in precipitation levels**. Human-induced disturbances of both **blue water** (e.g. rivers and lakes) and **green water** (i.e. soil moisture) have **exceeded the safe level**.
- **Land System Change:** The transformation of natural landscapes, such as through **deforestation** and **urbanization**, **diminishes ecological functions** like carbon sequestration, moisture recycling, and habitats for wildlife, all crucial for Earth system health. Globally, the remaining forest areas in all 3 biomes (tropical, boreal, and temperate) have **fallen below the safe levels** (i.e., boundary has been breached).
- **Biosphere Integrity:** The decline in the diversity, extent, and health of living organisms and ecosystems, threatens the biosphere's ability to **co-regulate the state of the planet** by impacting the energy balance and chemical cycles on Earth. Both the loss of genetic diversity, and the decline in the functional integrity of the biosphere, have **exceeded their safe levels**.

4. High Performance Buildings (HPBs)

News: High Performance Buildings (HPBs) can play a vital role in reducing energy consumption and carbon emissions.

Role of Buildings in Sustainability

- Globally, buildings account for ≈40% of total energy consumption during their lifespan. They contribute ≈28% of energy-related carbon emissions.
- According to the Bureau of Energy Efficiency, buildings account for more than **30% of national energy use** and **20% of carbon emissions** in India. With rising urbanization, this is expected to rise further.

About High Performance Buildings (HPBs)

- High-performance buildings (HPBs) build upon the concept of green buildings, which focus on **reducing environmental impact** through **energy efficiency, water conservation, and sustainable materials**.
- Green buildings are a foundational step, certified through programs that assess design and sustainability.
- HPBs take these ideas further by **achieving peak efficiency in energy, water use, and occupant comfort**, using **advanced technologies** like energy-efficient HVAC (heating, ventilation and air conditioning) systems, smart lighting controls, and real-time monitoring through **Building Management Systems (BMS)**.
- Examples of HPBs include Unnati in Greater Noida, which uses a solar-optimized façade, and Indira Paryavaran Bhawan in New Delhi, with its advanced HVAC system.

Difference between HPBs and Green Buildings

- **Scope and Focus:** Green buildings focus on **basic sustainability goals** like energy efficiency, water conservation, and materials sourcing, while HPBs aim for **peak efficiency in all areas**, including energy, water, and occupant comfort.

- **Technology and Monitoring:** HPBs use **advanced technologies** such as energy-efficient HVAC systems, smart lighting, and real-time performance tracking through building management systems (BMS).
 - Green buildings are often assessed through certification programs that ensure sustainability goals are met.

Benefits of HPBs

- HPBs provide both environmental and operational benefits.
- They **reduce energy demand**, extend the lifespan of building systems, and **lower maintenance costs**.
- HPBs also improve indoor air quality and natural lighting.
- HPBs also **increase property value** and create intelligent ecosystems with automation and AI.

Role of HPBs in Indian Cities

- India's urban population will reach **600 million by 2030**, increasing building demand. Without action, the **building sector's carbon footprint will rise drastically**. HPBs reduce energy use and emissions, addressing this urgent challenge.
- HPBs offer **resilience** through energy-efficient and **adaptive designs**. They improve air quality, enhance workplace environments, and reduce resource consumption.
- HPBs **help cities meet climate goals** and manage the challenges of rapid urbanization.

5. Ecomark Scheme

News: The Ministry of Environment has notified the new Ecomark Rules. The scheme aligns with the 'LiFE' (Lifestyle for Environment) Mission. This new scheme replaces the previous Ecomark scheme of 1991.

About Ecomark Scheme

- The Ecomark Scheme provides **accreditation and labelling** for **household and consumer products** that meet specific **environmental criteria** while maintaining quality standards as per Indian norms.
- **Key Objectives of the Ecomark Scheme**
 - **Promoting Sustainable Consumption:** The scheme encourages the demand for environment-friendly products by fostering consumer awareness of eco-conscious choices.
 - **Production Practices:** It motivates manufacturers to adopt environmentally friendly production methods, aligning with the sustainable development goals.
 - **Ensuring Accurate Labelling:** The scheme ensures that products carry accurate environmental labels and eliminates misleading information.
 - **Resource Efficiency and Circular Economy:** It promotes lower energy consumption and resource efficiency, contributing to a circular economy.
- The scheme will be implemented by the **Central Pollution Control Board (CPCB)**. The **Bureau of Indian Standards (BIS)** will collaborate in ensuring strict environmental standards for accredited products.
- **Impact on Environmental and Consumer Awareness:** Products certified under the Ecomark scheme will adhere to specific environmental criteria to reduce ecological footprints.
 - The scheme aims to increase consumer understanding of environmental issues and the benefits of sustainable consumption.
- **Alignment with Global and National Goals:** The scheme supports India's commitment to environmental conservation and protection. It aligns with global sustainability goals and encourages both individual and collective decision-making towards a more sustainable future.

6. International Big Cat Alliance

News: The Union Cabinet has approved India's membership in the International Big Cat Alliance (IBCA) by ratifying the Framework Agreement on the Establishment of the International Big Cat Alliance.

About International Big Cat Alliance (IBCA)

- The IBCA was launched on April 9, 2023, during the commemoration of **50 years of India's Project Tiger**.
- It is aimed at **securing the future of big cats and their habitats**.
- The IBCA focuses on the conservation of **7 big cats: Tiger, Lion, Leopard, Snow Leopard, Puma, Jaguar, and Cheetah**. Out of these, **5 are found in India** (Tiger, Lion, Leopard, Snow Leopard, and Cheetah).
- The Union Cabinet has approved the establishment of the IBCA Headquarters in India.
- So far, 4 countries, including India, Nicaragua, Eswatini, and Somalia, have become members of IBCA. Additionally, 9 international organizations have partnered with the Alliance.
- **Objectives and Scope of IBCA**
 - **Global Multi-Country Coalition:** IBCA is envisioned as a multi-country, multi-agency coalition involving 95 big cat range and non-range countries, along with conservation partners, scientific organizations, and businesses.
 - **Centralized Conservation Platform:** The IBCA aims to establish a common platform for **sharing successful conservation practices**, technical know-how, and financial resources to arrest the decline in big cat populations.
 - **Gold Standard Conservation Practices:** The IBCA focuses on disseminating gold-standard practices for big cat conservation and providing access to a central repository of knowledge.
 - **Collaboration and Synergy:** Through its collaborative platform, the IBCA will strengthen species-specific intergovernmental initiatives and transnational efforts on big cat protection.
 - **Addressing Climate Challenges:** The Alliance will also mitigate challenges from climate change by safeguarding big cat habitats, contributing to climate adaptation, water and food security, and the well-being of communities dependent on these ecosystems.

India's Role and Global Leadership

- India's role as a founder member of IBCA demonstrates its leadership in the global conservation of big cats, solidifying its **commitment to the long-term conservation agenda**.
- India's involvement will foster cooperation among countries, promoting mutual benefits and a deeper understanding of big cat conservation worldwide.

7. Living Planet Report, 2024

News: The Living Planet Report, 2024 by the Worldwide Fund (WWF) for Nature has highlighted a severe decline in global wildlife populations.

Key Findings of the Report

- From 1970 to 2020, the average size of monitored **wildlife populations has decreased by 73%**. In the 2022 report, the recorded decline was **69%**, indicating an **ongoing trend of population loss**.
- The report emphasizes that addressing the **dual crises of climate change and nature loss** requires urgent, coordinated action over the next 5 years. Data compiled by the Zoological Society of London (ZSL) included 35,000 population trends across 5,495 species, covering the years 1970 to 2020.
- **Ecosystems at Risk:** The Report showed that **freshwater ecosystems has witnessed the sharpest decline** at 85%, with freshwater habitats experiencing significant losses. **Terrestrial ecosystems** showed a **69%**

decline, reflecting extensive impacts on land-based wildlife. **Marine ecosystems declined by 56%**, highlighting issues within ocean and coastal habitats.

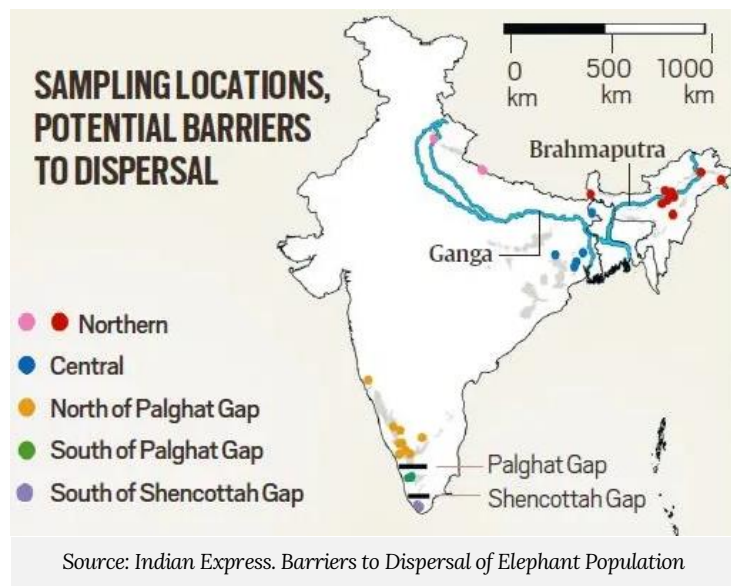
- **Key Drivers of Decline: Habitat Loss and Degradation** are predominantly caused by **agriculture and food consumption practices** worldwide. Other threats include **over-exploitation, invasive species, and diseases**, which are also contributing to the rapid decline of wildlife populations.
- **Implications for Global Ecosystems:** The declining wildlife populations serve as a critical indicator of escalating extinction risks and potential ecosystem degradation.
- The Report has also highlighted **India's sustainable dietary model** and estimates that by 2050, the world would need only 0.84 of an Earth to sustain food production if India's diet model were adopted worldwide.

8. Migration of Elephants in India

News: Researchers have discovered in a recent study that Indian elephants migrated southward over several millennia, progressively losing genetic diversity with each migration.

