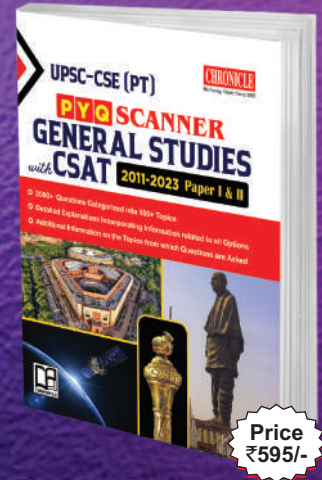


Civil Services

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CSE Prelims Special GS Roundup-2

32 Most Important Topics from which Questions are Frequently Asked in the Preliminary Examination

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- Maritime Security Challenges in IOR
- Drug Abuse among Young Persons
- Ramnath Kovind Panel on 'One Nation, One Election'
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India's G20 Leadership

Towards Realizing the Vision of an Inclusive World Order

The unanimous acceptance of the New Delhi Leaders' Declaration by all the countries shows that India has been able to end the differences among the big powers in this Summit. It is noteworthy that after last year's G20 Summit, differences between the big powers had increased significantly. India's presidency of G20 and its success proves that 'India is ready for the world and the world is ready for India'.

■ Dr. Amarjeet Bhargava

The 18th G20 Summit was held at the 'Bharat Man-dapam International Exhibition-cum-Convention Centre' (IECC) in New Delhi on 9-10 September, 2023. This was the first G20 summit to be held in India as well as South Asia.

The theme of India's G20 presidency is 'Vasudhaiva Kutumbakam', which translates to 'One Earth, One Family, One Future'. The summit ended with the adoption of the New Delhi Leaders' Declaration which was unanimously adopted by all the member countries. This is a major diplomatic victory for India given the consensus of both Russia and China on the stance taken on the Ukraine crisis.

Numerous innovative global initiatives were launched at the summit, which have the potential to make a huge impact on the global landscape in the times to come.

G20 is an intergovernmental forum for international economic cooperation and plays an important role in the global economic and political issues. When the G20 group was established, its initial focus was mainly on global economic issues and financial stability, but over time its agenda expanded to include trade, climate change, sustainable development, health, agriculture, energy, environment and anti-corruption, etc.

The success of this year's G20 Summit provides a unique opportunity for India to put the aspirations of the developing world at the forefront while leading a collective approach to address the world's complex economic and political challenges.

Important Outcomes of the Summit

(A) New Delhi Leaders' Declaration

New Delhi Leaders' Declaration was adopted at the conclusion of the conference. The main aspects of this declaration can be understood as follows:

- **Strong, Sustainable, Balanced and Inclusive Growth:** The Declaration calls for a comprehensive framework to identify global value chains. This will help members identify and address risks. With mutual cooperation of the member countries, a 'Financial Inclusion Action Plan' will be prepared to rapidly promote the financial inclusion of individuals and MSMEs.

- **Accelerating Progress towards Achieving the Sustainable Development Goals:** Member States acknowledged the need for strengthening of Group on Earth Observation Global Agriculture Monitoring (GEOGLAM) and Agricultural Market Information System (AMIS).
- **Green Growth Agreement for a Sustainable Future:** Developing countries, in particular, need \$5.3 to 5.9 trillion before 2030 to implement their Nationally Determined Contributions. Thus, a potential Green Growth Agreement would be able to facilitate the necessary finance.
- **Multilateral Institutions for the 21st Century:** In the New Delhi Leaders' Declaration, for the first time, a broad consensus has been reached among the member states on 'UNGA 75/1' related to the reform of the 'United Nations Security Council'.
 - ♦ Similarly, all countries have agreed on a roadmap to implement the recommendations of the G20 independent review on the Multilateral Development Bank Capital Adequacy Framework.
- **Technological Transformation and Digital Public Infrastructure:** As agreed by member states, creation of a Global Digital Public Infrastructure Repository (GDPIR) to share best practices and experiences in the development and use of Digital Public Infrastructure (DPI) will be done.
 - ♦ Consensus has also been reached on preparing a joint roadmap to support a coordinated and comprehensive 'Policy and Regulatory Framework' for crypto-assets.
- **International Taxation:** The Declaration reaffirms the commitment to the 'Twin-Pillars of the International Tax Package'. These two pillars include 'Profit Allocation and Alliances' and 'Global Minimum Taxation'.
- **Gender Equality and Empowering All Women and Girls:** The Delhi Declaration calls for the establishment of 'A Full Working Group on Women Empowerment' to promote gender equality and women's empowerment globally.
- **Paving the Way for Planet Earth, People, Peace and Prosperity:** The adverse impact of the Russia-Ukraine

India's G20 Leadership

war on the global economy will be addressed. Furthermore, the Declaration welcomes constructive initiatives to support comprehensive, just and lasting peace in Ukraine.

GOA ROADMAP TO BOOST TOURISM SECTOR

The G20's New Delhi Leaders' Declaration underlines the importance of the 'Goa Roadmap' to promote the tourism sector as a means to achieve the Sustainable Development Goals.

- **Priority Areas:** The five priority areas related to tourism have been identified in this roadmap. These include:
 - i) green tourism
 - ii) digitalization,
 - iii) skill development,
 - iv) tourism MSME, and
 - v) destination management.
- **Travel for Life Initiative:** The launch of 'Travel for Life Initiative' has also been mentioned in the Delhi Declaration. This initiative inspires all tourists and tourist businesses to take simple actions that have special significance for environmental protection and climate action.

(B) India-Middle East-Europe Economic Corridor

MoU for establishment of 'India-Middle East-European Economic Corridor' (IMEC) was signed during the G20 meeting on 9th September, 2023. This Memorandum of Understanding (MoU) has been signed by India, United States of America, Saudi Arabia, European Union, United Arab Emirates, France, Germany and Italy.

Objective

IMEC is envisioned to create a Network of Transportation Corridors. This network will aid economic growth through geographical integration between Asia, the Arabian Gulf and Europe.

Three Important Components of IMEC

- Railway Lines:** This will increase the speed of trade between India and Europe by 40%.
- Power Cables and a Clean Hydrogen Pipeline:** This will boost clean energy business.
- High Speed Data Cable:** Will connect the world's innovative digital ecosystem and create business opportunities.

Part of PGII

- IMEC is a part of the Partnership for Global Infrastructure Investments (PGII). PGII was announced during the G-7 Summit held in the United Kingdom in 2021.
- PGII has been launched to finance infrastructure projects around the world. Another project announced under PGII is the 'Trans African Corridor'. It will connect Lobito port in Angola with the Copper Belt in Congo's Katanga province and Zambia.

(C) Global Biofuels Alliance

The 'Global Biofuels Alliance' (GBA), launched during the G20 Summit, aims to act as a platform towards promoting the use of biofuels.

GBA Members

- **07 Countries of the G20:** Argentina, Brazil, Canada, India, Italy, South-Africa and the United States.
- **04 Countries Invited by G20:** Bangladesh, Singapore, Mauritius and United Arab Emirates.
- **08 Countries that are not members of the G20:** Iceland, Kenya, Guyana, Paraguay, Seychelles, Sri Lanka, Uganda and Finland.
- **12 International Organizations:** These include the World Bank, Asian Development Bank, World Economic Forum, World LPG Organisation, International Energy Agency, International Energy Forum, International Renewable Energy Agency and World Biogas Association, among others.

Importance of Global Biofuels Alliance

- It will accelerate global use of biofuels by promoting technology development. Also, it will reduce dependence on fossil fuels.
- It will help in the development, adoption and implementation of internationally recognized standards, codes, sustainability principles and regulations. This step will give a massive boost to the adoption and trade of biofuels globally.
- This alliance will help in achieving India's goal of moving towards the use of alternative fuels and achieving Net Zero Carbon Emissions by the year 2070.

(D) African Union joins G20 as a New Permanent Member

- The African Union (AU) joined the G20 as a new permanent member during the summit. AU was established in the year 2002 in Durban, South Africa. 55 countries of the African continent are members of this union. The purpose of establishing this union is to establish unity and harmony among African countries and to accelerate their political, social and economic integration.

Importance of including AU

- This will help make the G20 a more representative organization. With the inclusion of the AU, the group will now represent approximately 88.9% of global GDP and approximately 78.9% of the global population.
- Similarly, most of the AU countries are also countries of the Global South (GS). The inclusion of the AU will strengthen the Global South's position in multilateral platforms. This will also help counter-balance China's influence in Africa.

(E) Other Important Achievements

(1) Joint Statement of India and Brazil

India and Brazil released a joint statement on the occasion of G20 Summit. The Joint Statement was issued to mark the

75th anniversary of diplomatic relations between Brazil and India as well as the 20th anniversary of the India-Brazil-South Africa (IBSA) Forum.

Key points of the Joint Statement

- Both countries have decided to work together on the framework of 4G and L.69. 4G includes Brazil, India, Japan and Germany. Similarly, the L.69 group includes the African continent, Latin America, the Caribbean and developing countries in Asia and the Pacific region. Both these groups are demanding reforms in the United Nations Security Council (UNSC).
- In the joint statement, Brazil has supported India's candidature for the non-permanent seat of the UNSC for the term 2028-29.
- India has welcomed Brazil's chairmanship of the BASIC Group. Apart from this, India has also supported Brazil's presidency of the 30th 'Conference of the Parties' of the UNFCCC in the year 2025. The BASIC group includes Brazil, South Africa, India and China.
- Both the countries have decided to establish 'India-Brazil Business Forum' for mutual cooperation in the private sector.

(2) Joint Statement of India and the US

India and the United States issued a joint statement at the bilateral meeting on the sidelines of the G20 Summit meeting.

- **Key Points of the Joint Statement**
- **Semiconductors:** \$300 million will be invested under the Microchip Technology Initiative to promote research and development in India.
- **Education:** Indian universities and the Association of American Universities (AAU) have signed a MoU to establish the Global Challenge Institute. For this, both the parties have agreed to contribute a combined initial amount of US \$ 10 million.
- **Space:** A 'Working Group for Commercial Space Cooperation' will be set up under the existing India-US 'Civil Space Joint Working Group'.
- **Renewable Energy:** Both countries have exchanged letters of intent to contribute US\$500 million to the 'Renewable Infrastructure Investment Fund'.
- **Trade:** The 7th and last pending dispute on poultry products between the two countries has been resolved in the World Trade Organization (WTO).
- **Quantum Technology:** S. N. Bose National Centre for Basic Sciences will be partnered as a member of the Quantum Economic Development Consortium.

(3) Decision to Set Indicators to Measure Global Skills Gaps

On the sidelines of the G20 meeting, the International Labour Organization (ILO) and the Organization for Economic Cooperation and Development (OECD) have proposed indicators to monitor and measure global skills gaps.

- G20 member countries have also agreed on these indicators. The 'G20 Employment Working Group' under the

chairmanship of India has given the following suggestions to eliminate the skill mismatch:

- ♦ A comprehensive global skill classification should be developed, which can be used across different countries.
- ♦ Institutional platforms to generate, collect, use and disseminate data should be created and available capacity should be utilized.
- ♦ Big data analysis and machine learning should be used to develop and complement existing labour market information.

G20: AN OVERVIEW

- **Establishment:** The G20 was established in 1999 in response to the global economic crisis of 1997-98. It is an informal group currently comprising 19 countries, the European Union and the African Union, and also includes representatives of the International Monetary Fund and the World Bank.
 - * Initially the group functioned as a forum for central bank governors and finance ministers of member countries. But, after the financial crisis of 2008, in 2009, it was declared as the 'major platform for international economic cooperation'. Since then, leaders of G20 countries have been organizing meetings regularly.
- **Member Countries:** G20 members are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States America, the European Union and the African Union.
- **Purpose:** The G20 works to address all major international economic issues as well as issues related to international financial stability, climate change mitigation and sustainable development.
- **The structure of the G20 Summit can be understood through Sherpa Track and Finance Track:**
 - * **Sherpa Track:** Sherpas from member countries act as personal envoys of individual leaders. They oversee all negotiations throughout the year, discuss the summit agenda, and coordinate key G20 functions.
 - * **Finance Track:** It is led by the Finance Ministers and the Governors of the Central Banks, who generally meet four times a year, two of which coincide with World Bank/International Monetary Fund meetings.
- **Troika:** The G20 has no charter or secretariat. The Presidency is supported by the Troika which includes the previous, present and upcoming presidencies of the G20
 - * The Troika of the year 2023 included Indonesia, India and Brazil. This means that the presidency of the G20 meeting in the year 2022 and 2023 is held by Indonesia and India respectively. The upcoming meeting will be hosted by Brazil in 2024.

India's G20 Leadership

Current State of the World-Order

- **Bloc-Based Order:** After the Cold War, the trend of bipolar global system under the leadership of America and Russia is still in function. In support of Russia, China has emerged as a new economic and political power. And to balance China, extensive organizational changes have taken place in the Indo-Pacific and African region. This Bloc-based order sometimes increases tensions between different countries on economic and political issues.
- **Demand for Expansion of Global Organizations:** There is a demand to increase the role of the countries of the 'Global South' in organizations like the United Nations Security Council, the World Bank and the International Monetary Fund. The continued failure of the rules-based system is increasing cooperation between Asian and African countries.
- **Global Emergence of G20:** The G20 grouping has become global in nature with the inclusion of the African Union (AU) in the 18th G20 Summit. It has become one of the most important and leading groups in the world as it comprises more than 85% global GDP and approximately 80% of the world population. G20 group was founded on a vision of economic progress and development; now the group has become more focused towards addressing political conflicts as well.
- **Russia-China Strategic Alignment:** Russia and China are deepening their strategic alignment. Both countries have built a comprehensive partnership in diplomacy and trade issues as well as in many other areas. This has resulted in challenges for Western groups.
- **New Groupings and Projects:** In the context of emerging new global challenges, the development of new alliances such as Paris Agreement (to address climate change), Quad grouping (to balance geopolitical activities in the Indo-Pacific region) and India-Middle East-Europe Economic Corridor (to counter China's BRIC project) will have a great impact on the global scenario in future.

18th G20 Summit: Role in Building an Inclusive World Order

- **Cooperation among Global Powers:** The consensus of all countries on the Delhi Declaration is important not only for India but also for the global scenario. The consensus on all issues like climate change, Russia-Ukraine war and other global disputes will help in building a resilient world order.
- **Multilateral Institutions for the 21st Century:** The Summit gave broad impetus to the idea of reforming global institutions and making them more capable, accountable, inclusive and representative to meet the challenges of the twenty-first century.
- **Emphasis on Rapid, Inclusive and Resilient Growth:** The current meeting focused on initiatives that can promote structural changes. For example, supporting small and medium-sized businesses in international trade, pro-

moting labour rights and welfare, addressing the global skills gap and building inclusive agricultural value chains.

- **Accelerating Progress on SDGs:** Members have committed to achieving the goals outlined in the Sustainable Development Agenda-2030. This will help in building an inclusive world order.
- **Technological Change and Digital Public Infrastructure:** The summit focused on encouraging a human-centered approach to technology. Additionally, it has been acknowledged to promote financial inclusion, digital public infrastructure and technology-enabled development in sectors such as agriculture and education.
- **Women-led Development:** Emphasis was placed during the summit on promoting women's empowerment and representation to address gender inequalities globally and make the process of socio-economic development more inclusive.

India's G20 Presidency: Key Achievements

- **Promotion of Digital Activities:** As a leading country in digital public infrastructure, adoption of India's UPI and India-Stack will boost FinTech, entrepreneurship and related businesses.
- **Emergence as a Leader of the Global South:** The inclusion of the African Union (AU) in the Delhi Summit of the G20 has strengthened India's position as a leader of the Global South.
- **New Momentum in India-Africa Relations:** India's outreach to Africa has seen many ups and downs over the past decades. Inclusion of the African Union will prove to be extremely important for Indian diplomacy. Using this opportunity, India can strengthen its relations with African countries.
- **Economic Progress:** India plays an important role in the G20 group as a fast growing economy. Chairing this summit has helped India strengthen its economic ties with other member countries (especially Brazil and the US).
- **India's Leadership on Climate Change:** India has been a strong supporter of climate action. India's current presidency has been successful in achieving international cooperation on the global issue of climate change.
- **Promoting Inclusive Global Growth:** India has been successful in drawing global attention to important issues such as infrastructure development, job creation and women empowerment by prioritizing inclusive growth under its presidency.

Conclusion

Leading the G20 successfully has helped India position itself as an influential diplomatic and economic power and to boost investment and trade flows to the world's most populous country. This conference has succeeded in unifying the opinion of the member countries on issues like condemnation of terrorism, climate change issue, increase in renewable energy capacity, digital public infrastructure, and inclusive development. This shows that the global community is in full support of India's principle of 'One Earth, One Family, One Future'. ■■

Maritime Security Challenges in IOR

Need for Greater Collaboration among Nations

The Indian Ocean Region's maritime safety and security challenges are complex and multifaceted. International cooperation and the exchange of critical information are imperative to address these issues effectively. Embracing cutting-edge technologies and building resilient maritime security architecture are essential to ensure a safe and sustainable future for all nations in the Indian Ocean Region.