Key Findings on Indian Elephant Migration and Genetic Diversity

- **Migration from North to South:** Indian elephants migrated progressively from the north to the south over several millennia.
- This movement led to a **loss of genetic diversity**, with the **southern populations showing reduced genetic vigour**.
- **Five Genetically Distinct Populations:** Researchers have identified 5 genetically distinct elephant populations across India: **Northern population** along the Himalayan foothills (Northwest to Northeast); **Central Indian population** located in parts of central India; **3 Southern populations** distributed across Tamil Nadu and Kerala, south of the Shencottah Gap.



- **Southernmost Population and Genetic Diversity:** The southernmost population, **south of the Shencottah Gap**, has the **lowest genetic diversity**, making it **highly vulnerable**. This isolated population consists of fewer than 150 elephants and faces a higher risk of extinction.
- **Historical Divergence of Populations:** The northern population diverged from the others over 70,000 years ago. Central Indian elephants diverged $\approx 50,000$ years ago. The three southern populations separated $\approx 20,000$ years ago.
- **Serial Founder Effect and Inbreeding Risk:** As elephants migrated southward, the reduced population sizes led to the **serial founder effect**. This phenomenon increased the **risk of inbreeding depression**, where **harmful genetic traits** are more likely to be passed down. (Refer EPIC June 2024 for Genetic Drift).
- **Southern Barrier:** The study revealed that the **Shencottah Gap acted as a natural barrier**, further dividing the southern elephant populations. This was previously unrecognized, with the Palghat Gap thought to be the only barrier in the Western Ghats.
- **Central and Northern Populations:** Central Indian elephants are found between southwest West Bengal and eastern Maharashtra, forming a distinct population. Northern elephants, in the Northwest (Uttarakhand,

Uttar Pradesh) and Northeast (Assam, Arunachal Pradesh), are separated by the Ganga and Brahmaputra rivers but were historically connected.

- **Habitat Connectivity:** The study stresses the **need to maintain habitat connectivity**, especially in the Western Ghats, where infrastructure development has **disrupted gene flow between populations**.

9. Commission for Air Quality Management (CAQM)

News: The Supreme Court has expressed dissatisfaction with the CAQM's measures to control pollution, particularly in Delhi. It has directed the CAQM to file a detailed status report specifically addressing the issue of stubble-burning and actions taken against the violators.

About Commission for Air Quality Management in the National Capital Region and Adjoining Areas Act, 2021

Aspects	Description
About the Act	<ul style="list-style-type: none"> • The Commission for Air Quality Management in the National Capital Region and Adjoining Areas Act, 2021 was enacted to address the severe air pollution in the National Capital Region (NCR) and the adjoining areas. • The Act provides special provisions to address stubble burning. CAQM is authorized to implement and monitor strategies to prevent and reduce stubble burning in agricultural fields.
Establishment of the Commission	<ul style="list-style-type: none"> • The Act establishes the Commission for Air Quality Management as a statutory body with powers to take comprehensive measures to curb air pollution.
Jurisdiction of the Commission	<ul style="list-style-type: none"> • Its jurisdiction extends to the National Capital Region (NCR), as well as any other adjoining areas that may be notified by the Central Government.
Powers and Functions	<ul style="list-style-type: none"> • The CAQM has the power to monitor, coordinate, and regulate activities contributing to air pollution. • It can formulate policies, issue directives, and provide guidelines to curb sources of air pollution like industrial emissions, vehicular pollution, stubble burning, construction activities, and road dust. • It can impose fines and penalties on polluters and violators of regulations.
Overriding Powers	<ul style="list-style-type: none"> • The CAQM has overriding authority over other bodies such as the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) within its jurisdiction, with the aim of ensuring coordinated efforts to tackle pollution.
Advisory and Coordination Role	<ul style="list-style-type: none"> • The Commission advises Central and State Governments on air quality. • It also coordinates with State authorities, agencies, and local bodies to enforce environmental laws and implement measures for improvement of air quality.

10. Guidelines to Curb Greenwashing

News: The Government has released guidelines to curb Greenwashing by companies and make it mandatory for companies to substantiate their claims with scientific evidence.

About Greenwashing

- Greenwashing refers to the growing tendency of companies, organisations or even countries to make **dubious or unverifiable claims about their activities, products or services being environment or climate-friendly**.

- The discourse on climate change and need for climate action has raised pressure on the corporations and the Governments to undertake their activities in an environment-friendly manner. Governments have legal commitments in this regard.
- Consequently, companies and Governments often make claims that are **exaggerated, misleading, or completely wrong**.
 - Companies like Volkswagen (cheated on emissions testing data), Shell, British Petroleum and Coca Cola have faced accusations of greenwashing.
 - Countries have tried to exaggerate claims related to potential of their forests to absorb carbon dioxide. **Carbon trading mechanisms** too have been questioned for faulty methods of generating carbon credits, and **shifting of carbon emissions from developed to developing countries**, rather than reducing them.

About the Guidelines

The Guidelines have been issued by **Central Consumer Protection Authority** to curb greenwashing in **advertisements of products or services**.

- Greenwashing has been defined as any **deceptive or misleading practice** that **conceals, omits or hides relevant information**, or **exaggerates, or makes vague unsubstantiated environmental claims** about the product or service.
- Use of misleading words, symbols or imagery, emphasizing positive environmental attributes while **downplaying or concealing negative aspects** would constitute greenwashing.
- Guidelines allow the use of “obvious hyperboles” or “puffery”, which is central to the advertising business, if these **do not amount to deception or misleading practice**.
- Generic terms like ‘clean’, ‘green’, ‘eco-friendly’, ‘good for planet’, ‘cruelty-free’, ‘carbon neutral’, ‘natural’, ‘organic’, ‘sustainable’, or similar other descriptions for a product would be allowed **only if the company is able to substantiate these with evidence**.
 - The evidence may include credible **certification from statutory or independent third-party verification** or reliable scientific evidence.
- If technical terms such as “environment impact assessment”, “greenhouse gas emissions”, or “ecological footprint”, are used to advertise a product or service, the companies would be **mandated to explain their meaning and implications** in a “**consumer-friendly**” language.
- The Guidelines will **apply to all environmental claims made by manufacturers, service providers or traders** and to an **advertising agency** or endorser whose service is availed for the advertisement.
- The new norms would complement the existing **Guidelines for Prevention of Misleading Advertisements and Endorsement for Misleading Advertisements**, framed in 2022, which deal with false or exaggerated claims in advertisements in general.

Principles of Trustworthy Environment Claims

- ★ **Truthfulness and Accuracy:** Environment claims should be based on **verifiable information** through **certification** from authorities or internal **empirical evidence**.
- ★ **Clarity and Unambiguity:** Generic terms (like ‘Green’) should not be used without mentioning **adequate and accurate data**.
- ★ **Fair and Meaningful Comparisons:** Claims that compare two or more products must be based on **verifiable, quantifiable and relevant data**. Aspects being compared must be disclosed.
- ★ **Make Absolute and Relevant Claims:** If a claim is about a specific part or feature of the product, a **disclosure is needed**.
- ★ **Use of Correct Imagery:** Visual elements without providing relevant details or context on the packaging cannot be used.
- ★ **No Misleading Endorsement:** Claims suggesting endorsements from **non-existent, non-official, untrustworthy authorities** cannot be used.

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Recommendations of UN Expert Group

The UN had constituted a high-level expert group to suggest measures to curb greenwashing by non-state entities such as corporations, financial institutions, or cities that have net-zero commitments to meet.

- Corporations pursuing net-zero targets must **not be allowed to make fresh investments in fossil fuels**.
 - Corporations must be asked to **present short-term emission reduction goals** on achieving net-zero.
- Corporations must bring an end to all activities that lead to **deforestation**.
- Corporations were advised **not to use offset mechanisms** at the start of their journey to net-zero status.

11. Disproportionate Impact of Climate Change on the Poor

News: Food and Agriculture Organization (FAO) has reported that poor households globally lose an average of 5% of their total income each year due to heat stress and 4.4% due to floods.

Key Findings of the FAO Study

- **Income Loss from Heat and Floods:** Poor households globally lose an average of 5% of their income annually due to heat stress and 4.4% due to floods.
- **Structural Inequalities:** The Report suggests that structural inequalities make **poor households more vulnerable** to climate stressors, which **exacerbates income disparities**.
- **Effect on On-Farm Income:** Rural poor in India experience varying impacts on their farm income depending on the type of climate stress. Droughts and similar events prompt poor households to allocate more time and resources to agricultural production as off-farm job opportunities decline.
- **Reduced Total Income:** Poor households tend to have lower overall income compared to those not exposed to significant climate stressors.

Policy Recommendations for Mitigating Impact

- **Expand Social Security:** The Report calls for a **broader social security net** to mitigate the adverse effects of climate stress on poor farmers.
- **Anticipatory Social Protection:** Scaling up **social protection programs** to prepare for **extreme weather events** can help reduce reliance on negative coping strategies and prevent poverty induced by these events.
- **Workforce Diversification:** Enhancing non-farm employment opportunities and addressing gender barriers in these fields can help improve **economic resilience**.

Government Response and Initiatives

- **National Innovations on Climate Resilient Agriculture (NICRA):** NICRA was launched by the Indian Council of Agricultural Research (ICAR) in 2011 to **enhance resilience of Indian agriculture to climate change** and climate vulnerability through strategic research and technology demonstration.
- **Contingency Plans and Employment Schemes:** India has contingency plans for all agricultural districts and was the first to implement an employment guarantee scheme as a social safety net for farmers.

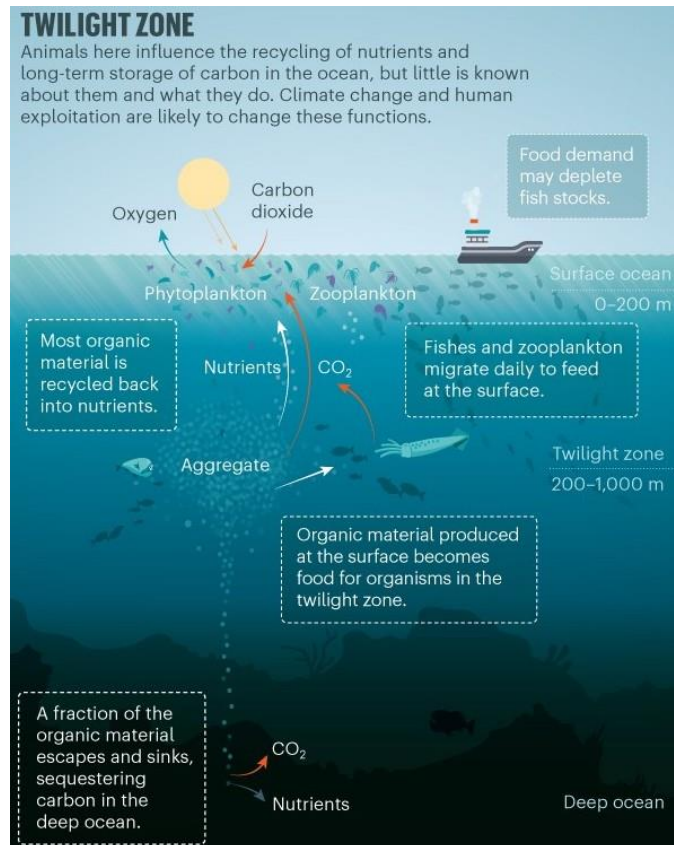
12. Twilight Zone in Oceans

News: Recent evidence suggests that there are more animals in Twilight Zone of the oceans (by weight) than in all the world's fisheries combined.

About Twilight Zone in the Oceans

- The Twilight Zone is also known as **Mesopelagic Zone**. It is a layer that lies between the **Epipelagic Zone** (sunlit surface waters) and the **Bathypelagic Zone** (deeper, darker waters).
- It extends from **≈200 meters to 1,000 meters** below the ocean's surface. In this zone, sunlight is minimal, creating a dimly lit, shadowy realm, hence the name 'twilight'.
- **Penetration of Light:** Very little sunlight reaches this zone, which gradually diminishes as depth increases. It is not completely dark, the low light levels make it impossible for photosynthetic organisms to survive.

- **Temperature and Pressure:** Temperatures in the Twilight Zone are significantly cooler than at the surface, often ranging from 4°C-20°C. Pressure increases drastically with depth, which plays a role in the adaptation of organisms living here.
- **Oxygen Levels:** The oxygen concentration in this zone is relatively low, especially at deeper levels, creating a challenge for marine life that must adapt to low-oxygen environments.
- **Marine Life:** Despite the low light and harsh conditions, the Twilight Zone is home to a **wide array of organisms**. Many species, including lanternfish, bristle mouths, squids, jellyfish, and zooplankton have evolved to survive in this environment.
 - Some animals are **bioluminescent**, which produce light through chemical reactions in their bodies. This ability is crucial for **communication, predation, and camouflage** in the dim light of the twilight zone.
- **Diel Vertical Migration:** In the diel vertical migration, vast numbers of creatures travel from the depths to the surface at night to feed, returning to the twilight zone by day to avoid predators.
- **Role in the Carbon Cycle:** The twilight zone plays a crucial role in the global carbon cycle. Marine organisms, particularly **zooplankton** and small fish, feed on phytoplankton from the surface waters and transport carbon to deeper layers of the ocean when they excrete waste or die and sink.



History, Art and Culture

1. Mahakaleshwar Temple

News: Mahakaleshwar Temple in Ujjain, Madhya Pradesh faced some damage due to heavy rainfall.

About the Mahakaleshwar Temple

- The Mahakal Temple is located in Ujjain, Madhya Pradesh. It is situated on the banks of the holy river, **Shipra**.
- It is dedicated to **Lord Shiva**. It is one of the 12 **Jyotirlingas** in India, which are considered the most **sacred abodes of Shiva**.
- **Distinctive Feature:** The temple's importance lies in its **unique representation of Shiva** in the form of the Mahakaleshwar Jyotirlinga which is believed to be a **Swayambhu** (self-manifested) **linga, emerging naturally from the earth**.
- **Architecture and Structure:** The temple complex is expansive, with **multiple shrines dedicated to various dieties**, including Omkareshwara, Ganesh and Parvati.
 - The main sanctum houses the **Mahakaleshwar Jyotirlinga**, and the temple's towering **Shikhar** (spire).



- One unique feature of the temple is the **Bhasma Aarti**, a ritual performed every morning during which the linga is bathed in **sacred ash** (bhasma). This ritual symbolizes the concept of life, death, and rebirth.
- **Spiritual Significance:** The Mahakal Temple is mentioned in several ancient scriptures, including the *Puranas* where Ujjain (**Avantika**) is depicted as a major center for spiritual and scholarly pursuits.
 - The temple is believed to be the place where **time itself is under the control of Mahakala**, or Shiva, who is the lord of time and death.
- **Festivals and Celebrations:** The temple is particularly vibrant during **Mahashivratri** which is an annual festival dedicated to Lord Shiva.
 - Another important celebration is the **Nag Panchami** during which special offerings are made to the serpent gods, considered companions of Lord Shiva.
 - The temple also plays a key role in the **Simhastha Kumbh Mela** held in Ujjain every 12 years.

2. Abhidhamma Divas

News: The Abhidhamma Divas was celebrated by the Ministry of Culture in association with the International Buddhist Confederation (IBC).

About Abhidhamma Divas

- Abhidhamma Divas (Abhidhamma Day), is a significant Buddhist observance. It commemorates descent of Lord Buddha from the celestial realm of the thirty-three divine beings (**Tāvatiṃsa - Devaloka**) to **Sankassiya**, known today as Sankisa Basantapur in the Farrukhabad district of Uttar Pradesh, India.
- The event signifies the **Buddha's return to the human world** to share these advanced teachings with his disciples.
- Abhidhamma Divas coincides with the end of the first Rainy Retreat and the **Pavāraṇā Festival**.

Historical Significance

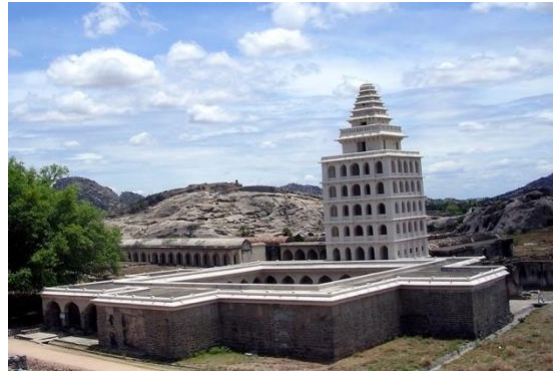
- According to tradition, after attaining enlightenment, the Buddha spent 3 months in the Tāvatiṃsa Heaven. He taught the Abhidhamma to his mother, Māyā, who had passed away and was reborn there.
- This period coincides with **the Buddhist Lent**, known as **Vassa**, a time when monks stay in monasteries to meditate and study.
- Abhidhamma Divas is celebrated on the **full moon day of the seventh lunar month**. It marks the end of the Vassa period and is observed with devotion across **Theravāda Buddhist countries** like Myanmar, Thailand, Laos, Cambodia and Sri Lanka.
- **Religious Activities:** Devotees gather at temples for various religious practices: Offering alms to monks and nuns, participating in scripture recitation and listening to sermons on the Abhidhamma and engaging in meditation and reflecting on the Buddha's teachings.
- **Cultural and Spiritual Practices:** The day is an opportunity for Buddhists to:
 - Deepen their understanding of the Buddha's teachings, particularly the Abhidhamma, which focuses on Buddhist philosophy.
 - Cultivate virtues of generosity, wisdom, and loving-kindness.
 - Perform acts of charity, such as donating food, clothing, or money to monasteries, charitable organizations, and the needy.
- **Significance in Modern Times:** Abhidhamma Divas encourages **mindfulness, self-reflection, and spiritual growth**. It reinforces the core values of Buddhism, including compassion and the pursuit of wisdom. The observance also highlights the importance of connecting with the teachings of the Buddha to lead a life of peace and purpose.

3. Gingee Fort

News: A team from UNESCO visited the Gingee Fort in Tamil Nadu, which has been nominated by the Union Government, alongside 11 other forts of the Maratha Military Landscapes, for UNESCO's World Heritage Site.

About the Gingee Fort

- The fort is located in **Villupuram district** of **Tamil Nadu**. It is also known as the '**Troy of the East**'.
- It is located atop three hillocks – Rajagiri, Krishnagiri and Chandragiri and was **considered impregnable**. It has witnessed the rise and fall of successive empires spanning centuries.
- It was built by **Ananta Kon of the Konar Dynasty** in **1,200 CE**. The ownership of the fort changed hands many times and was under the possession of several empires, such as the Vijayanagar Nayaks, Marathas, Mughals, Nawabs, the French and British.
- The first fortification was built by Ananda Kon in the 12th Century. His successor fortified the northern hill in 1,240 CE and called it Krishnagiri, while the other buildings and structures were raised by successive rulers.
- The fort was **captured by Chhatrapati Shivaji in 1677**. It remained under Maratha rule till it came under the the Mughals in 1698. It was taken over by the **Arcot Nawabs** in 1714 and remained under their control till 1749. The fort was with the **French** from 1750 to 1770, and finally came under the control of the **British**.
- The fort is spread over **11 acres**. It houses a stepped well, a Kalyana Mahal, a durbar hall, a cannon, a clock tower, an armoury, an elephant tank, a stable, a granary, a gymnasium, the Venkataramana temple, and the Sadathulla mosque.
- The fortress had **two elaborate systems for water supply**, corresponding to the Nayaks and the Nawab period, which had ensured that even the top of the structure had continuous supply.
- The fort is maintained by the **Archaeological Survey of India**.



4. New Statue of Lady Justice Unveiled in the Supreme Court

News: A new statue of Lady Justice has been unveiled in the Supreme Court of India.

About the New Lady Justice Statue

- The move reflects India's effort to **shed colonial symbols** and build a justice system more relevant to its own cultural and constitutional values. The statue has been created by artist **Vinod Goswami**.
- In the new statue, the Lady Justice is **dressed in a saree**, aligning with Indian traditions.
- The statue's eyes are open, **replacing the blindfold**, to represent that **justice in India is not blind** but **sees everyone equally**.
- It holds the Constitution of India in one hand, symbolizing the **supremacy of the Constitution in Indian jurisprudence**, replacing the traditional sword.
- The **scales of justice** have been retained, symbolizing **impartiality in delivering judgments**.
- This change emphasizes that the **law should consider India's social diversity** and the upliftment of the underprivileged sections.