■ Chandrakant Singh

Recently, the Maritime Information Sharing Workshop (MISW) was organized by Information Fusion Centre – Indian Ocean Region (IFC-IOR) in Gurugram. Delegates from 26 countries, representing both the Indian Ocean Rim Association (IORA) and the Djibouti Code of Conduct/Jeddah Amendment emphasized the myriad maritime safety and security challenges in the Indian Ocean Region (IOR). A safe and secure Indian Ocean is important for socio-economic development. The importance of the Indian Ocean as a major transit area for international trade is evident from the fact that half of the world's container ships, one third of the world's bulk cargo traffic and two thirds of the world's oil shipments cross its waters annually. The Indian Ocean Region (IOR), owing to its strategic and economic importance, holds special significance for India.

Indian Ocean Region: Strategic & Economic Significance

The Indian Ocean is a vast maritime expanse extending from the eastern coast of Africa to the western coast of Australia, covering a significant portion of the Earth's surface.

It is the third-largest ocean in the world and is known for its diverse geography, including continental coastlines, islands, and archipelagos.

However, Indian Ocean Region (IOR) encompasses vast expanse of the Indian Ocean and 38 littoral (coastal) states that have territories along its shores. These 38 littoral states along with islands play a crucial role in shaping the strategic, economic, and geopolitical dynamics of the region.

Economic Importance

The Indian Ocean Region holds significant economic importance in various sectors, including trade, oil and gas, minerals, fishing and aquaculture, and tourism.

Trade

- ◆ The Indian Ocean is a vital maritime trade route connecting the economies of the Middle East, South Asia, South-east Asia, Africa, and Oceania. It facilitates the movement of goods between Europe, the Middle East, and Asia.

- ◆ Several major international shipping lanes, such as the Strait of Hormuz, the Strait of Malacca, and the Suez Canal are located in this region, making it a crucial hub for global trade.
- ◆ Around 80 per cent of the world's seaborne oil trade passes through the choke points of this ocean with 40 per cent passing through the Strait of Hormuz, 35 per cent through the Strait of Malacca and eight per cent through the Bab el-Mandab.

Oil and Gas

- ◆ The Indian Ocean Region is rich in oil and natural gas reserves, particularly in the Persian Gulf and the coastal areas of countries like Saudi Arabia, Iran, and the United Arab Emirates.
- ◆ These reserves are critical to the global energy supply, and the region serves as a major source of crude oil and natural gas exports.
- ◆ Forty per cent of the world's offshore oil production takes place in the Indian Ocean basin.
- ◆ India is also the fourth-largest importer of liquefied natural gas (LNG), with about 45 per cent coming by sea.

Minerals

- ◆ The seabed of the Indian Ocean is also a potential source of valuable minerals, including polymetallic nodules, ferromanganese crusts, and rare earth elements.
- ◆ These minerals have commercial value, and there is ongoing interest in their exploration.
- ◆ The Government of India signed a 15-year contract with International Seabed Authority for exploration of polymetallic nodules, which contain nickel, cobalt, copper and manganese, from the Central Indian Ocean Basin in 2002.

Fishing and Aquaculture

- ◆ The Indian Ocean is home to a wide variety of marine species, making it an important region for fishing and aquaculture.
- ◆ Fisheries in this region provide employment for millions of people and contribute to food security, both locally and globally.

Maritime Security Challenges in IOR

Tourism

- ♦ The Indian Ocean Region boasts stunning coastlines, tropical islands, and rich cultural diversity.
- ♦ As a result, it is a popular destination for tourism and leisure.
- ♦ Countries like the Maldives, Seychelles, Mauritius, Sri Lanka, and parts of Indonesia and Thailand attract tourists from around the world.
- ♦ Tourism in this region generates revenue, creates jobs, and stimulates economic growth, making it a significant contributor to the local economies.

Strategic Importance

The Indian Ocean Region (IOR) holds immense strategic importance due to its geopolitical, geoeconomic, and geo-strategic characteristics.

- ♦ **Geopolitical Significance:** The IOR is strategically located, bridging the East and the West, and serving as a crossroads for maritime trade and connectivity. It is home to nearly 38 countries, making it a complex and dynamic geopolitical landscape.
- ♦ **Geoeconomic Importance:** The IOR is vital for trade and commerce, with significant maritime routes like the Straits of Malacca, Straits of Hormuz, and Bab-el Mandeb facilitating global trade flows. It is rich in hydrocarbon resources, fisheries, and rare earth materials, contributing to the global economy.
- ♦ **Transit Routes:** The IOR hosts crucial transit routes that are vital for global commerce, with the Straits of Malacca, Straits of Hormuz, and other chokepoints serving as gateways for international trade and energy transportation.
- ♦ **Competition with China:** With China's growing presence in the Indo-Pacific, including the IOR, India's engagement and leadership in the region become even more critical. India must expand its presence in the IOR to maintain its leadership position and counterbalance China's influence.
- ♦ **Security Issues:** This region is home to many threats like piracy, illegal and unregulated migration, and presence of extremist groups, for example, in Somalia, Bangladesh, and Indonesia.
- ♦ **Island Nations as Partners:** Island nations in the IOR are valuable partners for India. They need assistance in various areas, such as climate change, disaster management, and economic development. India's approach of respecting sovereignty and offering strategic autonomy positions it as a preferred partner for these nations.

Maritime Safety and Security Challenges in the IOR

The Indian Ocean Region faces a range of maritime security and safety challenges due to its strategic importance, vast expanse, and complex geopolitical dynamics.

Key Challenges

Piracy and Armed Robbery

- ♦ The Indian Ocean has been a hotspot for piracy, particu-

larly off the coast of Somalia and in the Gulf of Aden.

- ♦ While there has been a decline in recent years, piracy remains a concern.
- ♦ Armed robbery at sea, often targeting cargo vessels and fishing boats is also a persistent issue.

Territorial and Maritime Boundary Disputes

- ♦ There are several territorial and maritime boundary disputes in Indian Ocean Region.
- ♦ For example, territorial disputes in the South China Sea involve conflicting island and maritime claims in the region by several sovereign states, namely the People's Republic of China, Taiwan, Brunei, Malaysia, the Philippines, and Vietnam.
- ♦ Indian Ocean border dispute between Kenya and Somalia.
- ♦ India and Sri Lanka's long-standing dispute concerning the maritime boundary and claim of Katchatheevu Island.
- ♦ These disputes can lead to tensions, military posturing, and potential conflicts.

Maritime Terrorism

- ♦ Terrorist organizations have shown an interest in using the maritime domain for illicit activities, including smuggling weapons, conducting attacks on coastal regions, and targeting critical maritime infrastructure.
- ♦ The Mumbai terror attack in November 2008 is an example in which ten Pakistani terrorists reached the city through the Indian Ocean.

Human Trafficking and Smuggling

- ♦ The Indian Ocean is a common route for human trafficking and smuggling of migrants.
- ♦ Vulnerable individuals are often subjected to exploitation during their journeys.
- ♦ Human trafficking is arguably the largest concern in IOR where trafficking is done by organized criminal groups across the Gulf of Aden and Red Sea.

Illegal, Unreported, and Unregulated (IUU) Fishing

- ♦ IUU fishing poses a significant threat to the sustainability of marine resources in the Indian Ocean.
- ♦ It continues to rise beyond India's Exclusive Economic Zone (EEZ).
- ♦ Chinese fishing vessels, fishing vessels from European Union countries and other countries from outside the region are observed to be fishing in the Indian Ocean.
- ♦ It can lead to resource depletion, impact coastal communities, and harm the marine ecosystem.

Drug Trafficking

- ♦ The Indian Ocean serves as a major transit route for drug trafficking, with illegal drug flows often traveling by sea.
- ♦ This activity poses challenges for law enforcement agencies.

- ♦ Maritime narcotics trafficking has become a major security concern for India and other countries in the region, with the Afghanistan–Pakistan corridor being the primary conduit facilitating illegal drug trade via the sea-route in the Western Indian Ocean.

Environmental Concerns

- ♦ Environmental threats, including oil spills, marine pollution, and the impact of climate change, affect the safety and health of the Indian Ocean’s ecosystem.
- ♦ These issues have consequences for both the environment and human livelihoods.

Naval Competition

- ♦ Although the Indian Ocean strategic milieu offers immense opportunities for maritime cooperation, the naval build-up by regional countries and the forward presence by extra regional powers showcase competitive dynamics.
- ♦ Regional countries of Indian Ocean have created legitimate space for the US naval presence in the Indian Ocean to correct security imbalances, challenge the hegemony of the dominant powers and ensure regional stability.
- ♦ The US Navy conducts joint naval exercises and shares intelligence which assures the alliance partners of its political and diplomatic commitments.

Search and Rescue Operations

- ♦ The vast expanse of the Indian Ocean complicates search and rescue operations.
- ♦ Timely response to maritime emergencies and natural disasters can be challenging, particularly in remote areas.

Overcrowded Shipping Lanes

- ♦ The Indian Ocean is a major global shipping route, with crowded shipping lanes and chokepoints like the Straits of Malacca and the Strait of Hormuz.
- ♦ Accidents, collisions, and congestion can pose safety risks.

Geopolitical Tensions

- ♦ Geopolitical rivalries and power competition among states in the region can lead to increased uncertainty and challenges for maritime security.
- ♦ It can also affect cooperation on safety and security measures.

India’s Approach & Key Initiatives in IOR

SAGAR Vision

- ♦ India’s approach to the Indian Ocean Region is based on its vision of Security and Growth for All in the Region (SAGAR).
- ♦ Under SAGAR, India seeks to deepen economic and security cooperation with its maritime neighbours.
- ♦ On the security front, India assists other nations in building their maritime security capabilities by cooperating in information/intelligence sharing, coastal surveillance, building of infrastructure and strengthening capabilities.

- ♦ In the economic sphere, India cooperates with other nations at multitude of areas including maritime resource management, and development of blue economy, maritime connectivity, disaster management and capacity building.

The Information Fusion Centre – Indian Ocean Region (IFC-IOR)

- ♦ The Information Fusion Centre – Indian Ocean Region (IFC-IOR), hosted by the Indian Navy, was established by the Government of India at Gurugram in 2018 to address the need to promote collaboration for maritime safety and security.
- ♦ The Centre aims at strengthening maritime security in the region through maritime security information sharing.
- ♦ The Centre hosts International Liaison Officers (ILOs) from partner nations. The Centre hosts ILOs from 12 partner nations viz. Australia, France, Italy, Japan, Maldives, Mauritius, Myanmar, Sri Lanka, Seychelles, Singapore, the United Kingdom and the United States of America.
- ♦ The Centre monitors the Indian Ocean and adjoining seas to understand each region and generates various periodic reports viz., Weekly Maritime Security Updates (WMSU), Monthly Maritime Security Updates (MMSU), Half Yearly Overviews and Annual Reports.

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Maritime Security Challenges in IOR

DJIBOUTI CODE OF CONDUCT AND THE JEDDAH AMENDMENT

Adopted on 29th January, 2009, the Djibouti Code of Conduct aims to combat Piracy and Armed Robbery against Ships in the Western Indian Ocean and the Gulf of Aden.

- It was established under the International Maritime Organization (IMO).
- Under the code, the signatories agreed to co-operate to the fullest possible extent in the repression of piracy and armed robbery against ships.
- It has been signed by 20 countries including Djibouti, Ethiopia, Kenya, Madagascar, Maldives, Seychelles, Somalia, the United Republic of Tanzania, Yemen, Comoros, Egypt, Eritrea, Jordan, Mauritius, Mozambique, Oman, Saudi Arabia, South Africa, Sudan and the United Arab Emirates.
- The member states are located in areas adjoining the Red Sea, Gulf of Aden and the east coast of Africa and include island nations in the Indian Ocean.
- India is an observer nation.
- In 2017, scope of the Djibouti Code of Conduct (DCoC) was expanded to include human trafficking and other illegal maritime activities in the western Indian Ocean and the Gulf of Aden area. These activities include:
 - * Human trafficking and smuggling;
 - * Illegal, unreported and unregulated (IUU) fishing;
 - * Trafficking in narcotics and psychotropic substances;
 - * Arms trafficking;
 - * Illegal trade in wildlife;
 - * Crude oil theft; and
 - * Illegal dumping of toxic waste.
- The revision – signed in Jeddah, Saudi Arabia, on 12 January, 2017 is known as the Jeddah Amendment to Djibouti Code of Conduct 2017.

Indian Ocean Naval Symposium (IONS)

- The 'Indian Ocean Naval Symposium' (IONS) is a voluntary initiative that seeks to increase maritime co-operation among navies of the littoral states of the Indian Ocean Region by providing an open and inclusive forum for discussion of regionally relevant maritime issues.
- It was initiated by the Indian Navy in 2008.
- In the process, it endeavours to generate a flow of information between naval professionals that would lead to common understanding and possibly cooperative solutions on the way ahead.

Information Management and Analysis Centre (IMAC)

- The Information Management and Analysis Centre (IMAC) is located in Gurugram.
- It is the main centre of the Indian Navy for coastal surveillance and monitoring.

- IMAC is the nodal centre of the National Command Control Communications and Intelligence Network (NC3I Network).
- IMAC is a joint initiative of Indian Navy, Coast Guard and Bharat Electronics Ltd. and functions under the National Security Adviser (NSA).

INDIAN OCEAN RIM ASSOCIATION (IORA)

IORA is an inter-governmental organisation aimed at strengthening regional cooperation and sustainable development within the Indian Ocean Region through its 22 Member States bordering the Indian Ocean and 9 Dialogue Partners.

- It was formed in 1997 and its secretariat is in Mauritius.
- The IORA is tripartite in nature, bringing together representatives of Government, Business and Academia, for promoting co-operation and closer interaction among them.
- It is based on the principles of open regionalism for strengthening economic cooperation, particularly on trade facilitation and investment, promotion as well as social development of the region.

Priority Areas

- IORA has identified six priority areas, namely: maritime security, trade and investment facilitation, fisheries management, disaster risk reduction, academic and scientific cooperation, tourism promotion, and cultural exchanges.

Way Forward

The safety and security of the Indian Ocean Region requires a comprehensive and cooperative approach to address the complex maritime challenges. To chart a way forward, it is imperative to consider the following key elements:

Holistic Perspective on Maritime Security Challenges

- To effectively address contemporary maritime security challenges, it is essential to adopt a holistic perspective.
- This involves recognizing the multifaceted nature of these challenges, including piracy, terrorism, environmental threats, and territorial disputes.
- Policymakers and stakeholders must develop strategies that encompass this complexity, acknowledging the interconnections between these issues.

A Resilient Maritime Security Architecture

- Resilient and adaptable maritime security architecture is crucial in responding to evolving threats.
- Such architecture should be built on the principles of inclusivity, shared responsibility, and flexibility.
- It should allow for cooperation among nations and international organizations, enabling collective responses to emerging security challenges.

CUTTING EDGE TECHNOLOGIES AND MARITIME SECURITY

Cutting-edge technologies and innovations can play a crucial role in securing the maritime domain by enhancing situational awareness, surveillance, communication, and response capabilities.

- **Satellite-Based Surveillance:** High-resolution satellite imagery and remote sensing technologies allow for continuous monitoring of maritime activities. These satellites can track vessel movements, identify illegal fishing, and detect environmental hazards.
- **Unmanned Aerial Vehicles (UAVs):** Drones equipped with advanced sensors, such as radar and cameras, can provide real-time surveillance of maritime areas, including tracking vessels and monitoring for illicit activities like smuggling and piracy.
- **Artificial Intelligence (AI):** AI can analyze vast amounts of data to identify anomalies and potential threats in real-time. Machine learning algorithms can improve the accuracy of vessel tracking and help predict suspicious behaviour.
- **Blockchain Technology:** Blockchain can be used to secure the supply chain and enhance transparency in maritime logistics. It can track the movement of goods, prevent tampering, and reduce the risk of cargo theft or smuggling.
- **Automatic Identification System (AIS) Enhancement:** Innovations in AIS technology can improve vessel tracking, increasing the accuracy and availability of vessel data. This can help authorities detect vessels engaged in illegal activities.
- **Maritime Domain Awareness (MDA) Systems:** MDA systems integrate various data sources, including radar, satellite imagery, and AIS data, to create a comprehensive picture of maritime activities. These systems help in identifying threats and coordinating responses.
- **Biometrics and Facial Recognition:** These technologies can be used for secure access control to ports and vessels. They enhance security by ensuring that only authorized personnel have access to sensitive areas.
- **Underwater Drones (ROVs and AUVs):** Remotely Operated Vehicles (ROVs) and Autonomous Underwater Vehicles (AUVs) are used for underwater inspections, including checking the hulls of vessels for contraband or damage.
- **3D Printing and Additive Manufacturing:** These technologies can be used to create replacement parts and equipment quickly, reducing downtime and improving the maintenance of vessels and port infrastructure.
- **Quantum Key Distribution (QKD):** Quantum encryption technology provides ultra-secure communication channels, protecting sensitive data from eavesdropping and cyberattacks.
- **Lidar and Hyperspectral Imaging:** These technologies can be used for environmental monitoring, such as detecting oil spills and monitoring marine ecosystems.