Historical Significance of ‘Lady Justice’

- **Greek Mythology:** The concept of Lady Justice traces back to the ancient Greek mythology.
 - **Themis** was the Goddess of Justice, Wisdom, and Good Counsel. She was one of the **12 Titans** born to **Gaea** and **Uranus**.
 - She is often depicted **holding scales in one hand** and a **sword in the other**, symbolizing fairness and enforcement of justice.
- **Roman Influence:** In Roman mythology, the first emperor Augustus introduced **Justitia**, the Goddess of Justice. Like Themis, Justitia held scales and a sword, but **she did not wear a blindfold**.
- The blindfold was added during the Renaissance (14th century). It was initially a **satire on legal corruption** but **later symbolized impartiality** during the **Enlightenment** (17th-18th century).
- The **scales signify fairness**, requiring courts to weigh both sides of an argument.
- The **sword symbolizes the law’s authority, representing its power to protect or punish**.
- This symbol became prominent in India during **British rule** and was placed outside courtrooms.
 - At the Calcutta High Court, Lady Justice appears in carvings, sometimes blindfolded, sometimes not.
 - The Bombay High Court also features a statue of Lady Justice without a blindfold.



5. Chenchu Tribe

News: The Chenchu tribe is facing several challenges like dwindling employment opportunities and an inability to keep pace with rapid modernization.

About Chenchu Tribe

- The Chenchus are an **aboriginal tribe** residing in the **Nallamala Hills**, part of the **Nagarjuna Sagar Tiger Sanctuary** in **Andhra Pradesh**. They are recognised as a **Scheduled Tribe in Andhra Pradesh**.
- The tribe’s origin is linked to **Lord Malikarjuna** of the **Srisailem temple**. They also have smaller populations in Tamil Nadu and Odisha.
- **Social Structure and Living Pattern:** The Chenchus live in small villages known as “**Penta**”, consisting of several huts grouped based on **kinship patterns**. Villages are overseen by a village elder called “**Peddamanishi**”, whose word holds the highest social authority.
- **Occupation:** Traditionally, the Chenchus rely on **hunting** for livelihood, using bows and arrows. Jungle products like roots, tubers, fruits, beedi leaves, mahua flowers, honey, gum, tamarind, and green leaves are collected and sold to traders and government cooperatives.
 - They also craft leaf cups and plates from tobacco leaves and sell items like tamarind and mahua flowers in local markets, which are in high demand.
- **Marriage:** The Chenchu society is **divided into clans**, with **26 gotras** found within their community. Marriages within the same gotra are prohibited. Marriage is known as “**Pelli**”. It is often arranged by elders or chosen by the youth.
- **Religion and Beliefs:** The Chenchus worship **Bhagwan Taru**, a sky god who oversees their well-being, and **Garelamai Sama**, the **Goddess of the forest** who protects them from danger. Other deities worshipped include Lord Shiva, Hanuman, and the Goddess of Fire.
- **Language:** They speak Chenchu language variants such as Chenchucoolam, Chenchwar, Chenswar, and Choncharu, which have a **Telugu accent**.

Miscellaneous

1. Nobel Peace Prize, 2024

News: The 2024 Nobel Peace Prize has been awarded to Japanese organisation Nihon Hidankyo, for its efforts to achieve a world free of nuclear weapons.

About Nihon Hidankyo

- The members of Nihon Hidankyo are **survivors of the atom bombings in Hiroshima and Nagasaki** by the US in August 1945. Many of those who survived (called “Hibakusha” or “bomb-affected people”) spearheaded the **global movement to end nuclear weapons**.
- The decision of the US to drop atomic bombs, when the World War II was nearing an end, has been criticised from both **strategic and ethical perspectives**. The bombings led the major powers to enter a race to develop their own nuclear weapons as a deterrent.
- In response, a global movement for nuclear disarmament emerged. The Hibakusha played an important role in this movement. It was founded on August 10, 1956.
- Its main objectives are **welfare of the Hibakusha, elimination of nuclear weapons** and **due compensation** to the victims.
- The group has worked towards **raising awareness among the people** about the experiences of Hibakusha and the after-effects of the atomic bombing. It sends the sufferers of the bombing to the US, nuclear-weapon States and other countries for sharing their experiences.
- Its works, along with the efforts of other disarmament organizations, has helped establish the **nuclear taboo**, which has ensured that nuclear weapons have not been used since 1945. However, one of the reasons behind the Nobel Committee’s decision this year is that the **nuclear taboo is now “under pressure”**.
- **New countries have sought their own nuclear weapons** and improved weapons have been developed. China, Russia and the US are poised to **expand their nuclear arsenal**. A BBC report said the US may spend more than US\$ 1 trillion by the 2040s for upgrading its nuclear capabilities. The Nobel Peace Prize 2024 is intended to **bring nuclear disarmament back into the centre-stage**.
- At least **10 Nobel Peace Prizes** have been awarded till now for the **disarmament related activities**.
- In recent times, the 2017 Nobel Peace Prize was awarded to the **International Campaign to Abolish Nuclear Weapons** (ICAN). ICAN has also worked with Nihon Hidanyo to document the impact of nuclear weapons.

2. Cyber Slavery

News: Recent reports have indicated that over 30,000 Indians are currently stranded under ‘cyber slavery’ in countries like Cambodia, Thailand, Myanmar and Vietnam.

About Cyber Slavery

- It refers to practice of **luring individuals** by promises of lucrative jobs to other countries and then **coercing them into working in illegal online operations**, such as cyber fraud, hacking, or scamming. Often their passports are taken away from them the moment they reach these countries.
- Victims are **often confined in guarded facilities with minimal freedom**, and their earnings are withheld. Threats of violence or reporting to authorities are used to maintain control.
- A significant portion of these individuals is believed to be involved in **various forms of digital fraud**, including investment scams and online dating frauds.
- Reports suggest that many of these scams have resulted in **substantial financial losses for victims back in India**, because they use the same language. As per the estimates, ≈INR 800 crore lost by Indians due to fraudulent activities orchestrated by these cyber slaves.

- According to the data compiled by the **Bureau of Immigration**, under the Ministry of Home Affairs (MHA), 73,138 Indians travelled to Cambodia, Thailand, Myanmar and Vietnam on visitor visas, from January 2022 to May 2024. 29,466 of these Indians are yet to return.

3. Relationship Between Ultra-Processed Foods and Diabetes

News: A study published in the International Journal of Food Sciences and Nutrition has highlighted the link between ultra-processed, AGE-rich foods and diabetes.

Key Findings of the Study

- **Chronic Disease Risk:** The research has linked ultra-processed foods in India to higher diabetes risk due to AGEs, fats, sugars, and salts.
- The study has suggested that following a low-AGE diet can potentially mitigate diabetes risk in Indians.
- **Insulin Sensitivity & Inflammation:** Low-AGE diets **improve insulin sensitivity** and **reduce inflammation**, that are **essential for prevention of diabetes**. AGEs, formed when sugars react with fats or proteins at high temperatures, contribute to inflammation, which is a precursor to diabetes.

About AGEs

- **Advanced Glycation End Products (AGEs)** are **harmful compounds** formed when **proteins or fats react with sugars in the bloodstream** through a process known as **glycation**.
- This process **occurs naturally in the body** over time but can be **accelerated by factors** like **high blood sugar levels**, certain **dietary habits**, and **oxidative stress**.
- AGEs contribute to various **age-related diseases** and **chronic health conditions**, particularly those involving inflammation and oxidative damage.

AGEs related health risks:

Disease	Description
Diabetes	<ul style="list-style-type: none"> • AGEs are highly prevalent in individuals with diabetes due to prolonged high blood sugar levels. • They can contribute to complications like neuropathy (nerves-related), retinopathy (retina (eye)), and nephropathy (kidney).
Cardiovascular Diseases	<ul style="list-style-type: none"> • AGEs can stiffen blood vessels and lead to atherosclerosis, increasing the risk of heart disease and stroke.
Kidney Disease	<ul style="list-style-type: none"> • The kidneys usually filter AGEs from the blood, but when they're over-worked (as in diabetic nephropathy), AGEs can accumulate, worsening the functioning of kidneys.
Alzheimer's Disease	<ul style="list-style-type: none"> • AGEs are found in high levels in the brains of individuals with Alzheimer's disease and are believed to contribute to neurodegeneration.
Skin Aging	<ul style="list-style-type: none"> • AGEs can affect skin elasticity and appearance, contributing to wrinkles and reduced skin resilience.

- **Sources of AGEs:** Foods **cooked at high temperatures**, such as grilled, fried, or roasted items, have higher levels of AGEs. **Processed foods**, meats, and foods high in sugar and fat are also rich in AGEs.
 - Within the body, AGEs are formed through **normal metabolic processes**, but their levels can increase due to poor blood sugar control, oxidative stress, and inflammation.
- **Preventing and Reducing AGEs:** Consuming a diet rich in fruits, vegetables, whole grains, and lean proteins can help lower AGE intake. Cooking methods like steaming, boiling, and poaching can also reduce AGE formation.

4. Lac Farming in India

News: The President of India advocated for lac farming during the centenary celebration of the ICAR-National Institute of Secondary Agriculture (NISA) in Ranchi.

About Lac and Lac Farming

- Lac farming involves the **cultivation of lac insects**, primarily *Kerria lacca* on host trees. These insects **secrete a resin** which is **harvested to produce lac**, a natural resin **used in various industries**.
- Lac is predominantly **produced by tribal communities in India**, providing them with a **vital source of income**. It is a **key livelihood activity** in states like **Jharkhand, Chhattisgarh, Odisha, and West Bengal**.
- Lac is **widely used in pharmaceuticals, cosmetics, food processing**, and in making varnishes and polishes. Its **non-toxic and biodegradable properties** make it valuable in diverse sectors.
- Lac farming has immense economic potential, with many farmers earning substantial profits from it. The rising demand in domestic/international markets, especially in the pharmaceutical and cosmetic industries, enhances its significance.
- Lac farming falls under **secondary agriculture**, which includes **value addition to primary agricultural products**. It also promotes **sustainable use of resources** and increases income of farmers by **utilizing agricultural waste**.
 - Lac farming has a **low environmental impact** and contributes to sustainable agricultural practices by utilizing forest resources without causing deforestation.
- Key challenges to lac farming include the need for improved quality, supply chain efficiency, and marketing strategies to enhance Indian lac's competitiveness in the global market.
- **Government Support and Training:** The Government is offering training programs to help farmers enhance their lac farming techniques through institutions like ICAR-NISA. The Government plans to **train 5000 farmers annually** aim to improve yields and income.
 - Institutions like NISA are working on automation, robotics, and AI-enabled equipment to advance lac farming practices, enhancing both productivity and quality.

5. Smart Insulin

News: An international team of scientists has engineered a “smart” insulin called NNC2215 that responds automatically to changes in the levels of blood sugar.

Working of ‘Smart’ Insulin

- NNC2215 consists of a ring-shaped structure and a glucoside molecule. The glucoside binds to the ring when blood glucose is low, keeping the insulin inactive.
- As glucose levels rise, glucose replaces the glucoside, activating the insulin to lower blood sugar.

Potential Benefits and Limitations

- **Easier Management:** It could **simplify blood sugar management**, reducing the **need for constant monitoring**. At present, patients with diabetes need to continuously monitor their blood sugar levels and adjust insulin doses, as blood glucose levels fluctuate throughout the day.
- **Effectiveness in Studies:** It has shown to be as effective as human insulin in controlling blood glucose in animal tests (rats and pigs), and human trials are expected soon.
- Its one **limitation** is that it activates only after a significant spike in glucose, leading to a **sudden insulin release**.
- Scientists are working to improve the insulin molecule so that **it activates more gradually**, allowing insulin levels to rise slowly for better glucose control.

Pointly

1. Chagos Archipelago

The UK has signed an agreement with Mauritius to **cede sovereignty of the Chagos Archipelago to Mauritius**. However, the UK will **control sovereign rights over Diego Garcia Island**.

The Archipelago consists of more than 60 islands in the **Indian Ocean** about 500 kilometres south of Maldives. The land area of the islands is 56.13 km², with the largest island, Diego Garcia, having an area of 32.5 km².

The Archipelago was under the French control in the 17th century, but was ceded to the British in 1814 after the defeat of Napoleon.

In 1965, the UK created the **British Indian Ocean Territory** on the Archipelago. In 1966, Britain signed an **agreement with the US to establish a military base on Diego Garcia island**, to be used by the US.

There had been a dispute between the two countries since Mauritius' independence from Britain in 1968, about the control of the Islands. Mauritius had laid sovereign claim on Chagos, as the **islands were administered from Mauritius during the colonial occupation**.

Now the UK has transferred the control of the archipelago to Mauritius, except for the Diego Garcia island having the **US military base**.



Source: Britannica. The Diego Garcia military base was used by the US in war on terror in Afghanistan and Iraq.

2. Bushveld Igneous Complex

Scientists have uncovered pockets of **living microorganisms** inside a sealed fracture of a **2-billion-year-old rock** from the Bushveld Igneous Complex. The Bushveld Igneous Complex (BIC) is located in **northern South Africa**. It is one of the world's **most significant geological formations**. It was **formed ≈2 billion years ago** during the **Paleoproterozoic era**. It covers an area of ≈66,000 kilometers². It has a **layered structure**, resulting from the cooling and crystallization of magma.

The BIC is significant due to its **rich platinum-group metals (PGM) reserves**, including platinum, palladium, rhodium, and others, which are **vital for industries** such as automotive, electronics, and high-tech applications. The complex holds **≈75% of the world's platinum reserves**.



3. Taiwan Strait

A Japanese warship sailed through the Taiwan Strait for the first time asserting its right to freedom of navigation. The Taiwan Strait is a narrow body of water located in East Asia, **separating the island of Taiwan (east) from mainland China (west)**.

It connects two major seas: The **East China Sea** in the north with the **South China Sea** to the south. The Taiwan Strait is ≈ 180 kilometres (110 miles) wide at its narrowest point. The strait stretches ≈ 355 kilometres (220 miles) from north to south. It is bordered by Taiwan in the east, mainland China is the west.



The Taiwan Strait is **crucial for global shipping**, and conflict in this area could severely impact international trade, especially in **industries like semiconductors** where Taiwan is a key player. Over **40% of global maritime trade passes through the region**, making it a vital **choke point**.

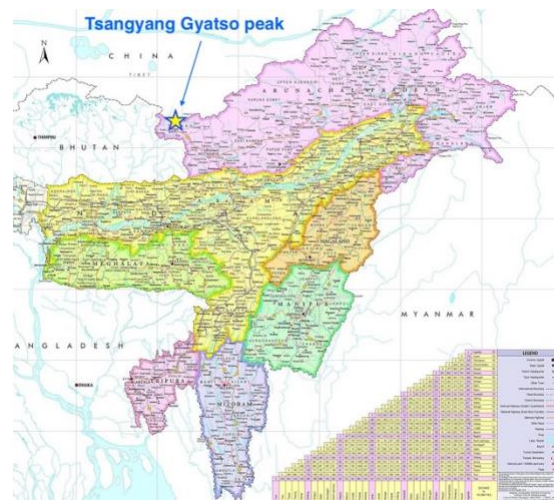
4. Negro River (Rio Negro)

It is one of the **major tributaries of the Amazon River** and the largest blackwater river in the world. It flows primarily through **Colombia, Venezuela, and Brazil**. It is $\approx 2,250$ kilometers (1,400 miles) long, making it one of the longest tributaries of the Amazon. The water in the Negro River is dark due to the **high concentration of organic matter** from decaying vegetation, which leaches tannins into the water, giving it a **tea-like color**. It meets the Amazon River near the Brazilian city of **Manaus**. This confluence creates the famous **Meeting of Waters**, where the dark waters of the Negro and the sandy-colored waters of the Amazon flow side by side for several kilometers before eventually mixing. The region is **facing extreme drought** and the river has recorded its **historically lowest level in the recent times**.



5. Tsangyang Gyatso Peak

India has named a mountain peak in the **Tawang district of Arunachal Pradesh** as **Tsangyang Gyatso**. It has been named so after the **6th Dalai Lama**. The peak has a height of 6,383 m. The naming of the peak is a gesture of tribute to "timeless wisdom and huge contributions" of the Dalai Lama to the local **Monpa community**. The 6th Dalai Lama was born in the Tawang district where the mountain peak is situated.



6. Roopkund Lake

It is situated at an altitude of $\approx 5,029$ meters (16,499 feet) in the **Chamoli district of Uttarakhand**, within the Himalayas. The lake is commonly referred to as the "Skeleton Lake" due to hundreds of ancient human skeletons found around its edges. Roopkund is a **shallow, high-altitude lake**, typically ≈ 2 meters (6.5 feet) deep, although its size fluctuates with

seasonal melting and freezing. It is a **glacial lake**, meaning it was formed by glacial activities, with **crystal-clear water**. The lake holds cultural importance for the local communities, who believe it is associated with **Goddess Nanda Devi**. A Nanda Devi Raj Jat pilgrimage occurs every 12 years, during which devotees travel through this region.



7. Hurricane Milton

Hurricane Milton was formed in the **Gulf of Mexico** and caused widespread damage in the US State of Florida.

The hurricane Milton **swiftly transformed from a Category 1 hurricane to a powerful Category 5 within just 12 hours**. This explosive growth was largely attributed to **unusually warm sea surface temperatures**, which provided ample energy for the storm's intensification. It reached a **peak wind speed of 290 km/hr (180 mph)** and recorded a minimum central pressure of 897 millibars, marking it as the **3rd-strongest hurricane in Atlantic history**. (Refer EPIC April 2024 for Classification of Tropical Cyclones).

8. Heavy Rainfall in Sahara

Heavy rainfall in **southeast Morocco** flooded the Sahara desert region. Some areas received more than 100 mm of rainfall in a single day, which is much more than the average annual rainfall. Parts of the regions received rainfall for the first time in 50 years. The rain was triggered by the **northward shift** of the **Intertropical Convergence Zone (ITCZ)**, which has moved further north than usual, resulting in **equatorial rainfall-like downpours** in the Sahara. Repositioning of ITCZ has been linked to **record-high ocean temperatures** and **climate change**.

9. Inter-Parliamentary Union (IPU)

It is a global organization dedicated to **promoting cooperation** and **dialogue among national parliaments worldwide**. It was founded in 1889. The IPU aims to **promote democracy** by advocating for **democratic governance and principles** across its member parliaments through **parliamentary diplomacy**. It fosters global cooperation on issues such as **sustainable development, human rights, and peace and security**. The IPU strengthens parliamentary institutions by helping them become **more inclusive, transparent, and effective** in their functions.

The IPU includes **180 national parliaments as members**, along with 15 regional parliamentary assemblies. It encourages **legislative action on sustainable development, promotes gender equality** by advocating for a balanced representation of women in political leadership roles, **supports youth representation**, and emphasizes **innovation in governance**, encouraging parliaments to **leverage technology** responsibly for better public service delivery and decision-making.

10. International Day of Non-violence

October 02 is observed as the International Day of Non-Violence. It was proclaimed by the United Nations in 2007 to **honour the birth anniversary of Mahatma Gandhi**. It **celebrates Gandhi's philosophy of peace and non-violence**. It is a reminder of the **enduring power of non-violence in shaping societies worldwide**.

Gandhi's non-violent philosophy inspired global movements, including **Martin Luther King Jr.'s civil rights campaign in the US** and **Nelson Mandela's fight against apartheid in South Africa**. His ideas continue to influence leaders worldwide, emphasizing **non-violence as a powerful instrument for**

change and reform. In today's world, characterized by political conflicts, social unrest, and environmental crises, Gandhi's principles of non-violence are seen as more crucial than ever.

11. East Asia Summit

The Prime Minister of India recently attended the 19th East Asia Summit in Laos. The EAS was established by the ASEAN in 2005. The first summit was held in Kuala Lumpur.

The EAS has 18 members, the **10 ASEAN countries** (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam) and **8 dialogue partners** (Australia, China, India, Japan, New Zealand, Republic of Korea, Russia and the United States). In 2023, EAS members represented **≈53% of the world's population** and accounted for **≈ 60% of global GDP**.