Imperative Need for International Cooperation

- ◆ The nations of the Indian Ocean Region must come together and pool their resources to collaborate effectively in addressing common maritime threats.
- ◆ This involves fostering a spirit of cooperation, trust, and mutual assistance.
- ◆ By working together, nations can enhance their maritime security capacities and collectively respond to security challenges.

Information Sharing as a Catalyst for a Collective Response

- ◆ Information sharing plays a central role in strengthening maritime security.
- ◆ Nations and organizations must be willing to share intelligence, surveillance data, and best practices to foster a collective response.
- ◆ Enhanced information exchange allows for early warning of potential threats and more effective coordination in addressing security challenges.

Advancing Maritime Security for a Sustainable Future

- ◆ Maritime security initiatives should align with the goal of a sustainable future.

- ◆ This means safeguarding the marine environment and promoting responsible practices in the maritime domain.
- ◆ Protecting against marine pollution, advocating for sustainable fishing, and addressing the impacts of climate change are integral components of advancing maritime security.

Conclusion

The Indian Ocean Region's maritime safety and security challenges are complex and multifaceted, ranging from piracy and territorial disputes to environmental concerns and geopolitical tensions. To address these issues effectively, a holistic approach, based on international cooperation and the exchange of critical information, is imperative. Initiatives like the Information Fusion Centre – Indian Ocean Region (IFC-IOR), Djibouti Code of Conduct, and Indian Ocean Rim Association (IORA) are significant steps in the right direction.

As the region's strategic and economic importance continues to grow, it is essential to embrace cutting-edge technologies and build resilient maritime security architecture to ensure a safer and sustainable future for all nations in the Indian Ocean Region. ■■

Drug Abuse among Young Persons

Problems and Solutions

Today, there is no part of the world is free from the curse of drug trafficking and drug addiction. Millions of drug addicts, all over the world, are leading miserable lives, between life and death. India too is caught in this vicious circle of drug abuse, and the number of drug addicts is increasing day by day.

■ Ranjeet Shah

On 3rd August, 2023, a report by the Parliamentary Standing Committee on “Drug Abuse among Young Persons - Problems and Solution” was tabled in Lok Sabha. The Committee has stressed on the need to introduce chapters on drug addiction, its consequences, and de-addiction measures in school and college curricula. The report also highlighted that the country aims to foster a society that understands drug abuse as a public health concern rather than a character flaw.

‘Drug abuse’, also known as *substance abuse*, refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs. The most common drugs abused are alcohol, marijuana, various kinds of cough syrups, sedative tablets, brown sugar, heroin, cocaine, and tobacco, etc.

Drug abuse is increasing at an alarming rate, causing serious threats to every nation and India too, by deteriorating health, increasing crimes, hampering productivity, destroying relationships, eroding social and moral values and impeding the overall progress of societies. Young people are becoming the largest hostage of the threat of substance abuse and their vulnerability is increasing gradually. Thus, drug and alcohol abuse among our nation’s youth has become a major public health issue.

Drug Abuse in India

Drug abuse is a significant concern in India, with various substances being abused across the country. Here are some statistics from earlier years:

- ◆ **Prevalence of Drug Users:** As per the survey conducted in 2018 by the National Drug Dependence Treatment Centre (NDDTC), AIIMS, around 21,70,71,000 adults in the age group of 18-75 years have been estimated to be using various drugs and that about 16 crore persons consume alcohol in the country too thus raising the total figure to a staggering 37 crore and above.
- ◆ **Types of Drugs:** Alcohol, Cannabis (marijuana and hashish) and Opioids (heroin and other opiate-based drugs) were reported to be the most commonly abused substances in India. However, other substances like synthetic drugs and prescription drugs were also being abused.
- ◆ **Treatment Seekers:** As on date, 535 de-addiction centres, i.e., 350 Integrated Rehabilitation Centers for Addicts (IRCA), 53 Community based Peer led Intervention

(CPLIs), 73 Outreach and Drop-in Centers (ODIC), 21 State level Coordinating Agencies (SLCA) and 38 Addiction Treatment Facilities (ATF) are running across the States/UTs in the Country.

- ◆ **Seizures and Arrests:** The Narcotics Control Bureau (NCB) in India regularly reports seizures of large quantities of illicit drugs, including heroin, cannabis, and synthetic drugs. It also conducts arrests of individuals involved in drug trafficking.
- ◆ **Regional Variation:** Drug abuse is not evenly distributed across India. States like Punjab, Manipur, Mizoram, and Himachal Pradesh have reported higher rates of drug abuse compared to other regions.

Factors Associated with the Problem

India is the biggest supplier of licit demand for opium required primarily for medicinal purposes. Besides this, India is also located close to the major poppy growing areas of the world with “*Golden Crescent*” (comprising illicit opium production areas in Iran, Afghanistan and Pakistan) on the Northwest and “*Golden Triangle*” (covering Myanmar, Thailand and Laos) on the Northeast. These make India vulnerable to drug abuse particularly in poppy growing areas and along the transit/trafficking routes.

Some Key Factors Associated with Drug Abuse among Young Persons

Economic Reasons

- ◆ **Economic Liberalization and Social Change:** The impact of globalization and economic liberalization, rapid socio-economic transition has influenced a widespread attitudinal shift to greater normalization of alcohol use.
- ◆ **Unemployment:** It is an important factor contributing to drug and alcohol addiction especially among youths. Increased rate of unemployment among the youth leads to increasing instances of drug abuse.

Socio-Cultural Reasons

- ◆ **Lack of Parental Care and Control:** The lack of parental care and control due to disintegration of joint family system and scenario where both parents are working are also contributory factors that encourage this problem. It is more common among the middle, upper-middle and high economic class families.

- ♦ **Frustration and Emotional Stress:** Frustration and emotional stress due to failures, sorrows or miseries of life diverts people to join the company of addicts. Thus, in course of time they become more and more addicted and habitual.
- ♦ **Hippie Culture:** Hippie culture also detracts youngster to drug addiction and they start it as a fun or enjoyment. They also start consuming drugs or alcohol as an experimental basis. Frequency of consumption gradually increases due to its narcotic effect and finally a good majority of them turn out to be drug addicts.
- ♦ **Communication Gap between Parents and Children:** Communication gap between parents and young addicts is also a contributory factor for drug abuse and alcoholism.
- ♦ **People who do Manual Work:** Those who do manual work often before starting work use drugs such as alcohol, opium, ganja, etc. as these provide them added strength and vigour to withstand hard labour. Thus, false idea of physical vitality by use of these alcohol or narcotic drugs ultimately makes them confirmed addicts.
- ♦ **Social Disorganization:** It is also a contributory factor for drug abuse or misuse. Frequent family quarrel/ conflicts and breakdowns due to poverty, temperamental differences, neighborhood influence, etc. divert persons to alcohol or drug consumption.
- ♦ **Accessibility:** Easy access to drugs in local drug markets or proximity to drug-abusing peers can increase the likelihood of experimentation.
- ♦ **Cultural Acceptance:** In some cultures and communities, certain substances might be considered acceptable or even traditional, leading to higher rates of abuse.
- ♦ **Lack of Education:** Insufficient education about the risks and consequences of drug abuse can lead to uninformed decisions.

Psychological Reasons

- ♦ **Low Self-Esteem:** Individuals with low self-esteem might use drugs as a means of escaping negative feelings and gaining a sense of self-worth.
- ♦ **Psychophysical Performance:** In order to reduce unpleasant bodily sensations like pain, insomnia, and tiredness or overcome physiological needs like sleep and hunger, many people turn to drugs.
- ♦ Overall, the process of alcoholism and drug addiction sets in when a person knowingly or unknowingly begins to assume alcohol or narcotic drug as a medicine for work or to get relief from domestic problems or to repress depression, resentment or to get rid of disturbing mental restlessness and so on.

Drug Abuse: Impacts & Challenges

Drug abuse has significant impacts on individuals, families, communities, and society as a whole. Additionally, there are various challenges that hinder efforts to address this issue effectively.

Impacts of Drug Abuse

- ♦ **Health Consequences:** Drug abuse can lead to severe physical and mental health problems, including addiction, respiratory issues, heart problems, mental disorders, and an increased risk of infectious diseases like HIV/AIDS through needle sharing.
- ♦ **Social Disintegration:** Drug abuse can disrupt family structures, leading to strained relationships, breakdowns in communication, and even domestic violence. This can contribute to social disintegration and dysfunction within communities.
- ♦ **Economic Burden:** Drug abuse places a significant burden on the healthcare system due to increased healthcare costs, treatment expenses, and lost productivity. Families often bear the financial costs of supporting individuals struggling with addiction.
- ♦ **Crime and Violence:** Drug abuse is often linked to criminal activities such as drug trafficking, smuggling, and violence. Individuals struggling with addiction might engage in criminal behaviour to support their habits.
- ♦ **Educational Disruption:** Young individuals who abuse drugs might experience a decline in academic performance, leading to a cycle of limited educational opportunities and diminished future prospects.
- ♦ **Community Instability:** Areas with high rates of drug abuse can experience increased crime rates, reduced economic growth, and overall instability within the community.

Challenges in Addressing Drug Abuse

- ♦ **Stigma and Lack of Awareness:** Stigma surrounding drug abuse and mental health issues can prevent individuals from seeking help. Lack of awareness and education about the risks of drug abuse also contribute to the problem.
- ♦ **Lack of Treatment Facilities:** There is a shortage of adequate treatment facilities and trained healthcare professionals equipped to address substance abuse and addiction. Many individuals struggling with addiction do not have access to proper treatment.
- ♦ **Regulation and Enforcement:** The illicit drug trade is complex and difficult to regulate. Drug trafficking networks are often sophisticated, making it challenging for law enforcement agencies to curb the supply.
- ♦ **Poverty and Accessibility:** Poverty and lack of opportunities can lead to increased vulnerability to drug abuse, especially among marginalized communities. Easy access to drugs in local drug markets exacerbates the problem.
- ♦ **Youth Vulnerability:** A significant percentage of drug abusers are young individuals who are more susceptible to peer pressure and experimentation. Preventing drug abuse among the youth requires targeted educational programs.
- ♦ **Lack of Holistic Approach:** Addressing drug abuse requires a multi-faceted approach involving prevention,

Drug Abuse among Young Persons

treatment, rehabilitation, and community support. A lack of coordination among various stakeholders can hinder these efforts.

- ♦ **Cultural and Regional Variation:** India's cultural diversity means that different states and regions might face varying challenges related to drug abuse. Tailoring interventions to specific cultural contexts is crucial.

CLASSIFICATION OF DRUGS

Drugs of abuse are classified into various categories based on their effects on the central nervous system and their potential for addiction and harm. Some of the commonly classified categories of drugs are:

1. Depressants

- **Examples:** Alcohol, benzodiazepines, barbiturates.
- **Effects:** Depressants slow down brain activity, leading to relaxation, sedation, and in high doses, unconsciousness.

2. Stimulants

- **Examples:** Cocaine, amphetamines, methamphetamines, caffeine, nicotine.
- **Effects:** Stimulants increase brain activity and alertness, leading to heightened energy, euphoria, and increased heart rate.

3. Hallucinogens

- **Examples:** LSD (acid), psilocybin (magic mushrooms), mescaline, DMT.
- **Effects:** Hallucinogens alter perception, mood, and various cognitive processes, often causing hallucinations and distorted sensory experiences.

4. Opioids

- **Examples:** Heroin, morphine, oxycodone, fentanyl.
- **Effects:** Opioids are powerful pain relievers that can induce euphoria, but they also carry a high risk of dependence and respiratory depression.

5. Cannabis

- **Examples:** Marijuana, hashish.
- **Effects:** Cannabis can have both depressant and hallucinogenic properties, leading to altered perception, relaxation, and altered sense of time.

6. Dissociative Anesthetics

- **Examples:** Ketamine, PCP (phencyclidine).
- **Effects:** These drugs induce feelings of detachment from oneself and surroundings, often leading to hallucinations and altered perception.

7. Inhalants

- **Examples:** Solvents, aerosols, nitrous oxide.
- **Effects:** Inhalants are volatile substances that produce mind-altering effects when vapours are inhaled, often leading to a rapid and intense high.

It is important to note that these categories are not mutually exclusive, and some drugs may exhibit characteristics of multiple categories. The effects and potential for addiction vary widely within each category, and the legal status of these substances can also differ from one region to another.

- ♦ **International Cooperation:** Illicit drug trafficking often involves international networks. Effective co-operation and information sharing with other countries are essential to curb the supply chain.

Government Initiatives/Interventions

Some of the key government initiatives and interventions to eradicate the problem of drug abuse in India are:

Constitutional Provisions

- ♦ Article 47 of the Constitution of India directs the state to regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and, in particular, to endeavour to bring about prohibition of consumption, except for medical purpose of intoxicating drinks and drugs which are injurious to health.

Legislative and Other Enabling Provisions

The Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985 and its Amendments up to 2014; and the Narcotic Drugs and Psychotropic Substances (NDPS) Rules, 1985 and its Amendments up to 2019

- ♦ The NDPS Act, 1985 was amended to the NDPS (Amendment) Act, 2014 in order to consolidate and amend the law relating to narcotic drugs, to make stringent provisions for the control and regulation of operations relating to narcotic drugs and psychotropic substances (to provide for the forfeiture of property derived from, or used in, illicit traffic in narcotic drugs and psychotropic substances, to implement the provisions of the International Conventions on Narcotic Drugs and Psychotropic Substances) and for matters connected therewith.

Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) (COTPA) Act, 2003 & Rules made there under

- ♦ The COTPA, 2003 is an Act of the Parliament of India to prohibit advertisement of, and to provide for the regulation of trade and commerce in, and production, supply and distribution of, cigarettes and other tobacco products in India.

The Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act, 2019

- ♦ This Act prohibits the production, manufacture, import, export, transport, sale, distribution, storage and advertisement of electronic cigarettes in the interest of public health to protect the people from harm and for matters connected therewith or incidental thereto.
- ♦ **National Action Plan for Drug Demand Reduction (NAPDDR)**
- ♦ The scheme has been formulated for the period 2018-25 to control the drug menace in the country after subsuming erstwhile Scheme of Assistance for Prevention of Alcoholism and Substance (Drug) Abuse, which was running since 1980s.

National Drug De-Addiction Programme (NDDP)

- ◆ This program focuses on creating awareness about drug abuse, providing counseling, treatment, and rehabilitation services for drug-dependent individuals, and facilitating community-based interventions.

Nasha Mukta Bharat Abhiyan

- ◆ Launched in 2018, this initiative aims to prevent drug abuse and provide treatment and rehabilitation services to those affected. It focuses on a multi-pronged approach involving awareness generation, community participation, and effective enforcement.

School-Based Awareness & Prevention Programmes

- ◆ The government collaborates with educational institutions to implement awareness and prevention programmes on drug abuse among students. These programmes are designed to educate young people about the risks associated with substance abuse.
- ◆ For example, the Ministry of Social Justice & Empowerment has developed '*Navchetna*' Modules in collaboration with the Ministry of Education with an aim to increase awareness and education on life skills and drugs among students in schools.

Counseling and Rehabilitation Centres

- ◆ Various government-funded centres provide counseling, treatment, and rehabilitation services to individuals struggling with drug abuse. These centres offer medical, psychological, and social support to help individuals overcome addiction.

Awareness Campaigns

- ◆ The government regularly conducts awareness campaigns using various media platforms to educate young people and the general public about the dangers of drug abuse and the available resources for prevention and treatment.

It is important to note that the effectiveness of these initiatives can vary, and addressing drug abuse requires a multi-faceted approach involving education, prevention, treatment, enforcement, and community support.

Way Forward

Scientific evidence-based treatment needs to be made available for people with Substance use disorders at an adequate scale

- ◆ It is evident that a sizable population in India is affected by substance use disorders and is in need of urgent help. However, reach of the national programmes for treatment of substance use disorders is grossly inadequate.
- ◆ Considering the wide treatment gap (mismatch between demand and availability of treatment services) in the country, India needs massive investments in enhancing the avenues for treatment.
- ◆ Optimum allocation of resources for treatment of substance use disorders is imperative. Planning for a national level treatment programme must be guided by

the absolute magnitude of the problem, for prioritization among the states.