12. India-Nepal-Bangladesh Electricity Trade

Nepal, India, and Bangladesh have signed a Tripartite Agreement for Cross-Border Electricity Trade. **Nepal will export surplus electricity to Bangladesh through India** from June 15 to November 15 every year. **India will make arrangements to supply electricity** from Nepal to Bangladesh. In the first phase, Nepal will export **40 MW of hydroelectricity** to Bangladesh via Indian territory. The price of electricity has been set at 6.4 cents per unit. Nepal is expected to earn US\$ 9.2 million annually from this electricity export.

13. Malabar Maritime Exercise

The opening ceremony of the 28th edition of Malabar maritime exercise was held recently in Vishakhapatnam. The exercise was initiated in 1992 as a **bilateral exercise between India and the United States**. **Japan** and **Australia** joined later, making it a multi-national maritime engagement. It supports India's vision of **Security and Growth for All in the Region (SAGAR)**.

14. Exercise Eastern Bridge

It is a bilateral exercise between the **Indian Air Force (IAF)** and the **Royal Air Force of Oman (RAFO)**. Exercise **Eastern Bridge VII** was held recently in Oman.

15. Exercise KAZIND

The 8th edition of the **India-Kazakhstan** Joint Military Exercise KAZIND was held in Uttarakhand. It is an **annual bilateral military exercise**. It was instituted in 2016 as **Exercise Prabal Dostyk** which was later upgraded to a company-level exercise and renamed as Exercise KAZIND in 2018.

16. Exercise Aikya

A 2-day **disaster management exercise**, Aikya, was conducted in Chennai. It was jointly organized by the **National Disaster Management Authority (NDMA)**, **Southern Command of the Indian Army**, and the **Tamil Nadu State Disaster Management Authority (TNSDMA)**. The aim of the exercise was to improve **disaster preparedness and response** through collaboration between various stakeholders.

17. ABHED Light Weight Bullet Proof Jackets

DRDO, in collaboration with IIT Delhi, has developed Light Weight Bullet Proof Jackets named **Advanced Ballistics for High Energy Defeat (ABHED)**. The jackets have been made from **polymers** and indigenous **boron carbide ceramic material**. These **modular-design** jackets provide **360-degree dprotection** with both **front and rear armour plates**. The jackets meet the highest threat level standards and are lighter

than the maximum weight limits specified in the General Staff Qualitative Requirement of the Indian Army.

18. Dragon Drones

Dragon drones are being deployed by both Russian and Ukrainian forces. These drones release a substance called **thermite**, which is a **mixture of aluminium and iron oxide**. Thermite was initially developed for welding railroad tracks over a century ago. When ignited by an electrical fuse, thermite initiates a self-sustaining reaction that can **burn through various materials**, including clothes, trees, and **even military vehicles**. The reaction is intense enough to **continue burning underwater** and causes **severe burns and bone damage** on contact with humans.

Ukrainian forces reportedly used these drones to burn vegetation, **exposing Russian troops and their equipment**. Russian forces have since adopted similar tactics with their own dragon drones.

While the use of thermite is not outrightly banned, it is **restricted under international law to avoid civilian casualties**.

Protocol III of the Convention on Certain Conventional Weapons: Incendiary weapons like thermite are **limited to military targets** due to their indiscriminate nature and the severe burns they cause. Using thermite on civilian targets is prohibited, but its use against military targets remains legal.

19. THAAD

The US has deployed 100 troops and the Terminal High Altitude Area Defense (THAAD) to Israel. It is an **advanced missile defense system** designed to **counter threats from short, medium, and intermediate-range ballistic missiles** (up to 5,000 km).



It is the only US missile defense system capable of intercepting missiles both inside and outside the atmosphere (**endoatmospheric** and **exoatmospheric**). It is designed to intercept ballistic missiles during the “**terminal phase**”, or the **final stage** of the missile’s flight before impact.

A THAAD battery comprises 95 soldiers, 6 truck-mounted **launchers**, 48 **interceptors** (which destroy incoming missiles), a sophisticated **radar surveillance system** (detects missiles from up to 3,000 kms), and tactical **fire control elements** (controls the launch/firing of interceptors).

THAAD strengthens Israel’s already robust, multi-layered air defense, adding an advanced layer against potential missile threats from Iran and Iranian-aligned militias.

20. Differential Speed of Sun’s Rotation

Scientists at the Kodaikanal Solar Observatory have used data of daily records of the Sun of the past 100 years to map the **variation in the rotation speed of the Sun’s chromosphere**, from the equator right up to its polar regions. The Earth spins like a rigid ball, with the same rotational speed everywhere and completing a full rotation every 24 hours. The Sun is a giant ball of plasma and its **different parts rotate at different speeds**, depending on their latitude. Sun’s **equator spins much faster than its poles**. It takes the **equatorial region ≈25 days to complete one rotation**, while the **poles take ≈35 days**.

Scientists think that the interaction of differential rotation with the Sun’s magnetic field activates the solar dynamo, the **11-year solar cycle**, and its periods of intense activity that produce **magnetic storms on Earth**.

21. Radio Jets

Radio jets refer to **high-energy streams of charged particles** ejected from the **regions surrounding supermassive black holes**, often located at the centre of galaxies.

These jets are typically observed at **radio wavelengths** and are thought to be produced by the **interaction between the black hole's magnetic field** and the **accretion disk**, which channels material into narrow beams.

22. Interstellar gas

Interstellar gases are composed mainly of **hydrogen and helium**. Interstellar gas exists between stars in galaxies and serves as the **medium through which radio jets propagate**. When a radio jet interacts with interstellar gas, it can **compress and heat the gas**, triggering various effects, including star formation or, conversely, suppressing it by dispersing the gas.

23. CERN

The **European Organization for Nuclear Research** (CERN) recently celebrated its 70th Anniversary. It was established in 1954. It is one of the world's largest and most respected centres for **scientific research in particle physics**. It is located near **Geneva, Switzerland**, on the border between Switzerland and France. CERN's primary mission is to **explore the fundamental properties of the universe** through advanced particle physics research. CERN aims to **explore dark matter, dark energy**, and physics beyond the **Standard Model**, with upgrades to the Large Hadron Collider (LHC) and plans for the **Future Circular Collider (FCC)**. **Large Hadron Collider (LHC)** is the **world's largest accelerator** and helps study particles by recreating conditions similar to the **Big Bang**. CERN confirmed the existence of the **Higgs boson in 2012**, validating the **Standard Model of Particle Physics**. CERN has driven breakthroughs like the **World Wide Web** and continues to lead in computing and data storage technologies. (Refer EPIC February 2024 for Future Circular Collider and Large Hadron Collider).

24. MACE Observatory, Hanle, Ladakh

The Major Atmospheric Cerenkov Experiment Telescope (MACE) Observatory has been inaugurated in Hanle, Ladakh. The observatory features the **largest imaging Cherenkov telescope in Asia**, located at an altitude of $\approx 4,300$ meters, making it the highest observatory of its kind globally. It has been built indigenously by **Bhabha Atomic Research Centre (BARC)** with support from **Electronics Corporation of India Limited (ECIL)** and other Indian industry partners. Its purpose is to advance **cosmic-ray research** and **observe high-energy gamma rays**, aiding the understanding of universe phenomena like supernovae, black holes, and gamma-ray bursts. (Refer EPIC April 2024 for Tachyon and Cherenkov Radiation).

25. Planet Venus

Venus is the **second planet from the Sun** and is often referred to as **Earth's "sister planet"** due to its similar size and mass. Venus has a **thick atmosphere** composed primarily of **carbon dioxide**, with clouds of sulfuric acid. Surface temperature of **462°C makes Venus hotter than Mercury** despite being farther from the Sun. The **surface pressure is about 92 times that of Earth**, equivalent to the pressure found about 900 meters underwater on Earth. The surface of Venus is **rocky and volcanic**. It is dotted with mountains, vast plains, and large **impact craters**. Venus has a unique rotation. Venus rotates very slowly, with **one rotation taking 243 Earth days**. It takes only **224.7 earth days to complete its revolution** around the Sun. Hence **a day is longer than a year on Venus**. (Refer EPIC September 2024 for About Venus Orbiter Mission).

26. X-Band Radar

The Union Ministry of Earth Sciences has approved the installation of an X-band radar in Wayanad district, Kerala.

Radar (Radio Detection and Ranging) is a device that **uses radio waves to measure the distance, speed, and other characteristics of objects**. It emits a signal toward a target, such as a cloud, and **analyses the reflected signals** to gather data. (Refer EPIC January 2023 for Doppler Radars).

X-band Radars operate in the **microwave segment of the spectrum**, with wavelengths between **2.5 to 3.75 cm** and frequencies from **8.0 to 12.0 GHz**. The short wavelength allows for **precise imaging** and **higher resolution**, which is **ideal for detecting small targets** and **providing detailed information**. They can be used as **weather radar**, for **maritime navigation**, **military surveillance** and **Air Traffic Control**.

27. BharatGen

BharatGen is an initiative in **generative AI** designed to **revolutionize public service delivery** and **boost citizen engagement** through developing a **suite of foundational models in language, speech** and **computer vision**. This initiative marks the world's first **government-funded Multimodal Large Language Model project** focused on creating efficient and inclusive AI in Indian languages.

The initiative is led by IIT Bombay under the **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)**.

It will create generative AI systems that can generate **high-quality text and multimodal content** in various **Indian languages**. By training on multilingual datasets, it will deeply capture the nuances of Indian languages, which are often **underrepresented in global AI models**. It will cater to both **text and speech**.

BharatGen will deliver generative AI models and their applications **as a public good by prioritizing India's socio-cultural and linguistic diversity** ensuring that **generative AI reaches all segments of society**.

The four key distinguishing features of BharatGen are:

- Multilingual and multimodal nature of foundation models.
- Bhartiya data set based building, and training.
- Open-source platform.
- Development of an ecosystem of generative AI research in India.

28. PARAM Rudra Supercomputer

The Prime Minister inaugurated the PARAM Rudra Supercomputer at S.N. Bose National Centre for Basic Sciences (SNBNCBS), Kolkata. It has been developed under the **National Supercomputing Mission (NSM)**. It is aimed at **revolutionizing research across multiple domains** including advanced materials, high-energy physics, earth sciences, cosmology, and biological sciences. It has been designed with an **838 TFLOPS computing power**. It symbolizes India's commitment to self-sufficiency in advanced computing technology. It equips Indian researchers with essential tools to **drive global innovation** and make significant contributions across various scientific fields. It will improve India's **ability to predict weather and climate phenomena**, aiding in environmental sustainability and disaster preparedness. (Refer EPIC August 2023 for National Supercomputing Mission).

29. Click-to-Cancel Rule

The United States' Federal Trade Commission (FTC) is going to introduce a rule that will **simplify the process for consumers to cancel their subscriptions and memberships**. The rule addresses rising complaints regarding recurring payments, aiming to modernize the 1973 **Negative Option Rule** to tackle

deceptive practices in the growing digital subscription economy. Companies must provide a **cancellation option through the same medium** (online, phone, etc.) that was used to sign up.

Cancellation cannot be more difficult than subscribing. Companies **cannot force customers to speak to a live or virtual representative to cancel** if they didn't have to do that while signing up. **Companies cannot charge extra for phone cancellations** and must **respond promptly to cancellation requests**. Companies must offer cancellation options online or over the phone and **cannot mandate in-person cancellations**. The rule applies to most subscription models, including those with automatic renewals, free trials, or continuity plans, often referred to as “**negative option**” programs, where **consumers are charged unless they explicitly opt out**.

30. Haber Bosch Process

The Haber-Bosch Process is a method used for **synthesizing ammonia** (NH_3) **from nitrogen** (N_2) and **hydrogen** (H_2) gases. It was developed by Fritz Haber in the early 20th century and later industrialized by Carl Bosch. The process is a critical component of the modern **agricultural industry**, as **ammonia serves as a key ingredient in fertilizers**. The process has had a transformative impact on food production worldwide, **enabling the large-scale manufacture of ammonia** and thereby **contributing significantly to global crop yields**. Despite its benefits, the Haber-Bosch Process is **energy-intensive** and **contributes to greenhouse gas emissions** due to the use of fossil fuels in production of hydrogen. Efforts are underway to **make the process more sustainable**, including research into **alternative hydrogen sources** (such as renewable-powered electrolysis) and improved catalysts that could **operate at lower temperatures and pressures**. Present industrial process operates under high pressure (150-200 atmospheres) and high temperature (400-500°C).

31. Trachoma

The WHO has officially recognized that **India has eliminated trachoma as a public health issue**. India is now the 3rd country in the WHO Southeast Asia Region to achieve this significant public health milestone.

Trachoma is the **leading infectious cause of blindness globally**. It is caused by **Chlamydia trachomatis**, an obligate intracellular bacterium. It occurs via direct or indirect contact with eye or nose discharges from infected individuals, particularly young children who are the main reservoir. Certain fly species can also spread the infection. It is primarily transmitted within households; close contact with infected individuals increases risk. Although an individual's immune system can clear single infections, frequent re-infections are common in endemic areas. **Inadequate hygiene, overcrowded living conditions, limited access to water and insufficient sanitation facilities** influence transmission. It is **hyper-endemic** in rural, impoverished areas across Africa, Central and South America, Asia, Australia, and the Middle East.

In 1976, Trachoma control was incorporated into the **National Programme for Control of Blindness and Visual Impairment** (NPCBVI), allowing for continued funding and strategic focus on trachoma elimination.

32. Unified Genomic Chip

The Prime Minister has launched the ‘Unified Genomic Chip’. It is an initiative aimed at **improving livestock breeding in India**, specifically targeting cattle and buffalo. Its purpose is **to help farmers identify high-quality cattle** early and improve dairy farming efficiency in India. The chip comes in two versions: the ‘Gau Chip’ for cattle and the ‘Mahish Chip’ for buffalo. Both versions are tailored specifically for Indian cattle breeds. It will help farmers **make informed decisions regarding animal selection** by

identifying high-quality bulls at an early age. It aims to improve cattle quality and enhance dairy productivity, contributing to farmers' economic growth.

33. Key Biodiversity Areas (KBA)

Key Biodiversity Areas (KBA) are geographical regions that have been **determined to be of international importance in terms of biodiversity conservation**. They are determined using globally **standardized criteria published by the IUCN** as part of a collaboration between scientists, conservation groups, and government bodies across the world.

The purpose of KBA is to identify regions that are in **need of protection by governments or other agencies**.

Examples of types of KBAs include **Important Plant Areas (IPAs)**, **Ecologically and Biologically Significant Areas (EBSAs)** in **the High Seas** etc.

The criteria for identifying KBA include

- Contains a significant number of **endangered species**; or **ecosystems threatened** on a global scale.
- Contains species, taxonomic groups, or ecosystems that are **confined to small geographic zones**.
- Relatively **untouched by human activity**.
- Attracts species at important life stages, such as "breeding, feeding or during migration" or is a "refuge" where species retreat from **temporary negative environmental conditions**.
- Has a **high level of irreplaceability**.

34. 'Ek Ped Maa ke Naam' Campaign

The Government has successfully met the target of **planting 80 crore saplings** under the 'Ek Ped Maa Ke Naam' campaign. The campaign was initiated by the Prime Minister on **World Environment Day**, June 05, 2024. The campaign encouraged citizens to **plant a tree in honour of their mothers**, promoting both **ecological conservation** and **familial respect**.

The campaign adopted a "**Whole of Government**" and "**Whole of Society**" strategy, involving **citizens, communities, and local administrations** in a collective effort to **rejuvenate India's green cover**. The campaign is part of a broader movement to **integrate environmental consciousness with personal and cultural values**. The campaign also focused on **halting land degradation** and **restoring degraded land parcels** through large-scale tree plantation efforts.

35. India's Biodiversity Targets under the CBD

India has submitted its National Biodiversity Targets **to be achieved by 2030** to the **UN Convention on Biological Diversity**. The 23 targets submitted by India include:

- **30% of areas** are effectively conserved.
- **Ensure participation**, justice, and rights for **indigenous peoples** and local communities, women and youth.
- **Sustainable consumption choices** are enabled, and **food waste reduced by half**.
- Multiple values of biodiversity are integrated into decision-making at all levels.
- **Fair and equitable sharing of benefits from genetic resources**, digital sequence information and associated traditional knowledge.
- **Pollution reduced**, halving nutrient loss and pesticide risk.
- Reduce rates of introduction and establishment of **invasive alien species** by 50%.
- All areas are planned or managed to **reduce loss of areas of high biodiversity importance**.

36. Ranthambore Tiger Reserve

It is located in the **Sawai Madhopur district** of Rajasthan. It was established as the **Sawai Madhopur Game Sanctuary** in 1955. It was declared one of the **Project Tiger reserves in 1973** and became a **national park in 1980**. It is now a part of the **larger Ranthambore Tiger Reserve**, which includes the nearby **Kailadevi Sanctuary** and **Sawai Mansingh Sanctuary**. It spans an area of around 1,334 km², with the core zone comprising about 392 km². The park is situated in **the Aravalli hill ranges**.



The park landscape is combination of **rugged hills and plateaus**, with **open grasslands, dense forests**, lakes, and rivers.

The park is known for its **diverse ecosystem**, which includes dry deciduous forests, grasslands, and scrublands. **Bengal tiger** is the primary attraction. It is home to a variety of other wildlife including mammals such as leopards, sloth bears, striped hyenas, sambar deer, chital, nilgai, wild boar, and Indian foxes.

37. Karakoram Wildlife Sanctuary

Karakoram Wildlife Sanctuary is located in the easternmost reaches of the **Karakoram Range in Leh District**, Ladakh. The sanctuary is one of the few places in India where **the Chiru or Tibetan Antelope migrates**. The sanctuary is bounded by the **Nubra and Shayok Rivers** and shares international borders with China and Pakistan. It is named after the Karakoram Ranges, which line the north of the sanctuary. In certain elevations within this Wildlife Sanctuary, the **average temperature during the warmest month is below 0°C**, while in other areas, it stays under **10°C**.



The sanctuary is home to **14 mammal species**, including **10 rare and endangered ones** like the Ibex, Ladakhi Urial, Argali, Chiru (Tibetan Antelope), Tibetan Gazelle, Shapo, Bharal (Blue Sheep), Wild Yak, Snow Leopard, Lynx, and Wolf. Bactrian camels are also found in nearby region.

The sanctuary serves as a **breeding centre and habitat** for a wide range of **rare and endangered wild animals** and plant species.

38. Classical Language Status

The Union Cabinet has approved classical language status for 5 new languages: **Marathi, Bengali, Assamese, Pali** and **Prakrit**. There are already 6 classical languages: Tamil (2004), Sanskrit (2005), Kannada (2008), Telugu (2008), Malayalam (2013) and Odia (2014).

The existing criteria for Classical Language include Antiquity, Literary Heritage, Original Literary Tradition and Distinctiveness. The Government has reworded the Literary Tradition to include "Knowledge texts, especially prose texts in addition to poetry, epigraphical and inscriptional evidence".

(Refer EPIC July 2024 for Criteria for Classical Language).

39. National Maritime Heritage Complex (NMHC)

The Union Cabinet has approved the development of the National Maritime Heritage Complex (NMHC) in Lothal, Gujarat. It will be undertaken by Ministry of Ports, Shipping & Waterways (MoPSW). It will

showcase India's 4,500-year-old maritime heritage. The project is expected to generate ≈22,000 jobs (15,000 direct and 7,000 indirect).

NMHC will benefit local communities, tourists, researchers, government bodies, educational institutions, cultural organizations, conservation groups, and businesses.

40. Battle of Walong

The Indian Army is organizing a series of month-long events to commemorate **the 62nd anniversary of the Battle of Walong**, which occurred during the **1962 war with China**. It was the **only counterattack launched by India** during the 1962 war.



The battle took place in **Arunachal Pradesh's Walong**, the easternmost town near the Tibet region.

Indian Army's 6 Kumaon Battalion launched the counterattack with **limited resources**, ammunition, and manpower. Despite being heavily outnumbered, Indian troops managed to hold back the Chinese forces for over 20 days.

The bravery and determination of Indian soldiers were recognized, with **Time magazine in January 1963** stating, "At Walong, Indian troops lacked everything. The only thing they did not lack was guts".