- ◆ Addiction treatment programmes focused heavily upon inpatient treatment/ hospitalization (in a 'de-addiction centre') is unlikely to cater to the huge demand for treatment. Enhancing treatment services as outpatient clinics, which have all the necessary components (trained human resources, infrastructure, medicines and supplies, a system of monitoring and mentoring) is urgently required.
- ◆ Scaling-up of treatment services for substance use disorders, would also require large-scale capacity building mechanisms.
- ◆ Overall, a coordinated, multi-stakeholder response will be necessary to scale-up treatment programmes in the country.

Evidence-based substance use prevention programmes are needed to protect the young people

- ◆ Protecting the youth of the nation is of paramount importance. Very often prevention of drug abuse is seen (erroneously) as synonymous with spreading the awareness about dangers of drug abuse among young people. Evidence for effectiveness of awareness generations as the predominant preventive strategy is very weak.
- ◆ Most researches have demonstrated that best prevention strategies are those which are based on scientific evidence and which involve working with families, schools and communities in general.

A conducive legal and policy environment is needed to help control drug problems

- ◆ Studies indicate that despite the existence of strict drug control laws and a multitude of agencies working towards drug supply control, a wide variety of the controlled drugs are being used and a sizeable number of Indians suffer from addiction to these drugs.
- ◆ Results also indicate a shift in demand for psychoactive substances, from traditional, low- potency, plant-based products (e.g. opium) to more potent and processed products (e.g. heroin). Thus, there may be elements of drug supply control which influence the pattern of demand. The non-medical, recreational use of controlled pharmaceutical products remains a concern.
- ◆ However, ensuring their adequate availability for medicinal purposes is vital for public health. It is important that laws and policies are aimed at providing health and welfare services to people affected by substance abuse (rather than subjecting them to the criminal justice system).

Every year, June 26 is celebrated as International Day against Drug Abuse and Illicit Trafficking. It is an exercise undertaken by the world community to sensitize the people in general and the youth in particular, to the menace of drugs. Today, there is no part of the world is free from the curse of drug trafficking and drug addiction. Millions of drug addicts, all over the world, are leading miserable lives, between life and death. Therefore, concerted efforts are needed to curb this widespread menace afflicting the world. ■■

- [Ramnath Kovind Panel on 'One Nation, One Election'](#)
- [India Ageing Report 2023](#)
- [Rising Prices of Crude Oil & its Impact on Indian Economy](#)
- [Battery Energy Storage System: Empowering the Future](#)
- [Global Innovation Index 2023](#)

Ramnath Kovind Panel on 'One Nation, One Election'

Recently, the Union government constituted a committee headed by former president of India Ram Nath Kovind to explore the possibility of "One Nation, One Election".

Mandate of the Committee

- The committee will examine and recommend specific amendments to the Constitution, the Representation of the People Act and any other laws and rules which would require amendments for the purpose of holding simultaneous elections.
- The committee will also analyse and recommend possible solutions to scenarios such as hung House, adoption of no-confidence motion, or defection or any such other event in case of simultaneous elections.

One Nation, One Election

- 'One Nation, One Election' refers to the idea of holding simultaneous polls for State Assemblies and the Lok Sabha instead of separate and continuous elections.
- 'One Nation, One Election' was the norm in India until 1967. Simultaneous elections were conducted for the Lok Sabha and the state assemblies in 1952, 1957, 1962, and 1967. However, due to the premature dissolution of some Legislative Assemblies in 1968 and 1969 the simultaneous election cycle got disrupted. Further in 1970, the Lok Sabha was dissolved prematurely and fresh elections were held in 1971. All these events led to the breakdown of the cycle of simultaneous elections in India.

Arguments in favor of 'One Nation, One Election'

- **Reduction of Financial Burden:** Continuous election cycles are a financial burden on the state exchequer. 'One Nation, One Election' will reduce the overall expenditure on political process by Election Commission of India (ECI). For example, the 2014 Lok Sabha polls cost Rs. 3,870 cr to the exchequer and the 2015 Bihar elections alone cost the exchequer 300 cr. ECI has estimated the cost of 'One Nation, One Election' to be around Rs.4500 cr.

- **Better Utilisation of Financial Resources:** Simultaneous elections will reduce the campaign expenditure of political parties and the candidates. This will help smaller regional parties in better management of financial resources.
- **Reduced Duration of Model Code of Conduct:** Frequent imposition of the Model Code of Conduct (MCC) during polls stalls all development work for months at a time. It will reduce 'policy paralysis' that results from the imposition of the Model Code of Conduct during election time.
- **More Focus on Governance:** 'One Nation, One Election' will ensure continuity of policies and programmes of the central and state governments. It will reduce disruption of normal public life as political rallies will be kept to a minimum. It will improve the delivery of essential services to public.
- **Administrative Efficiency:** During elections the entire state machinery focuses on conducting a free and fair electoral process which impacts the everyday administration because officials are engaged in polling duties. 'One Nation, One Election' will increase efficiency of administrative system.
- **Curb on Black Money:** Elections involve considerable expenditure by prospective candidates most of which is black money. 'One Nation, One Election' will reduce the circulation of black money in the economy.
- **Increase Voter Turnout:** According to the Law Commission, simultaneous elections will increase voter turnout because it will be easier for people to cast many votes all at once.

Arguments against 'One Nation, One Election'

- **Reduced Accountability:** Regular elections ensure that the government is under an obligation to listen to the will of the people regularly. Regular state elections serve as feedback mechanism for the political parties. Critics argue that if the government is assured of a fixed term it might lead to autocratic tendencies.

- **Undermining of Federal Power:** In recent years, issues affecting the states have gained political value, which is demonstrated with more regional parties forming state governments like DMK in Tamil Nadu, TDP in Andhra Pradesh & Biju Janata Dal in Odisha. Due to simultaneous elections union elections might overshadow the state elections.
- **Disadvantage for Regional Parties:** Critics argue that simultaneous election would hamper the prospects of regional parties as national issues would dominate the political narrative instead of local issues. Regional parties would not be able to compete against national parties in both money and election strategies.
- **Threat to Internal Security:** Deployment of heavy security forces for simultaneous elections is a logistical challenge and might endanger the internal security in the country.

Challenges in the Implementation of ‘One Nation, One Election’

- **Constitutional and Legal Challenges:** It will require change in the Constitution and other legal frameworks. Simultaneous elections would require amendments in five articles of the Constitution:
 - i) **Article 83** (relating to the duration of Houses of Parliament),
 - ii) **Article 85** (relating to dissolution of the Lok Sabha by the President),
 - iii) **Article 172** (relating to the duration of the state legislatures),
 - iv) **Article 174** (relating to dissolution of the state legislatures), and
 - v) **Article 356** (relating to the imposition of the President’s Rule in states).

RECOMMENDATIONS OF COMMITTEES & COMMISSION ON “ONE NATION, ONE ELECTION”

- **Election Commission of India:** The idea of “One Nation, One Election” was first formally proposed by the Election Commission of India (ECI) in its 1983 report. The Commission suggested that conducting simultaneous Lok Sabha (parliamentary) and state legislative assembly elections could reduce the frequency and associated costs of elections.
- **Niti Aayog:** In 2017, the Niti Aayog released a paper titled ‘Election Time Table’, discussing the feasibility of simultaneous elections. It suggested a practical roadmap for implementing the concept.
- **Law Commission of India:** The Law Commission of India also examined the issue and submitted several reports suggesting measures to synchronise the terms of the state legislatures with those of the Lok Sabha. In 2018, the Law Commission of India released a draft working paper that outlined the legal and constitutional aspects of simultaneous elections.

- This requires constitutional amendments with 50% ratification of states which is challenging for the government.
- **Lack of Synchronisation:** Parliament and state elections were held simultaneously until 1967, but over the years as Assemblies and Lok Sabhas were dissolved before the end of their terms, the elections fell out of sync with each other.
- **Infrastructure and Technological Challenges:** Adequate investment in infrastructure and technology is vital for conducting simultaneous elections effectively. This includes provisions for electronic voting machines (EVMs), voter-verified paper audit trail (VVPAT) machines, polling booths, and the deployment of sufficient security personnel.

Way Forward

- **One-Time Constitutional Amendment:** To synchronize the electoral cycles of Lok Sabha and State Assemblies, constitutional adjustments are required. This may involve either extending or curtailing their terms through a one-time constitutional amendment.
- **Robust Legal Framework:** The establishment of a comprehensive legal framework is necessary to address potential scenarios like no-confidence motions, premature dissolution of assemblies, or hung parliaments that may arise during simultaneous elections. It is also advisable to schedule two cycles per year to accommodate cases where a state assembly dissolves prematurely, enabling a re-election in the subsequent cycle.
- **Awareness Creation:** Raising awareness among voters about the advantages and challenges associated with simultaneous elections is crucial. Ensuring that voters can exercise their franchise without confusion or inconvenience should be a priority.

Conclusion

Elections impact everyone in the entire country – citizens, businesses, administrative machinery, constitutional institutions, political parties, leaders and so on. Eventual implementation of ‘One Nation, One Election’ would not only require significant constitutional and statutory amendments, it would also require significant consensus amongst the key stakeholders. Without a general consensus and wider acceptance, its intent and efficacy could be compromised.

It is therefore suggested that a focused group of stakeholders comprising Constitution and subject matter experts, think tanks, government officials and representatives of various political parties come together and work out appropriate implementation related details. This may include drafting appropriate Constitution and statutory amendments, agreeing on a workable framework to facilitate transition to simultaneous elections, developing a stakeholder communication plan, etc. As is the case with long-term structural reforms, implementing this measure would also cause some short-term pain. However, this would be a stepping stone towards improved governance and a larger initiation of “electoral reforms” – a desperately needed measure to re-boot the Indian polity.

India Ageing Report 2023

On 26th September, 2023, the India Ageing Report 2023 was released by the United Nations Population Fund (UNFPA) and the International Institute for Population Sciences (IIPS).

Major Highlights

Demographic Projection of Elderly Population

- The decadal growth rate of the elderly population of India currently estimated to be at 41%.
- With this rate, the percentage of elderly population in the country projected to double to over 20% of total population by 2050.
- By 2046, it is likely that elderly population will have surpassed the population of children (aged 0 to 15 years) in the country.

Population of People Aged 80+

- The population of people aged 80+ years will grow at a rate of around 279% between 2022 and 2050 with a predominance of widowed and highly dependent very old women.

Gendered Poverty

- Poverty among the elderly is often gendered, with older women more likely to be widowed, living alone, without income, and dependent on family support.

Vulnerabilities of Elders

- More than 40% of the elderly in India are in the poorest wealth quintile, with about 18.7% of them living without an income.

Significant Inter-State Variation

- Most States in the southern region and some northern States such as Himachal Pradesh and Punjab reported a higher share of the elderly population than the national average in 2021.
- This gap is expected to widen by 2036.
- States reporting higher fertility rates and lagging in demographic transition, including

Bihar and Uttar Pradesh, expect to see an increase in the share of the elderly population between 2021 and 2036.

- Compared with southern and western India, central and northeastern regions have the younger group of States as indicated by the ageing index.

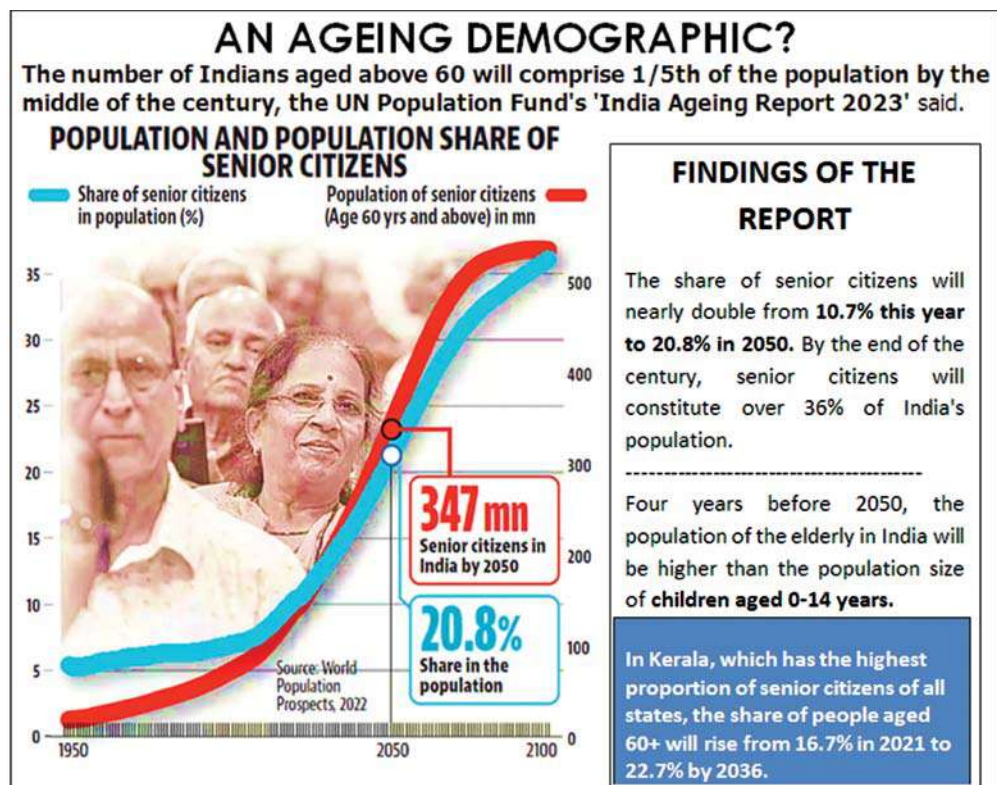
Low Awareness of Social Security Schemes

- The elderly in India have low awareness about the various social security schemes designed for them.
- A little more than half of the elderly (55%) are aware of the old-age pension scheme (IGNOAPS); 44% about the widow pension scheme (IGNWPS); and 12% about the Annapurna Scheme.

Challenges of an Ageing Population

Three aspects of ageing that create significant challenges are:

- Women living longer than men (feminization) resulting in higher levels of widowhood and associated socio-cultural and economic deprivations and dependencies;
- High proportion of rural population among the elderly (ruralization); and
- Ageing of the aged persons.



Recommendations

Systematic Coordination & Collaboration

- The government needs to focus on systematic coordination, convergence and collaboration across key stakeholders to avoid duplication of effort, operations at cross-purposes and bureaucratic hold-ups.

Coordination between Government Departments

- Departments within the government need to converge their efforts to ensure that their respective programmes are elderly friendly and delivered in a holistic fashion. For example, programmes of the Ministry of Health and Family Welfare should prioritize the training of service providers and supervisors on geriatric care.

Empowering the Elderly with Knowledge

- Government should focus on empowering the elderly with knowledge and awareness and increase efforts to

address the needs of elderly women in particular.

Research Advisory Committee

- A Research Advisory Committee consisting of programme managers, academics and private participants may be set up for identifying and funding research priorities and subsequently incorporating findings to improve programme implementation and effectiveness and expand the research base.
- Research on quality of care from the user's perspective with the user's participation would be essential to increase the reach and utilization of public services specially meant for elderly.

Engagement of CBOs

- Community-based organizations (CBOs) can be a bridge between the government and the older population in eliciting beneficiary feedback on schemes and projects, their access and impact.

Rising Prices of Crude Oil & its Impact on Indian Economy

Recently, Brent crude jumped to a 10-month high and breached \$93/barrel mark for the first time in 2023.

Reasons for Rise in Brent Crude Prices

Voluntary Oil Output Cuts: The latest uptick came after major oil producers – Saudi Arabia and Russia, two major oil-producing countries, extended their voluntary oil output cuts by a combined 1.3 million barrels per day (bpd) until the end of the year. This move tightened the global oil supply, leading to a surge in international crude prices.

OPEC+ Cuts: In addition to Saudi Arabia and Russia's cuts, the Organization of Petroleum Exporting Countries and its allies (OPEC+) had previously agreed on production cuts running until the end of 2024. These cuts further reduced the global oil supply.

Impact of High Crude Oil Prices on the Indian Economy

- High crude oil prices are said to have a domino effect on the economy, as the price shocks are instantly passed on to the macroeconomic indicators. India is the world's third-largest consumer of crude oil and it imports a significant amount of crude oil. If crude oil prices rise, it puts pressure on India's fiscal maths.

High Import Bill

- India - a net importer of crude oil which fulfills as much as 85 per cent of its energy needs through imports, may see a heavier import bill if international crude oil prices keep rising throughout the year.

- Crude oil imports decreased by 6.3 per cent and 2.4 per cent during June 2023 and April-July 2023 respectively, compared to the corresponding period of the previous year.
- The net import bill for oil and gas was \$9.8 billion in July 2023 compared to \$15.8 billion in July 2022.

Higher Fuel Prices

- Restricted oil supply leads to higher oil prices, which, in turn, can contribute to higher fuel prices for consumers and businesses, putting upward pressure on the overall inflation.
- Indian Oil marketing companies (OMCs) may be forced to lift the freeze on petrol and diesel prices on rising international crude prices.

Widening Current Account Deficit (CAD)

- India's CAD which measures the difference between exports and imports of goods and services – is also impacted by high crude prices.
- CAD is a key indicator of the balance of payment of a country and in the current scenario of the momentum picked up by crude rates.
- Every 10 dollar rise in Brent crude prices widens India's current account deficit by 0.5 per cent.

Depreciation of Indian Currency

- High oil prices push the US dollar above against its peers, which in turn, is a downside for the Indian rupee.
- A stronger dollar can weigh on oil demand by making the fuel more expensive for holders of other currencies.

High Fiscal Deficit

- Higher crude oil prices will increase the subsidy burden for the central government.
- The government bears the difference between the market price and the controlled price of oil and gas end-products such as kerosene, diesel, liquefied petroleum gas (LPG).
- This is likely to widen the fiscal deficit - expressed as a percentage of the country's gross domestic product (GDP).
- As per recent official data, the government's fiscal deficit, or the gap between spending and receipts met through borrowings, crossed Rs. 6 trillion, or a third of the Rs. 17.9 trillion estimated in the union budget for FY24.

Deteriorating Trade Balance

- Rising oil prices mean that India needs to spend more on oil imports.
- This has a direct impact on the trade balance, which measures the difference between the value of exports and imports.
- When imports, particularly oil imports, increase due to higher prices, it can deteriorate the trade balance.

Lower Economic Growth

- Higher crude oil prices will increase the cost of production and transportation for various sectors, affecting their profitability and competitiveness.
- This will reduce the disposable income of consumers, affecting their demand for goods and services.
- Consumer behaviour plays a critical role because when fuel prices rise, consumers may cut back on discretionary spending, which can impact economic activity.

Impact on Monetary Policy

- Higher inflation and lower economic activity will impact the monetary policy.
- As rising oil prices are expected to have a sustained impact on inflation, central banks can be expected to maintain higher interest rates for longer to control soaring prices.

Long-Term Strategies for India to deal with High Crude Oil Prices

Strategic Petroleum Reserves (SPR)

- India has been actively building strategic petroleum reserves (SPRs) as a strategic measure to enhance its energy security.
- These SPRs are large underground storage facilities for crude oil that can be tapped into during times of supply disruptions or sharp price spikes.
- By maintaining strategic reserves, India aims to reduce its vulnerability to sudden oil supply disruptions, whether due to geopolitical tensions or natural disasters.

Diversify Energy Sources

- India can focus on diversifying its energy mix by promoting and investing in alternative and renewable energy sources.

- This includes expanding the use of solar, wind, hydro, and nuclear power.
- By reducing its reliance on fossil fuels, India can decrease its dependence on OPEC for oil imports.

Promote Domestic Oil and Gas Production

- India possesses substantial untapped oil and gas reserves.
- The government can incentivize domestic and foreign oil companies to engage in exploration and production activities, both onshore and offshore.

Favourable Policies

- Implementing favourable policies, such as tax incentives and streamlined regulatory processes, can encourage increased investment and boost domestic production.

Enhance Energy Efficiency

- India can prioritize energy efficiency measures across various sectors, including transportation, industrial processes, and buildings.
- This involves adopting energy-efficient technologies, optimizing industrial processes, and implementing stricter energy conservation measures.

Strengthening Diplomatic Ties with Major Oil-Producing Countries

- Strengthening diplomatic ties with major oil-producing countries is critical for securing stable oil supplies and prices.
- By engaging in strategic dialogues and partnerships, India can work to ensure a steady flow of oil imports, negotiate favourable terms, and minimize the impact of geopolitical tensions on energy security.
- Additionally, diversifying sources of oil imports can reduce dependence on a single supplier, enhancing energy resilience.

Conclusion

The crude oil prices all across the globe have a significant impact on global economies directly or indirectly. However, the increase in the crude oil prices results in increase in almost all the consumable and non-consumable commodities. Any positive change in the crude oil price has negative impact on the increment in GDP of a country.

The Indian economy is not an exception to the impact of change in crude oil prices. In India, the demand for petroleum related products is increasing at a rapid pace, which results in increase in crude oil imports. While India will still have oil as major energy resource for reasonable time, to cushion itself from global impacts, it will need to make use of all types of energy sources to meet the growing demand. On the other side, any increase in crude oil prices – a shock or impulse – is visible – which paves way for strengthening energy efficient mechanisms in order to reduce the dependency on petroleum products.

Battery Energy Storage System: Empowering the Future

On 6th September, 2023, the Union Cabinet approved to a plan aimed at providing viability gap funding (VGF) to establish a resilient energy storage infrastructure designed to store surplus wind and solar energy.

- This initiative outlines the development of 4,000 megawatt-hours (MWh) of Battery Energy Storage System (BESS) projects by the end of the fiscal year 2031. The scheme has an initial outlay Rs. 9,400 crore, with Rs. 3,760 crore provided as budgetary support.

Battery Energy Storage System (BESS)

- Battery Energy Storage System, often abbreviated as BESS, is a sophisticated system designed for the primary purpose of storing electrical energy in batteries. This stored energy can be efficiently utilized at a later time, providing flexibility and reliability to electricity management and consumption.

Purpose

The main purpose of a Battery Energy Storage System is multifaceted:

- **Energy Storage:** BESS serves as a means to store surplus electricity generated during periods of low demand or high renewable energy output.
- **Load Balancing:** It aids in load balancing by discharging stored energy when electricity demand surges, ensuring a stable and consistent power supply.
- **Backup Power:** BESS systems act as a backup power source during power outages, enhancing grid resilience and minimizing disruptions.

Components

- A typical Battery Energy Storage System comprises several crucial components:
- **Batteries:** These can be of various types, including lithium-ion and lead-acid batteries, serving as the energy storage medium.
- **Inverters:** Inverters are essential for converting direct current (DC) electricity stored in the batteries into alternating current (AC) that can be used in homes, businesses, or the grid.
- **Battery Management System (BMS):** The BMS plays a pivotal role in monitoring and managing the health and performance of the batteries, ensuring their efficient operation.

Types

Battery Energy Storage Systems come in various types, catering to different scales of energy storage requirements:

- **Residential BESS:** Designed for individual households, residential BESS systems provide backup power and energy management solutions for homes.

- **Commercial BESS:** Tailored for businesses and commercial establishments, these systems offer energy resilience and cost savings.
- **Utility-Scale BESS:** Large-scale Battery Energy Storage Systems are deployed at utility levels to address grid stability and support renewable energy integration on a massive scale.

Applications

Battery Energy Storage Systems find diverse applications in the energy sector. Some of these are:

- **Peak Load Shaving:** BESS can reduce electricity costs for businesses by storing energy during off-peak hours and discharging it during peak demand periods, effectively shaving off the highest demand spikes.
- **Uninterruptible Power Supply (UPS):** BESS can provide backup power in case of grid failures, ensuring uninterrupted operation for critical facilities like hospitals, data centres, and emergency services.
- **Renewable Energy Integration:** BESS can store excess energy generated from renewable sources (e.g., solar or wind) for use when the energy production is low or when it's needed the most.
- **Microgrid Support:** BESS plays a crucial role in microgrids by enhancing reliability and enabling them to operate autonomously or in coordination with the main grid during outages.
- **Electric Vehicle Charging:** BESS can be integrated into electric vehicle charging infrastructure to manage peak loads and ensure efficient and reliable charging.
- **Islanded Systems:** In remote areas or islands, BESS can be used to create isolated or hybrid power systems that reduce reliance on expensive diesel generators.
- **Industrial and Commercial Facilities:** Businesses can use BESS to optimize energy consumption, reduce electricity bills, and provide backup power.
- **Residential Energy Storage:** Homeowners can install BESS to store excess solar energy and use it during the evening or during power outages.
- **Energy Arbitrage:** BESS can take advantage of time-of-use electricity pricing by buying low-cost electricity when available and selling it back to the grid when prices are high.
- **Black Start Capability:** In the event of a complete blackout, BESS can provide initial power to restart generators and bring the grid back online.
- **Electricity Market Participation:** BESS can participate in energy markets, providing services like capacity, frequency response, and reserve capacity to earn revenue.

CURRENT AFFAIRS

- **Reducing Transmission and Distribution Upgrades:** In some cases, BESS can defer or eliminate the need for costly upgrades to transmission and distribution infrastructure by providing localized capacity.

Benefits

Battery Energy Storage Systems offer several advantages:

- **Renewable Energy Smoothing:** BESS smoothes out the variability of renewable energy generation, ensuring a consistent power supply.
- **Peak Demand Reduction:** They help reduce peak electricity demand and associated costs, promoting grid efficiency.
- **Enhanced Grid Reliability:** BESS enhances the overall reliability of the electricity grid by providing rapid response to fluctuations in demand and supply.
- **Support for Renewable Energy Adoption:** BESS supports the broader adoption of renewable energy technologies by mitigating their intermittent nature.
- **Greenhouse Gas Reduction:** BESS technology contributes to reducing greenhouse gas emissions by enhancing overall energy efficiency and promoting the use of clean, renewable energy sources.

Challenges and Considerations

Despite their numerous benefits, BESS systems face certain challenges:

- **High Initial Costs:** Implementing BESS systems can be expensive, particularly for large-scale deployments.
- **Battery Degradation:** Batteries used in BESS systems tend to degrade over time, affecting their long-term performance.
- **Recycling and Disposal:** Recycling and disposal of batteries pose environmental challenges and require sustainable solutions.
- **Regulatory and Grid Integration:** Addressing regulatory frameworks and integrating BESS into existing grids can present complex challenges that need careful consideration.

Conclusion

Battery Energy Storage Systems play a pivotal role in modernizing the energy sector, offering versatile solutions for storing, managing, and utilizing electrical energy efficiently. Their application spans from grid stabilization to renewable energy integration, with environmental benefits.

Global Innovation Index 2023

On 27th September, 2023, the World Intellectual Property Organization (WIPO) released the Global Innovation Index (GII) 2023. As per the report, India has maintained its 40th rank, retaining its position as a prominent performer among lower-middle-income countries.

Key Highlights

- **Leading the Innovation Landscape:** Switzerland continues its impressive streak as the most innovative economy for the 13th consecutive year, according to the Global Innovation Index (GII) 2023.
- **Sweden Surges to Second Place:** In a significant development, Sweden has secured the second position in the GII rankings, surpassing the United States. This remarkable ascent highlights Sweden's commitment to fostering innovation and its robust innovation ecosystem.
- **Singapore Emerges as a Top Performer:** Singapore's remarkable performance has earned it a place in the coveted top five, underlining its emergence as an innovation leader in the South East Asia, East Asia, and Oceania (SEAO) region.
- **China and Japan in Global Innovation Index:** China secured the 12th position, with Japan following closely at number 13. Notably, China stands out as the sole middle-income country within the top 30 ranks of innovators.

India in the Index

- **India Leads the Lower-Middle-Income Economies:** India secured the top position among the 37 lower-middle-income countries and also led the group of 10 economies in Central and South America.
- **Strong Performance Across Key Innovation Indicators:** India has consistently excelled in innovation for the 13th consecutive year, achieving top rankings in crucial indicators such as ICT services exports (5th place), venture capital received (6th place), graduates in science and engineering (11th place), and global corporate R&D investors (13th place).
- **India among Innovation Over performers:** The GII recognizes India as part of the elite group of 21 economies that have consistently outperformed in innovation relative to their development level for 13 consecutive years. Joining India in this prestigious club are Moldova and Vietnam.
- **Continuous Improvement:** Over the past eight years, India has steadily climbed in the GII rankings, showing remarkable progress. In 2015, India was positioned at 81st place.

Factors Contributing to Improved Ranking

- **Innovation:** Innovation played a pivotal role in addressing the challenges posed by the COVID-19 pandemic and is expected to drive India's resilience, aligning with the vision of an "Atma Nirbhar Bharat".

- **Think Tank:** NITI Aayog, the government think tank, has been diligently working to optimize national efforts in fostering policy-led innovation across various sectors, including electric vehicles, biotechnology, nanotechnology, space technology, and alternative energy sources.
- **Collaboration:** The Confederation of Indian Industry (CII) has also been actively collaborating with the government in India's journey toward becoming an innovation-driven economy.
- **Intellectual Capital:** India's unwavering commitment to education and research has yielded a highly educated workforce, a cornerstone for innovation. The presence of skilled professionals significantly bolsters the nation's capacity for innovation.
- **Dynamic Startup Ecosystem:** India's vibrant startup landscape has been a catalyst for innovation. Startups frequently introduce novel and disruptive concepts to the market, elevating India's innovation profile across various sectors.
- **Research Institutions:** Both public and private research institutions have played a pivotal role in nurturing innovation. Government bodies like the Department of Science and Technology, Department of Biotechnology, Department of Space, and Department of Atomic Energy have actively supported research and innovation ventures spanning diverse domains.
- **Government Endeavours:** Government departments and ministries have been proactive in fostering innovation through diverse policies and initiatives. Their backing and financial support have empowered innovation and research endeavours spanning fields like electronics, telecommunications, agriculture, and healthcare.
- **Ongoing Assessment:** Sustained monitoring and evaluation of India's standing in global innovation rankings, such as the Global Innovation Index (GII), are imperative for gauging progress and pinpointing areas necessitating enhancement. NITI Aayog's active engagement in this process underscores a commitment to bolstering India's innovation prowess.

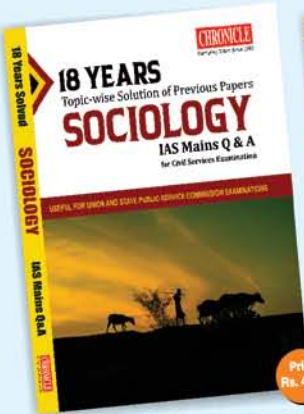
Global Innovation Index (GII): An Overview

- The Global Innovation Index (GII) is a highly regarded annual publication that evaluates and quantifies the innovation performance of global economies.
- It serves as an indispensable benchmarking instrument employed by policymakers, business leaders, and diverse stakeholders to gauge a nation's advancements in the innovation sphere.
- Published by the World Intellectual Property Organization (WIPO) in collaboration with Cornell University, INSEAD, and various organizations and institutions, the GII holds substantial influence in the innovation landscape. ■■

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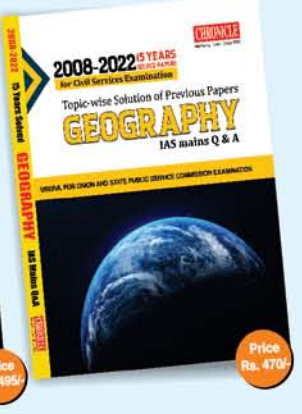
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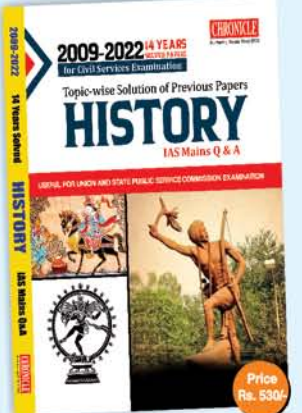
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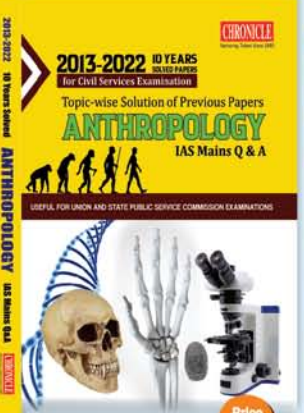
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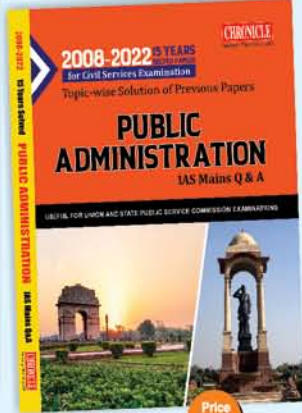
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Polity & Governance

Copyright Infringement

On 18th September, 2023, the Delhi High Court issued summons to an Instagram account in a copyright infringement suit filed by another company due to “substantial imitation” of the images.

About Copyright

- It refers to the right given by the law to creators of literary, dramatic, musical, and artistic works and producers of cinematograph films and sound recordings.
- It is a bundle of rights that includes rights of reproduction, communication to the public, adaptation, and translation of a work.