41. Pillboxes on Vishakhapatnam Beach

The shifting of sands of Visakhapatnam's beaches have revealed the presence of Pillboxes. They were **built during the Second World War (WWII)** and were part of a **strategic defence network** to protect city's shores from **potential enemy invasions**. The Pillboxes were equipped with **loopholes** through which **defenders can fire weapons**. The designs of the pillboxes were often compared to **medicine containers** made in the early 20th century to store pills; hence the reference 'pillbox' became popular. The pillboxes were constructed to protect the vital infrastructure of the port city from **possible invasion by Japanese submarines and aircraft** during the WWII.



42. Rosh Hashanah

It symbolizes **new year in Judaism**. It literally translated to 'head of the year'. Rosh Hashanah is a **2-day observance and celebration** that begins on the first day of **Tishrei**, which is the 7th month of the Jewish Calendar. Rosh Hashanah begins ten days of penitence culminating in **Yom Kippur**.

Rosh Hashanah customs include **sounding the shofar** (a hollowed-out ram's horn), attending synagogue services and enjoying festive meals. Eating symbolic foods, such as apples dipped in honey, hoping to evoke a sweet new year, is an ancient tradition.

43. Travel and Tourism Development Index, 2024

It is published by the **World Economic Forum**. India has secured **39th rank** among 119 countries in the TTDI 2024. India has shown significant improvements in the following areas: Prioritisation of Travel & Tourism, **Safety & Security** and Health & Hygiene. The Government of India is promoting tourism as a means of **social inclusion, employment generation, and economic growth**. Tourism is seen as a **key**

sector in driving India's goal to become a **developed nation by 2047**. Key initiatives to **increase foreign tourist arrivals** include promotion of adventure and niche tourism, simplification of e-visa availability, introduction of a 24×7 multilingual tourist helpline, launch of 'Paryatan Didi' and 'Paryatan Mitra' on World Tourism Day 2024 to ensure a hospitable tourist experience.

44. Antyodaya Diwas

It is celebrated on **September 25** every year, to commemorate the birth anniversary of **Pandit Deendayal Upadhyaya**. He was born in Mathura, Uttar Pradesh, on September 25, 1916. He was the co-founder of the **Bharatiya Jana Sangh (BJS)**, the forerunner of the Bharatiya Janata Party (BJP), and was also one of the thinkers of **Rashtriya Swayamsevak Sangh (RSS)**.

Upadhyaya was a well-known philosopher who worked for the **cause of the poor and needy** and championed **integral humanism**, focussing on **individual and collective welfare, social justice, economic equality, and self-reliance**.

The term 'Antyodaya' translates to **upliftment of the last person**, epitomising Upadhyaya's mission to **address the needs of the most disadvantaged individuals in society**.

45. Tobacco Free Youth Campaign 2.0

It has been launched by the Ministry of Health. The campaign aims to **protect young people** from the harmful effects of **tobacco use** and **promote healthier lifestyles**. The campaign emphasizes a '**whole of government**' approach, coordinating efforts between **7 ministries**. 3 key guidelines have been introduced **Health Workers Guide, SOPs for Tobacco-Free Villages** and **Guidelines for Law Enforcers** for effective implementation of tobacco control laws.

The key focus areas of campaign are **Public awareness, Improving compliance** with the revised Tobacco-Free Educational Institutions (ToFEI), **Strengthening enforcement** of tobacco control laws, Creation of **Tobacco-Free Villages, Social outreach** through digital/social media etc.

46. Mera Yuva Bharat

It is an **autonomous body** set-up in October 2023. Its aim is to be a **technology-driven facilitator for youth development**, helping young people contribute towards a "Viksit Bharat" (Developed India). The platform focuses on **empowering youth** and providing equitable opportunities for **leadership, innovation, and community engagement**. Beneficiaries are youth in the age group of **15–29 years**. It is a combination of **physical and digital initiatives** (phygital), and allows for **broad engagement** through both online tools and community activities. It is designed to connect the youth with government programs, leadership initiatives, and mentor-led skill-building opportunities.

'**Seva Se Seekhein**' campaign was recently launched under its aegis to foster a culture of service (seva), empowering young volunteers to contribute to the nation's healthcare system.

47. Spices Board of India

The Spices Board is **autonomous body** under the **Ministry of Commerce and Industry** for the development and worldwide **promotion of Indian spices**. It was constituted in 1987 under the **Spices Board Act, 1986** with the merger of the erstwhile Cardamom Board (1968) and Spices Export Promotion Council (1960). Its primary functions include the **regulation of the quality and marketing of spices** and the development of spice crops through **research, development, and promotion of Indian spices** both domestically and internationally. It is responsible for the export promotion of the **52 scheduled spices** and development of Cardamom (Small & Large). Its key responsibilities include R&D, quality control, export promotion, training and market intelligence (about production, prices, trends etc.).

48. Codex Alimentarius

The **Codex Alimentarius** (Latin for 'Food Code') is a collection of **internationally recognized standards**, codes of practice, guidelines, and other recommendations published by the **Food and Agriculture Organization** of the UN relating to **food, food production, food labelling, and food safety**.

The standards are maintained by the **Codex Alimentarius Commission (CAC)**. The CAC was established in 1961 by the FAO and joined by the WHO in 1962.

The Commission's main goals are to **protect the health of consumers**, to **facilitate international trade**, and **ensure fair practices in the international food trade**.

The CAC is an **intergovernmental organization**; the member states of the FAO and WHO send delegations to the CAC. As of 2021, there were **189 members of the CAC** (188 member countries plus one member organization, the European Union (EU)) and 239 Codex observers (59 intergovernmental organizations, 164 NGOs, and 16 UN organizations).

49. PUSA-44 Rice Variety

It is a **high-yielding variety of paddy** developed by the **Indian Agricultural Research Institute (IARI)**. It was released for large-scale cultivation in 1993 and has been widely adopted in Punjab. It takes **≈155-160 days from sowing to harvesting**. Its yields range between **35-40 quintals per acre**. Its yield is higher than other varieties like **PR-126** (30-32 quintal/acre in 123-125 days). The additional yield translates to a financial benefit of **≈ INR 9,280-11,600 per acre**, based on the minimum support price of INR 2,320 per quintal for 'Grade A' paddy.

It is the major contributor to **stubble burning** (due to long maturity period), and thus air pollution. It also has **high water requirements**, exacerbating **groundwater depletion** in water-scarce regions.

The Government of Punjab has banned Pusa-44 for the current crop year due to concerns over stubble burning. However, many farmers continue to **cultivate it using saved seeds from previous crops**.

The Union and State Governments are considering phasing out the PUSA-44, IARI has introduced a new variety called **Pusa-2090**. It matures faster (120-125 days) while maintaining comparable yields (34-35 quintals per acre).

50. National Mission on Edible Oils - Oilseeds

The Union Cabinet has approved the National Mission on Edible Oils – Oilseeds (NMEO-Oilseeds). It will be implemented over 7 years, from 2024-25 to 2030-31. It is aimed at **boosting domestic oilseed production** and **achieving self-reliance in edible oils**. The mission focuses on **enhancing production of key oilseed crops**, including: Rapeseed-Mustard, Groundnut, Soybean, Sunflower and Sesamum. It also aims to **improve extraction from secondary sources** such as: Cottonseed, Rice Bran and Tree-Borne Oils (TBOs). The mission will also promote awareness of recommended dietary guidelines for edible oils through an Information, Education, and Communication (IEC) campaign.

Targets

- Increase primary oilseed production from 39 Million Tonnes (MT) (2022-23) to 69.7 MT (2030-31).
- Target a total domestic edible oil production of 25.45 million tonnes, meeting 72% of projected domestic demand by 2030-31.
- Expand oilseed cultivation by an additional 40 lakh hectares.

51. Tele-MANAS Initiative

It has been initiated by the Union Ministry of Health & Family Welfare. The programme includes a network of 23 tele-mental health centres of excellence. The initiative aims to provide **free tele-mental health services** all over India round the clock, particularly catering to people in remote or under-served

areas. **National Institute of Mental Health and Neurosciences (NIMHANS)** is the nodal center for the initiative. A **toll-free, 24/7 helpline number (14416)** has been set up across the country allowing callers to select the language of choice for availing services. The calls would be routed to Tele-MANAS cells in the respective States and UTs.

Tele-MANAS operates on a two-tier system: Tier 1 comprises State Tele MANAS cells which include **trained counsellors** and **mental health specialists**. Tier 2 comprises specialists at District Mental Health Programme (DMHP)/Medical College resources for physical consultation and/or e-Sanjeevani for audio-visual consultation.

52. Hamsafar Policy

The Humsafar Policy aligns with the Government's goal to bring **national highways** to **international standards**. The Policy aims to **improve infrastructure** on national highways, focusing on comfort, convenience, and inclusivity for travellers. Its objective is to **enhance the travel experience** by providing **essential services** and making highways **more user-friendly**, including Sanitation Facilities; Family-Friendly Amenities, EV charging stations; Parking and Fuel Stations; Food and Refreshment facilities; Accommodation etc. The Policy is expected to **boost local economies** around the national highways and **enhance safety**.

53. SARTHI

The **National Institute of Food Technology Entrepreneurship and Management (Kundli, Haryana)** under the Ministry of Food Processing Industries has launched SARTHI (Solar Assisted Reefer Transportation with Hybrid Controls and Intelligence). It has been launched to **address post-harvest losses, reduce spoilage during transportation of perishable foods** (fruits and vegetables).

SARTHI integrates **advanced technology** like **IoT, sensors, and solar power** to ensure **real-time monitoring** and **control of transportation conditions**.

Sensors measure essential parameters like temperature, humidity, ethylene, and CO₂ levels, providing critical data for quality management through a mobile app.

The system features **dual compartments**, enabling **different temperature settings for various produce types**. Fruits are kept at 0-5°C, while vegetables are stored at 7-12°C. A compartment can maintain temperatures as low as -10°C, ensuring optimal conditions and **extended shelf life**, while minimizing moisture loss and chilling injuries.

It allows **transporters** to **make informed decisions** on the go through **real-time data tracking**. If spoilage is detected, the system can suggest **rerouting to nearby markets**, ensuring that produce reaches its destination faster and **reducing food wastage**.

SARTHI is equipped with a **solar-powered air handling unit**, ensuring uninterrupted temperature control **even during transport halts**. This enhances the **sustainability of the system**, reducing energy consumption and lowering carbon footprint.

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.