Copyright Infringement

- A copyrighted work will be considered “infringed” even if a substantial part of the original work is used without authorisation of the original creator.
- The Copyright Act, 1957 aims to safeguard creative works, which are considered to be the creator’s intellectual property.
- The minimum punishment is imprisonment for 6 months up to 3 years, with a minimum fine of Rs. 50,000 up to Rs.2 lakhs.
- In cases of infringement, the copyright owner can take legal action against any person who infringes on or violates their copyright and is entitled to remedies such as injunctions, damages, and accounts.
- An injunction is an official order given by a law court, usually to stop someone from doing something.
- An injunction only acts as a deterrent and does not mean that all alleged instances of misuse will be corrected immediately because when a court grants it, it is not easy to track all such cases and act on them.

Types

- **Primary Infringement:** It occurs when there is an actual act of copying. In this case, the infringer may or may not know about infringement.
- **Secondary Infringement:** It occurs when unauthorised dealings take place, such as selling or importing pirated books, etc. In this case, the infringer will know about infringement.

“PASSING OFF” IN COPYRIGHT INFRINGEMENT

- It is a situation in which a brand logo is misspelt in such a way that it is not easy for the consumer to differentiate between the brands.
- To make a claim of ‘passing off’, some form of deception, misrepresentation, or harm to the goodwill and reputation of the owner of a mark has to be established.

Controller General of Accounts

According to the data released by the Controller General of Accounts (CGA) on 29th September, 2023, the Centre’s fiscal deficit in the first five months of 2023-24 touched 36 per cent of the full-year target.

About CGA

- The CGA, in the Department of Expenditure, Ministry of Finance, is the Principal Accounting Adviser to Government of India.
- It is responsible for establishing and maintaining a technically sound Management Accounting System.

Functions

- Under Article 150 of the Constitution, the Annual Appropriation Accounts (Civil) and Union Finance Accounts are submitted to Parliament on the advice of Comptroller and Auditor General of India.
- Along with these documents, an M.I.S Report titled ‘Accounts at a Glance’ is prepared and circulated to Hon’ble Members of Parliament.

- The Office of CGA prepares monthly and annual analysis of expenditure, revenues, borrowings, and various fiscal indicators for the Union Government.
- It further formulates policies relating to general principles, forms, and procedures of accounting for the Central and State Governments.
- It administers the process of payments, receipts, and accounting in the Central Civil Ministries/ Departments.
- Through its Internal Audit Units in the respective Ministries/Departments, it is responsible for maintaining the requisite technical standards of accounting in the departmentalized accounting offices and for monitoring the financial performance and effectiveness of various programs, schemes, and activities of the civil ministries.
- It also administers banking arrangements for the disbursements of Government expenditures and the collection of government receipts and interacts with the Central Bank for the reconciliation of cash balances of the Union Government.
- CGA is also responsible for coordination and monitoring the progress of the submission of corrective/remedial action taken notes (ATNs) on the recommendations contained in Public Accounts Committee's (PAC) reports as well as the Comptroller & Auditor General (CAG) reports through its web based Audit Para Monitoring System (APMS).

DIFFERENCE BETWEEN CAG & CGA

- The CGA is not a constitutional body. But the CAG is a constitutional body.
- The CAG is an independent body while the CGA is under the Department of Expenditure.
- The President lays down general principles of government accounting on the CAG's advice; the CGA performs the function of maintaining them.

Immunity of Legislators from Bribery Charges

On 20th September, 2023, the Supreme Court referred to a seven-judge bench the question of whether the legal immunity of legislators under Articles 105(2) and 194(2) of the Constitution protects them from being prosecuted in a criminal court for the offence of offering or accepting a bribe.

- Observing the need to examine the “correctness” of its 1998 Constitution bench ruling in PV Narasimha Rao vs. State, a five-judge Bench led by Chief Justice of India referred the verdict to a larger bench for fresh consideration.

Constitutional Provisions Granting Legislators Immunity from Prosecution

- **Article 105** of the Constitution deals with the “powers, privileges, etc. of the Houses of Parliament and of the members and committees thereof”.

- **Article 105(2)** states, “No member of Parliament shall be liable to any proceedings in any court in respect of anything said or any vote given by him in Parliament or any committee thereof, and no person shall be so liable in respect of the publication by or under the authority of either House of Parliament of any report, paper, votes or proceedings.”
- Additionally, this immunity extends to certain non-members, like the Attorney General of India or a Minister who may not be a member but speaks in the House.
- In cases where a member oversteps or exceeds the contours of admissible free speech, the Speaker of the House will deal with it, as opposed to the court.
- **Article 194(2)** extends this immunity to Member of the Legislative Assemblies (MLAs).

1998 JUDGMENT OF SUPREME COURT

- In 1998, the Supreme Court delivered a judgment in the Jharkhand Mukti Morcha (JMM) bribery case.
- The case was related to taking of bribe by five JMM MPs, including the party patriarch Shibu Soren, in 1993 to vote against the no-confidence motion faced by the Congress government led by Prime Minister PV Narasimha Rao.
- The Supreme Court ruled that, as per Article 105 (2) of the Constitution of India, the actions of the MPs related to a speech made or a vote cast in the hall are immune from any prosecution.

e-Cabinet System

On 27th September, 2023, Tripura Chief Minister launched an e-cabinet system at Agartala to promote digital infrastructure development and digitisation of government services and information.

- With this, Tripura has become the fourth state—and second in the Northeast—after Uttarakhand, Uttar Pradesh and Arunachal Pradesh, to have introduced an e-cabinet system.
- The e-Cabinet System in Tripura follows a similar model as introduced in Uttarakhand.
- Executives from the National Informatics Centre and the state's information and cultural affairs department played pivotal roles in launching this system.
- The e-Cabinet app boasts features that streamline the upload of cabinet memos with date and time stamps. Ministers, the chief secretary, secretaries, and other officials can conveniently review and approve documents online.

Impact

- The implementation of the E-Cabinet System is expected to eliminate delays associated with physical document movements, injecting dynamism into government decision-making processes.

- This transformation would enhance transparency, efficiency, and accountability in government operations.

Important Facts

About e-Cabinet System

- It is a powerful software portal for State Governments to conduct Cabinet meetings electronically and online mode.
- It is developed by National Information Centre (NIC), Ministry of Electronics & IT (MeitY).
- It maximizes usage of technology in meetings and reduces paper use.
- It automates workflow activities of meetings; before, during and after.
- It is designed for smart tablets, with rich UI and UX elements, for ease of use.

Serious Fraud Investigation Office

Recently, the Serious Fraud Investigation Office (SFIO) arrested a chartered accountant in Hyderabad in connection with his role during the demonetisation period.

About SFIO

- It was set up in 2003 on the basis of recommendations of the Naresh Chandra Committee on corporate governance in the backdrop of stock market scams, the failure of non-financial banking companies and the phenomena of vanishing companies and plantation companies.
- It is a multi-disciplinary organisation under the Ministry of Corporate Affairs.
- It consists of experts in the fields of accountancy, forensic auditing, law, information technology, investigation, company law, capital market and taxation.
- SFIO is headed by a Director as Head of Department in the rank of Joint Secretary to the Government of India.
- The Director is assisted by Additional Directors, Joint Directors, Deputy Directors, Senior Assistant Directors, Assistant Directors Prosecutors, and other secretarial staff.
- The headquarters of SFIO is in New Delhi, with five Regional Offices in Mumbai, New Delhi, Chennai, Hyderabad and Kolkata.

Statutory Status

- Section 211 of the Companies Act, 2013, accorded the statutory status to the Serious Fraud Investigation Office (SFIO).

Investigation

- Investigation into the affairs of a company is assigned to SFIO, where Government is of the opinion that it is necessary to investigate into the affairs of a company:
- on receipt of a report of the Registrar or inspector under section 208 of the Companies Act, 2013,
- on intimation of a special resolution passed by a company that its affairs are required to be investigated, and

- in the public interest; or on request from any department of the Central Government or a State Government.

Central Empowered Committee

On 5th September, 2023, the Ministry of Environment, Forest and Climate Change issued a revised notification for reconstituting the Central Empowered Committee (CEC).

Changes Made

- According to the notification, instead of an ad hoc body, CEC should be instituted as a permanent statutory body on environmental issues.

Composition

- It will have a chairman with experience of 25 years in the field of environment, forests and wildlife or proven administrative experience of not less than 25 years in the central or state governments.
- Age limit 66 years and the level, not below the rank of additional secretary.
- The member secretary will be a full-time serving officer of the government not below the rank of Deputy Inspector General of forests or director in the Government of India.
- This person is required to have special knowledge in the field of environment, forests or wildlife, and experience of at least 12 years.
- The three expert members will be one each from the fields of the environment, forests and wildlife with experience of at least 20 years.
- The members will be nominated by the Centre for tenure of three years.

Origin of CEC

- It has been formed by Order dated 9th May, 2002 passed by the Hon'ble Supreme Court of India in T.N. Godavarman Thirumalpad vs. Union of India and Ors.
- The CEC's creation aimed to address environmental concerns and ensure proper protection of forests and biodiversity.
- The Committee has been vested with the power to:
- call for any documents from any person or the Government of the Union or the State or any other official;
- summon any person and receive evidence from such person on oath either on affidavit or otherwise;
- seek assistance/presence of any person(s)/official(s) required by it in relation to its work.

Significant Cases Dealt by CEC

- The Kudremukh iron ore mines issue.
- Rampant and illegal iron ore mining at Bellary.
- Protection of the Aravalli hills.
- The issue of compensatory afforestation.
- Determining the value of ecological services provided to forests, leading to the creation of Compensatory Afforestation Fund Management and Planning Authority (CAMPA) fund.

- Illegal sawmills in Tansa WLS, resulting in the imprisonment of a serving Minister and a high-ranking bureaucrat in the Maharashtra government.
- The CEC made recommendations that led to the reduction of Eco-Sensitive Zones (ESZs) in some cases down to zero, and in many cases, the 10 km distance was reduced to 100 meters, mainly benefiting builders and developers.

Judiciary

Advocate-on-Record

On 14th September, 2023, a Supreme Court (SC) Bench imposed a cost of Rs. 2,000 on an advocate-on-record (AoR) for sending a young junior to appear before the Bench without any papers.

The Bench headed by the Chief Justice of India (CJI) observed that such conduct was a disservice to the court as well as to the junior advocate.

About Advocate-on-Record (AoR)

- “Advocate on record” is a title given to an advocate who can represent a cause or pleading before the SC.
- The concept of AoR was introduced by the SC with the power given to it under Article 145(1) of the Indian Constitution, which states that the SC may, from time to time, make rules for regulating the practices and procedures in the court.
- Only these advocates are entitled to file any matter or document before the SC. They can also file an appearance or act for a party in the SC.
- AoR is allowed to assist, brief, collect all documents related to the case and help in the drafting as well.

Requirement for AoR

- Order IV Rule 5 of the Supreme Court Rules, 2013 lays down the requirements to be fulfilled to become an AoR.
- They are as follows:
 - ✓ The Advocate is required to be enrolled with any State Bar Council.
 - ✓ The Advocate is required to have a prior experience of at least 4 years.
 - ✓ The Advocate has undergone a training of 1 year under a senior AoR.
 - ✓ The Advocate has appeared for the examination conducted by the SC.
 - ✓ The Advocate is required to have an office in Delhi within a radius of 10 miles from the SC house and give an undertaking to employ a clerk, who shall be a registered clerk, within one month of being registered as an advocate on record.
 - ✓ Once registered, an AOR is issued a unique identification number that must be used on all documents filed in the SC.

Plans /Policies

Rashtriya Vigyan Puraskar

On 21st September, 2023, the Union Government came out with a new set of National Awards in the field of Science, Technology and Innovation known as “Rashtriya Vigyan Puraskar”.

The objective of the Rashtriya Vigyan Puraskar (RVP) is to recognize the notable and inspiring contribution made by the scientists, technologists, and innovators individually or in teams in various fields of science, technology and technology led innovation.

4 Categories

1. **Vigyan Ratna (VR)** award will recognize lifetime achievements & contributions made in any field of science and technology.
2. **Vigyan Shri (VS)** award will recognize distinguished contributions in any field of science and technology.
3. **Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB)** award will recognize & encourage young scientists up to the age of 45 years who made an exceptional contribution in any field of science and technology.
4. **Vigyan Team (VT)** award to be given to a team comprising of three or more scientists/researchers/innovators who have made an exceptional contribution working in a team in any field of science and technology.

Domains

- It shall be given in the 13 domains, namely Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology & Innovation, Atomic Energy, Space Science and Technology, and Others.

Selection Procedure

- All nominations received for the Rashtriya Vigyan Puraskar awards shall be placed before the Rashtriya Vigyan Puraskar Committee (RVPC) to be headed by the Principal Scientific Adviser (PSA) to Government of India and comprising Secretaries of Science Departments, members of Science and Engineering Academies and some distinguished scientists and technologists from different fields of science and technology.
- The Award Ceremony for all categories of awards will be held on 23rd August (National Space Day).

eCourt Phase III

On 13th September, 2023, the Union Cabinet approved the eCourts Project Phase III.

- Phase III of the e-Courts Project in India is rooted in philosophy of “access and inclusion”.
- This initiative represents a significant leap forward in the ongoing efforts to modernize and enhance the accessibility of the Indian judicial system.

Aim

- To usher in a regime of maximum ease of justice by moving towards digital, online and paperless courts.

Implementation

- It will be implemented under the joint partnership of Department of Justice, Ministry of Law & Justice, Government of India and eCommittee, Supreme Court of India.
- It will be implemented in a decentralized manner through the respective High Courts to develop a judicial system that would promote ease of justice by making the system more accessible, affordable, reliable, predictable, and transparent for all stakeholders.

Key Components

- It includes scanning, digitization, and digital preservation of case records, cloud infrastructure, establishment of virtual courts, paperless court initiatives, system and application software development.

Expected Impact

- **Bridge Digital Divide:** Citizens who do not have access to technology can access the judicial services from eSewa Kendras, thus bridging the digital divide.
- **Reduce Expenses through Virtual Participation:** The provision for virtual participation in the court proceedings will reduce costs associated with court proceedings, such as travel expenses for witnesses, judges, and other stakeholders.
- Expansion of virtual courts beyond the adjudication of traffic violation cases, thereby eliminating the presence of litigant or lawyer in the court.
- **Digital Mode of Payment:** Payment of court fees, fines and penalties from anywhere, anytime.
- **Reduce Time and Human Error:** Expansion of eFiling for reducing the time and effort required to file documents. Thereby minimizing human errors as documents are automatically checked and also prevent further creation of paper based records.
- Enhanced accuracy and transparency in court proceedings.
- **Smooth User Experience:** Use of latest technologies like AI and its subsets Machine Learning (ML), Optical Character Recognition (OCR), Natural Language Processing (NLP) to provide a smoother user experience by building a “smart” ecosystem.
- **Easy File Management:** Registries will have less data entry and minimal file scrutiny facilitating better decision-making and policy planning.
- **Reduce Delay in Trials:** Emphasis on automated delivery of court summons by further expanding the NSTEP (National Serving and Tracking of Electronic Processes), hence drastically reducing the delays in trials.

Intelligent Grievance Monitoring System (IGMS) 2.0

On 29th September, 2023, the Union Government launched the Intelligent Grievance Monitoring System (IGMS) 2.0 public grievance portal.

- IGMS is an artificial intelligence (AI) driven grievance monitoring system.
- It aims to enhance the efficiency of the public grievance redressal process.
- It has been developed by the Department of Administrative Reforms and Public Grievances (DARPG) in collaboration with IIT Kanpur.
- The system provides real-time analysis of grievances received and resolved, as well as state-wise and district-wise data. It also helps identify the root cause of grievances, allowing for targeted interventions.

Significance

- In India, the common man raises around 20 lakh grievances annually on the CPGRAMS portal. However, manually classifying and monitoring these grievances is a challenging and time-consuming task.
- Therefore, the launch of the IGMS 2.0 Dashboard will significantly expedite the grievance redressal process, enabling the concerned ministries and departments to respond more effectively.

Centralised Public Grievance Redress and Monitoring System (CPGRAMS) is an online platform available to the citizens 24x7 to lodge their grievances to the public authorities on any subject related to service delivery. It is a single portal connected to all the Ministries/Departments of Government of India and States. The status of the grievance filed in CPGRAMS can be tracked with the unique registration ID provided at the time of registration of the complainant.

Sankalp Saptah

On 30th September, 2023, the Prime Minister launched a unique week-long programme for Aspirational Blocks in the country called ‘Sankalp Saptah’ at Bharat Mandapam, New Delhi.

It was observed from 3rd October to 9th October, 2023.

- Sankalp Saptah was closely tied to effective implementation of Aspirational Blocks Programme (ABP).
- The goal of this initiative was to enhance governance at the block level, thereby improving the quality of the life of citizens.
- It was observed in 500 Aspirational Blocks across 329 districts in the country.
- Each day was dedicated to a specific development theme on which all blocks had to work.
- The themes for the first six days were ‘Sampoorna Swasthya’, ‘Suposhit Pariwaar’, ‘Swachhta’, ‘Krishi’, ‘Shiksha’, and ‘Samridhi Diwas’.

- The last day of the week was celebrated as ‘Sankalp Saptaah – Samavesh Samaroh’.

Aspirational Block Program (ABP) aims at improving performance of blocks lagging on various development parameters by enhancing governance and public services delivery in those areas. It was announced in the Union Budget 2022-23. It will initially cover 500 districts across 31 states and Union Territories, with over half of these blocks located in six states – Uttar Pradesh, Bihar, Madhya Pradesh, Jharkhand, Odisha and West Bengal. To execute this, Chintan Shivirs were organized at both village and block levels across the country. The ‘Sankalp Saptaah’ is a culmination of these Chintan Shivirs.

Report

Law Commission Report on e-FIR

On 29th September, 2023, the 22nd Law Commission submitted its report - Amendment in Section 154 of the Code of Criminal Procedure, 1973 for enabling online registration of FIR – to the Union Law Ministry.

Key Observations

- The CrPC or the Indian Penal Code (IPC) does not use the word ‘FIR’. However, many police guidelines and departmental regulations use the word, which has become a part of common legal parlance. The CrPC defines a complaint as allegations made orally or in writing to a magistrate.
- Section 154 has been interpreted to include filing of an FIR in cases of cognisable offence. Whereas, in non-cognisable cases; the police cannot initiate an investigation without an Order from a magistrate as per Section 155 of the CrPC.
- However, e-FIRs were partially introduced through the Crime and Criminal Tracking Network and System (CCTNS) in eight states (Delhi, Gujarat, Karnataka, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and Uttarakhand) for select offences such as theft.

Recommendations

- The Commission recommended making a provision for registration of e-FIRs in all cases of cognisable offences where the accused is unknown.
- In cases where the accused is known, e-FIRs can be permitted in all cognisable offences attracting punishment up to three years, the commission has recommended.
- It recommended enabling e-FIRs only for offences with a maximum punishment of up to three years in light of the strict guidelines on arrest to protect the accused against any possible misuse.
- The commission has recommended suitable amendments to the Code of Criminal Procedure, 1973, Indian Evidence Act, 1872, the Information Technology Act, 2000, the Indian Penal Code, 1860 and other legislation to support e-FIR registration.

- The Commission recommended against allowing registration of e-FIR in all cases. It referred to the Supreme Court’s landmark verdict in Lalita Kumari vs. State of Uttar Pradesh, in which the court held that preliminary enquiry should be conducted in cases pertaining to matrimonial disputes, commercial offences, medical negligence and corruption, among others.

Parliament Panel Report on the New Education Policy

The Parliament Standing Committee on Education tabled a report titled “Implementation of the National Education Policy (NEP), 2020 in Higher Education” during the special session of Parliament held from 18 to 22 September 2023.

Key Findings

- The report looked at the salient features of the NEP’s implementation in the higher education sector and the progress made so far.
- NEP has been implemented in Jammu and Kashmir, the first to implement NEP in 2022 in all its HEIs.
- It witnessed a paradigm shift in methods of teaching, leading to lifelong learning opportunities for students.
- The report noted that of the 1,043 universities functioning in the country 70% are under the State Act and that 94% of students are in State or private institutions with just 6% of students in Central higher educational institutions.
- By 2030, every district in the country should have at least one multidisciplinary HEI and that the Gross Enrolment Ratio in higher education, including vocational education, should be increased from 26.3% in 2018 to 50% by 2035.
- The panel said that Indian institutions were likely to face several issues in implementing the multiple entries and multiple exit (MEME) system. While the MEME looked like a flexible system, which was being operated by Western educational institutions effectively, it might not work well in the country.

Issues Raised by the Committee

- Rigid separation of disciplines,
- Limited access to higher education in socio-economically disadvantaged areas,
- Lack of higher education institutes (HEIs) that teach in local languages,
- Limited number of faculty,
- Lack of institutional autonomy,
- Lesser emphasis on research,
- Ineffective regulatory system, and
- Low standards of undergraduate education.

Recommendations

- Government should take actions like earmarking suitable funds for education of Socially and Economically Disadvantaged Groups (SEDGs) and set targets for higher

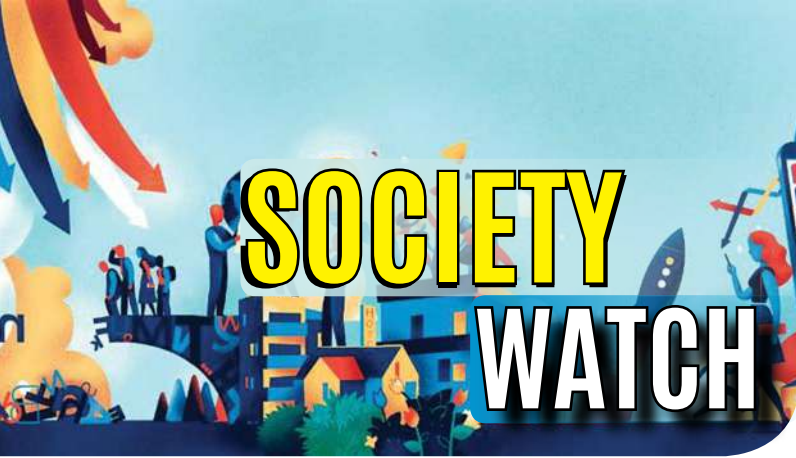
CURRENT AFFAIRS

- Gross Enrolment Ratio (GER) for SEDGs to enhance gender balance in admissions to HEIs.
- Total enrolment within a country in a specific level of education, regardless of age, expressed as a percentage of the population in official age group corresponding to this level of education (UNESCO).
- Provide financial assistance and scholarships to SEDGs in public and private HEIs, making admission processes and curriculum more inclusive.
- The employability potential of higher education programs shall be increased and degree courses shall be taught in regional languages.
- Take specific infrastructural steps to help physically challenged students and strictly enforce no-discrimination and anti-harassment rules.
- The effectiveness and impact of Higher Education Financing Agency (HEFA) in funding HEIs must be increased.
- Interest rates on loans provided by HEFA can be reviewed and adjusted for competitive and affordable education.

News Snippets

<p>Nagaland: First State in North Eastern Region to Initiate Aadhaar Linked Birth Registration</p>	<ul style="list-style-type: none"> Recently, Nagaland took the lead as the first state in the North Eastern Region to introduce Aadhaar Linked Birth Registration (ALBR). The initiative aims to improve the overall journey for both parents and children throughout the crucial phases of birth registration and Aadhaar enrolment. Through ALBR, the process of Aadhaar enrolment occurs simultaneously with birth, seamlessly intertwining it with the registration process. This enrollment method is facilitated smoothly using a tablet under the supervision of (Child Enrolment Lite Client) CELC Operators, necessitating only a proof of relationship document for enrolling the child. This groundbreaking endeavor is set to benefit children in their formative years and contribute to the realization of their rights and entitlements, ensuring a brighter future for the state's youngest citizens.
<p>100% Open Defecation Free (ODF) Plus Coverage</p>	<ul style="list-style-type: none"> Recently, Uttar Pradesh has achieved 100% Open Defecation Free (ODF) Plus coverage under the Swachh Bharat Mission (Grameen) programme. An ODF Plus village is one which has sustained its Open Defecation Free (ODF) status along with implementing either solid or liquid waste management systems. Currently, 4.4 lakh (75%) villages across the nation have declared themselves ODF Plus which is a significant step towards achieving the SBM-G phase II goals by 2024-25. So far, 11 states have been declared 100 per cent ODF Plus status out of which UP is the largest.
<p>Central Drugs Standard Control Organisation (CDSCO)</p>	<ul style="list-style-type: none"> Recently, Central Drugs Standard Control Organisation (CDSCO) has warned about the voluntary recall of Abbott India's popular antacid syrup Digene Gel. CDSCO works under the Directorate General of Health Services, Ministry of Health & Family Welfare. It is the National Regulatory Authority (NRA) of India. Under Drugs & Cosmetics Act, 1940, CDSCO is responsible for approval of Drugs, Conduct of Clinical Trials, laying down the standards for Drugs, control over the quality of imported Drugs in the country and coordination of the activities of State Drug Control Organizations. CDSCO along with state regulators is jointly responsible for grant of licenses of certain specialized categories of critical Drugs such as blood and blood products, I. V. Fluids, Vaccine and Sera.
<p>Project Naman</p>	<ul style="list-style-type: none"> Recently, the Indian Army launched 'Project Naman', which will entail establishing facilitation and grievance redressal centres for veterans and the kin of personnel who have lost their lives. The first such centre will be established in Delhi Cantonment. 'Naman' will house a Common Service Centre, which will facilitate the veterans and their relatives. It will offer all government-to-customer services and also facilitate the updating of pensioners' accounts on the SPARSH portal of veterans, next of kin and dependents.
<p>Digital House of Gujarat Assembly</p>	<ul style="list-style-type: none"> Recently, President Droupadi Murmu inaugurated the National e-Vidhan Application (NeVA) Digital House project of the Gujarat legislative assembly in Gandhinagar. This endeavor draws inspiration from Prime Minister's visionary concept of 'One Nation, One Application' and signifies a substantial leap towards achieving a completely paperless Assembly process. The National e-Vidhan Application (NeVA), a Unicode-compliant software, has been developed by the Union Parliamentary Affairs Ministry with the primary goal of making all legislative work and data available online for both citizens and Assembly members. As of now, 21 State legislatures have formally signed a Memorandum of Understanding (MoU) for the implementation of NeVA.

<p>First Urban-Shift Forum (Asia)</p>	<ul style="list-style-type: none"> • Recently, the first UrbanShift Forum (Asia) was inaugurated in India. • The key objective of this forum is to provide training and capacity-building to regional cities on various facets of integrated and sustainable urban development. • Cities will also have the opportunity to present their current plans and initiatives to their peers and engage in in-depth discussions with sector experts. • UrbanShift is a GEF-funded program led by UNEP that supports more than 20 cities in Asia, Africa and Latin America to adopt integrated approaches to urban development, helping shape cities that are efficient, resilient and inclusive.
<p>Overseas Citizenship of India (OCI)</p>	<ul style="list-style-type: none"> • Recently, India decided to cancel the registration of many Overseas Citizenship of India (OCI) card holders for carrying out pro-Khalistan activities and anti-India propaganda in Canada. • The OCI is given to registered overseas Indians under the Citizenship Act, 1955 and that provides long term visa free travel and stay in India with certain privileges normally not given to a foreign national. • It was implemented first in India under the Citizenship (Amendment) Act, 2003 as recommended by L.M. Singhvi committee, set up in 2000. • It earlier included the Persons of Indian Origin, which was subsequently abolished in 2015.
<p>International Lawyer’s Conference 2023</p>	<ul style="list-style-type: none"> • International Lawyers Conference 2023 was organized from 23rd – 24th September 2023 at Vigyan Bhawan, New Delhi. • It was organized by the Bar Council of India. • Theme: ‘Emerging Challenges in Justice Delivery System’ • The conference was organized to serve as a platform for meaningful dialogue and discussion on various legal topics of national and international importance, foster the exchange of ideas and experiences, and strengthen international cooperation and understanding on legal issues.
<p>Armed Forces Tribunal (AFT)</p>	<ul style="list-style-type: none"> • Recently, the Armed Forces Tribunal (AFT) Chandigarh Bench Bar Association went on an indefinite strike in protest against the AFT chairperson’s decision to transfer a judicial member from the city to Kolkata. • AFT is a military tribunal in India established in 2009 under the Armed Forces Tribunal Act, 2007. • Its main function is to provide for the adjudication or trial of disputes and complaints with respect to commission, appointments, enrolment and conditions of service in respect of persons subject to the Army Act, 1950, the Navy Act, 1957 and the Air Force Act, 1950. • Any appeal by a person against a decision given by the tribunal can only be taken up in the Supreme Court. • It has its Principal Bench at New Delhi and eight Regional Benches at Jaipur, Chandigarh, Lucknow, Guwahati, Kolkata, Chennai, Kochi and Mumbai.
<p>Samvidhan Sadan</p>	<ul style="list-style-type: none"> • On 19th September, 2023, the Prime Minister announced the new name for the old parliament building, which will now be known as “Samvidhan Sadan” or Constitution House. • This historic structure, designed by British architects Sir Edwin Lutyens and Herbert Baker, was completed in 1927 and has witnessed pivotal moments in Indian history, including the drafting and passing of India’s Constitution. • The Prime Minister paid tribute to every aspect of the old Parliament building, acknowledging its role in shaping India’s democratic history. • It is planned to conserve the old Parliament building as an archaeological marvel of India, recognizing its historical and architectural significance.
<p>‘Skills on Wheels’ Initiative</p>	<ul style="list-style-type: none"> • On 17th September, 2023, Union Minister of Skill Development and Entrepreneurship and Lok Sabha Speaker inaugurated the ‘Skills on Wheels’ initiative in Delhi. • The initiative aims to raise awareness about the government’s skill development mission and the available opportunities and support systems for young individuals. • It also focuses on promoting digital literacy and digital skills, aligning with India’s global efforts in this area. • The initiative will begin its journey by visiting villages in Rajasthan and subsequently expand to other parts of the country. • The Ministry of Skill Development and Entrepreneurship, along with the National Skill Development Corporation, initiated ‘Skill on Wheels’ or Kaushal Rath and Skillathon to spread awareness about the Skill Mission.



Social Issues

- Law Commission Report on POCSO Act, 2012

Social Justice

- The Constitution (One Hundred and Sixth Amendment) Act, 2023

Indian Society

- Justice Amitava Roy Committee

Plans/Policies

- G20 Declaration on Health
- Malaviya Mission: Teacher Training Program
- Transformative Programs to Empower Persons with Disabilities
- PM-DAKSH Yojana
- CRIIIIO 4 GOOD Initiative
- Vidya Samiksha Kendra
- Changes in Pre-Matric & Post-Matric Scholarship Scheme for SCs

News Snippets

Social Issues

Law Commission Report on POCSO Act, 2012

On 27th September, 2023, the 22nd Law Commission submitted its report on ‘Age of Consent under the Protection of Children from Sexual Offences Act (POCSO), 2012’ to the Ministry of Law & Justice.

Major Highlights

Government should not reduce the Age of Consent

- It said that reducing the age of consent would have a direct and negative bearing on the fight against child marriage and child trafficking.

Risk of Detention

- Minors aged between 16 and 18 who engage in a consensual act that may come under the definition of sexual activity under the law run the risk of being booked under POCSO Act.
- While the cases of adolescent sex may not necessarily result in conviction of a minor boy, the law is such that it could result in denial of bail and prolonged detention.

Romantic Cases

- One in every four cases under the POCSO Act in West Bengal, Assam and Maharashtra constituted “romantic cases” where the victim was found to be in a consensual relationship with the accused.

Tacit Approval

- It has called for certain amendments to the POCSO Act ‘to remedy the situation in cases wherein there is tacit approval in fact though not consent in law on part of the child aged between 16 to 18 years’.

Recommendations

- **Guided Judicial Discretion:** The Law Panel advises introduction of “guided judicial discretion” while sentencing in cases that involve the tacit approval of children in the 16 to 18 years age bracket.
- **Role of Special Court:** Law Commission recommended that amendments be made to Sections 4 (punishment for penetrative sexual assault) and Section 8 (sexual assault) of the POCSO Act, allowing the Special Court to award lesser sentence in cases where the child is of the age 16 or above, subject to a checklist.
- **Changes in Section 18 of JJA:** The Law Commission suggested making changes in Section 18 of the Juvenile Justice Act (JJA) dealing with ‘orders regarding children found to be in conflict with law’ and corresponding changes in Sections 375 and 376 of Indian Penal Code (IPC).
- **Real Time Crime Reporting:** It recommended amending Section 154 of the Criminal Procedure Code, 1973 in order to roll out the registration of e-FIRs in a phased manner, beginning with offences that attract a jail term of up to three years.

Social Justice

The Constitution (One Hundred and Sixth Amendment) Act, 2023

On 28th September, 2023, the Constitution (One Hundred and Sixth Amendment) Bill, 2023 (also known as Women’s Reservation Bill or Nari Shakti Vandan Adhiniyam) received the assent of the President of Bharat.

- The Act emphasizes the importance of women’s participation in decision-making processes for the development of the nation.

Need

- **Underrepresentation of Women:** 15% of the total members of the 17th Lok Sabha are women while in state legislative assemblies; women on average constitute 9% of the total members. In 2015, the Report on the Status of Women in India noted that the representation of women in state assemblies and Parliament continues to be dismal. It noted that decision making positions in political parties have negligible presence of women.
- **Need to Bridge the Gender Gap:** Development in India is being severely hampered by the breadth of the gender gap and limited female participation in traditionally male-dominated institutions and social strata.

Salient Features

Reservation to Women

- It provides 33 per cent reservation to women in Lok Sabha and State Legislative Assemblies. It proposes a similar provision for the Legislative Assembly of the National Capital Territory of Delhi.

Insertion of New Articles

- **Article 330A:** Reservation of seats for women in the House of the People (Lok Sabha). This article mandates the reservation of seats for women, with a focus on women from Scheduled Castes and Scheduled Tribes.
- **Article 332A:** Reservation of seats for women in the Legislative Assemblies of the States. Similar to Article 330A, this article focuses on women's reservation, including women from Scheduled Castes and Scheduled Tribes.

Commencement of Reservation

- The reservation will be effective after the census conducted and the Act has been published.
- Based on the census, delimitation will be undertaken to reserve seats for women. The reservation will be provided for a period of 15 years.
- However, it shall continue till such date as determined by a law made by Parliament.

Rotation of Seats

- Seats reserved for women will be rotated after each delimitation, as determined by a law made by Parliament.

Significance

- **Social and Economic Development:** Empowering women politically can have positive effects on social and economic development. It can lead to policies that promote gender-sensitive development, improved access to education and healthcare for women, and increased economic opportunities.
- **Addressing Gender Disparities:** It can contribute to reducing gender disparities in various sectors, including education, employment, and healthcare, as women's concerns and priorities are more likely to be addressed.
- **Gender Inclusive Governance:** It will help encourage political parties to promote women leaders and give them

opportunities to contest elections, which can lead to a more inclusive and diverse political landscape.

- **Fulfilling International Commitments:** India is a signatory to international agreements and conventions that call for gender equality and women's empowerment. The Act demonstrates India's commitment to these international obligations.

Indian Society

Justice Amitava Roy Committee

Recently, the Supreme Court sought views of the Central and the State Governments on the Justice Amitava Roy Committee report.

About the Committee

- In September 2018, the Supreme Court had formed a Committee, chaired by former judge, Justice Amitava Roy, to examine the various problems plaguing prisons in the country, from overcrowding to lack of legal advice to convicts to issues of remission and parole. The committee submitted the final report in December, 2022.

Major Findings

Crowding among Undertrials

- Globally, one in three prisoners is undertrials. In India, three out of four, or about 77% of the total prison population in 2021, were undertrials.

Worse Condition of Female Prisoners

- Women prisoners face far worse conditions than men in terms of access to basic facilities.
- Prisons only in Goa, Delhi and Puducherry allow female inmates to meet their children without any bars or glass separation.
- Less than 40% prisons provide sanitary napkins to female inmates.
- Only 18% of female prisoners get exclusive women's prison facilities, and functional women's prisons exist in just 15 states and Union Territories.

Transgender Prisoners

- Prison authorities of only 13 states and two Union Territories have designated a 'complaint officer' to deal with complaints of violation of rights of transgender inmates in prisons.
- Majority of the states and Union Territories have not formulated welfare schemes for transgender prisoners.

Recommendations

- **Segregation:** It recommended mandatory segregation of undertrials, convicts and first-time offenders inside jails, while producing them in courts, during their hospital visits, etc.

- **Insurance:** Prison administration should strive to comprehensively implement national and state health insurance schemes such as the Ayushman Bharat scheme, Chiranjeevi Health Insurance Scheme and similar state health insurance schemes in prisons.
- **Fast Track Courts:** Special fast track courts to be set up to extensively deal with petty offences and for cases pending for five years or more.
- **Monitoring:** It recommended tasking district and session's judge with the responsibility of regularly monitoring the progress of cases pending in courts where the accused is in custody for more than one year in a session triable case and for more than six months in magistrate triable cases.

Plans/Policies

G20 Declaration on Health

On 9th September, 2023, a joint declaration on health was passed at G20 Leaders' Summit 2023 to focus on strengthening primary healthcare, health workforce, and essential health services.

- India has also committed to provide its vaccine management platform CoWIN, its tele-medicine platform e-Sanjeevani, and its Ayushman Bharat Digital Mission platform as digital public goods to others.

Major Highlights of G20 Declaration on Health

Improving Access to Medical Countermeasures and Facilitate

- The G20 leaders committed to improve access to medical countermeasures and facilitate more supplies and production capacities in developing countries to prepare better for future health emergencies.

Promoting One Health-based Approach

- The leaders highlighted the need to promote the One Health-based approach driven by the quadripartite One Health Joint Plan of Action (2022-2026) and enhance the resilience of health systems.

Climate-Resilient and Low-Carbon Health Systems

- The leaders stressed on the need to support development of climate-resilient and low-carbon health systems in collaboration with multilateral development banks (MDBs), and support the work of the WHO-led Alliance for Transformative Action on Climate and Health (ATACH).

Tackling Antimicrobial Resistance (AMR)

- The leaders stressed on implementing and prioritising tackling antimicrobial resistance (AMR) following the One Health approach.

Facilitating Equitable Access of Vaccines

- The leaders called for facilitating equitable access to safe,

effective, quality-assured, and affordable vaccines, therapeutics, diagnostics, and other medical countermeasures, especially in low-and middle-income countries and least developed countries.

International Counter-Narcotics Cooperation

- The leaders called for strong international counter-narcotics cooperation, free of unnecessary restrictions, including information sharing and capacity building to disrupt production and proliferation of illicit drugs, including synthetic drugs, and precursor chemicals at their origin, in transit and at destination points.

Strengthening the Global Health Architecture

- The leaders committed to strengthening the global health architecture for pandemic prevention, preparedness and response through enhanced collaboration between finance and health ministries under the Joint Finance and Health Task Force.

Malaviya Mission: Teacher Training Program

On 5th September, 2023, on the occasion of the Teacher's Day, the Ministry of Education launched the Malaviya Mission - Teachers Training Programme by the University Grants Commission (UGC) at Kaushal Bhawan, New Delhi. It aims at enhancing the quality of education by providing specialized training for teachers in higher educational institutions.

Also, the name of the Human Resource Development Centres was changed to Madan Mohan Malaviya Teachers Training Centres.

- This program will work for the capacity building of faculty members in higher educational institutions (HEI).
- It will ensure continuous professional development and help in building capacities of 15 lakh teachers of HEIs through 111 Malaviya Mission centres across India in a time-bound manner.
- The capacity building under the Mission will be mapped to the credit framework to ensure career progression pathways for educators.
- The Indian Knowledge System has been included in the modules of the Program.
- The training program will focus on eight thematic areas-
 - Holistic and Multidisciplinary Education,
 - Indian Knowledge Systems (IKS),
 - Academic Leadership,
 - Governance and Management,
 - Higher Education and Society,
 - Research and Development, Skill Development,
 - Student Diversity and Inclusive Education,
 - Information and Communication Technology.
- The Mission is a significant initiative to enhance the quality of higher education in India by empowering

educators with specialized training and knowledge in various thematic areas.

- It aligns with the broader goals of educational reform and development in the country.

NISHTHA (National Initiative for School Heads Teachers Holistic Advancement) is a National Mission to improve learning outcomes at the elementary level through an Integrated Teacher Training Programme under the Centrally Sponsored Scheme of Samagra Shiksha in 2019-20. It aims to build competencies among all the teachers and school principals at the elementary stage. It is a capacity building programme for “Improving Quality of School Education through Integrated Teacher Training”.

Transformative Programs to Empower Persons with Disabilities

On 11th September, 2023, the Ministry of Social Justice and Empowerment unveiled five transformative initiatives aimed at shaping the lives of Persons with Disabilities (Divyangjans) serving as a testament to the government’s unwavering commitment to their holistic development and empowerment.

Five Initiatives

1. MOU with Council of Architecture

- Department of Empowerment of Persons with Disabilities (DEPwD) has joined hands with the Council of Architecture (COA) to introduce universal accessibility courses within Bachelor of Architecture programs.
- This collaboration extends to the development of a certified course for architects and civil engineers, equipping them with the skills to conduct accessibility audits in built environments, thereby ensuring compliance with accessibility standards.

2. Releasing of Anonymous Data of UDID

- This initiative provides invaluable insights at various levels, facilitating a deeper understanding and informing targeted interventions.

3. PM Daksh Portal

- DEPwD introduces the PM Daksh-DEPwD Portal, a comprehensive digital platform designed to empower Persons with Disabilities in their pursuit of skill training and employment opportunities.
- The portal offers seamless registration through UDID, access to location-based skill training options, a wide array of job listings from across India, and streamlined administrative processes.

4. Pathways to Access

- DEPwD has compiled notable judgments from India’s Supreme Court and High Courts concerning disability rights into a comprehensive booklet.
- This resource serves as a valuable reference guide for persons with disabilities and stakeholders in the disability sector.

5. Online Case Monitoring Portal by CCPD

- This initiative streamlines the entire process, making it paperless and efficient. Key features include seamless online complaint filing, automated reminders, and simplified hearing scheduling.

Impact

- These initiatives underscore DEPwD’s unwavering commitment to fostering inclusivity, advancing disability rights, and driving meaningful change in the lives of persons with disabilities throughout India.

PM-DAKSH Yojana

According to the Government data, during last three years of implementation from 2020-21 to 2022-23, a total of 107156 beneficiaries have been trained and an amount of Rs. 213.83 crore has been spent under PM-DAKSH.

- The Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi (PM-DAKSH) Yojana is a Central Sector Scheme.
- It was launched during 2020-21.
- **Nodal Ministry:** Ministry of Social Justice & Empowerment (MoSJ&E).

ASSISTANCE FOR SKILLING OF TARGET GROUP OF MOSJ&E BY ITS APEX CORPORATIONS

Target Groups & Assigned Corporations

- **National Scheduled Castes Finance and Development Corporation (NSFDC):** Person belonging to Scheduled Castes (SCs) without any annual family income criteria
- **National Safai Karamcharis Finance & Development Corporation (NSKFDC):** Safai Karamcharis including waste pickers without any annual family income criteria
- **National Backward Classes Finance & Development Corporation (NBCFDC):** OBC, EBC, DNT with following income criteria
 - (i) Other Backward Classes (OBCs) having annual family income below Rs 3.00 lakhs.
 - (ii) Economically Backward Classes (EBCs) having annual family income below Rs 1.00 lakh.
 - (iii) De-notified, Nomadic and Semi-Nomadic Tribes (DNTs) without any income criteria.
- Skill Development Training Programmes are facilitated primarily through Government Training Institutes (TIs) and Sector Skill Councils (SSCs) constituted by Ministry of Skill Development and Entrepreneurship (MSDE), Govt. of India.
- 100% Grant-in Aid for the same is provided by the Ministry.
- The cost of the training programmes is provided within the Common Cost Norms issued by the MSDE from time to time.

- The main objective of the Scheme is to enhance the competency level of the target groups to make them employable both in self-employment and wage-employment for their socio-economic development.
- The primary beneficiaries of the PM-DAKSH Yojana are Scheduled Castes (SCs), Other Backward Classes (OBCs), Economically Backward Classes (EBCs), Denotified Tribes (DNTs), and Safai Karamcharis, including waste pickers.
- To be eligible, individuals must fall within the age bracket of 18 to 45 years. While there is no income limit for SCs, Safai Karamcharis, and DNTs, the annual family income ceiling stands at Rs. 3 lakh for OBCs and Rs. 1 lakh for EBCs.
- Under the PM-DAKSH Yojana, there are various types of training programs, each with its duration and average cost per candidate:
 - ♦ **Up-skilling/Reskilling (35 to 60 hours/5 days to 35 days):** Ranges from Rs. 3,000 to Rs. 8,000 per candidate.
 - ♦ **Short Term Training (300 hours/3 months):** Is fixed at Rs. 22,000 per candidate.
 - ♦ **Entrepreneurship Development Programme (90 hours/15 days):** Rs. 7,000 per candidate.
 - ♦ **Long Term Training (650 hours/7 months):** Rs. 45,000 per candidate.

CRIIO 4 GOOD Initiative

On 28th September, 2023, the Ministry of Education launched 'CRIIO 4 GOOD', a new online, life skills learning module to promote gender equality among girls and boys.

It was launched in association with the International Cricket Council, UNICEF, and the Board of Control for Cricket in India.

- It is a new online life skills learning module.
- It consists of series of 8 cricket-based animation films to promote gender parity, equip girls with life skills and encourage their participation in sports.
- **The themes of the eight modules are:** leadership, problem-solving, confidence, decision-making, negotiation, empathy, teamwork and goal setting and are visualized through state-of-the-art animation using cricketer examples.
- Using the popularity and passion of cricket young audiences, ICC and UNICEF released these modules to inspire children and youth to adopt critical life skills and appreciate the importance of gender equality.
- **The programme is in three languages:** English, Hindi and Gujarati.
- The programme uses the power of sports and the popularity of cricket as a medium to empower the girl child and spread awareness about gender equity.

United Nations Children's Fund (UNICEF) was established in 1946. It is a specialised agency of the United Nations dedicated to providing humanitarian and developmental assistance to children and mothers in developing countries. The organisation operates in over 190 countries and territories around the world. It is working to ensure that every child has access to basic healthcare, education, nutrition, clean water, and protection from violence and exploitation.

Vidya Samiksha Kendra

Under the National Digital Education Architecture (NDEAR), the Ministry of Education is pushing States to open Vidya Samiksha Kendras (VSKs).

- Vidya Samiksha Kendra (VSKs) is a data repository which will have data from all schemes run by the Ministry of Education (MoE).
- The control rooms of these Kendras will collect data to track key performance indicators as well as analyse data collated from govt. schemes 'using AI & machine-learning.'
- This repository will include regularly updated data from:
 - ♦ The PM-POSHAN mid-day meal programmes;
 - ♦ Teacher training data from the National Initiative for School Heads' and Teachers' Holistic Advancement portal;
 - ♦ Textbook content from Digital Infrastructure for Knowledge Sharing;
 - ♦ School dropout and attendance-related data on Unified District Information System for Education (UDISE+);
 - ♦ Students learning outcomes from the National Achievement Survey;
 - ♦ Performance Grading Index, which evaluates the school education system at the State/U.T. level.
- The Centre has allocated funds ranging from 2 to 5 crore rupees to each State for adopting and establishing VSKs.
- The idea of developing VSKs is also to map the school location layer with the population layer to assess the Gross Access Ratio.
- It can help plan for new schools or for industry clusters to understand the skilling requirements of the area and help plan higher educational institutions based on demand and future scenarios.

Changes in Pre-Matric & Post-Matric Scholarship Scheme for SCs

On 25th September, 2023, the Ministry of Social Justice & Empowerment revised the Pre-Matric Scholarships Scheme for SCs & Others and Post-Matric Scholarship Scheme for SC Students (PMS-SC) in order to further strengthen the implementation of the scheme.

Changes in the Scheme

- **Funding Pattern under Pre-Matric Scholarships Scheme for SCs & Others:** This scheme is based on fixed sharing pattern of 60:40 between Centre and State (90:10 in case of NE states, Uttarakhand & Himachal Pradesh and 100:0 in case of UT without legislature);
- **Funding Pattern under PMS-SC:** Funding pattern has been revised during FY 2020-21 from the concept of Committed Liability to a fixed sharing pattern of 60:40 between Centre and States (90:10 in case of NE states)
- Online end to end processing, verification of eligibility credentials through online transaction to ensure greater transparency, control duplicity and wrongful claims by institutions;
- Central share (maintenance allowance and non-refundable fees) is being released directly to the students’ bank account only through Direct Benefit Transfer (DBT) preferably through an Aadhaar Based Payment System only after ensuring that the concerned State Government has released their share;
- Schemes are based on fixed sharing pattern of 60:40 between Centre and State (90:10 in case of NE states, Uttarakhand & Himachal Pradesh and 100:0 in case of UT without legislature);
- Coverage of poorest households would be focused.

Post-Matric Scholarship Scheme for SCs

- It is a Centrally Sponsored Scheme for the SC students

for studies in India only whose Parent/Guardian’s income is less than Rs. 2.5 lakh per annum.

- The objective of the scheme is to provide financial assistance to the Scheduled Castes students and to appreciably increase the Gross Enrollment Ratio of SC students in higher education with a focus on those from the poorest households.
- It is the endeavor of the Government to raise the GER of SCs in higher education from 23.0 % to the national average till FY2025-26.

Pre-Matric Scholarships Scheme for SCs and Others

- It is a Centrally Sponsored Scheme with the objective of promoting literacy and uninterrupted education at the Pre-Matric level for children belonging to Scheduled Castes and children of parents/guardian who are engaged in unclean and hazardous occupations.

Achievements

- Under Pre-matric Scholarships Scheme for SC & Others during FY2023-24, Central share amounting to Rs. 141.01 Cr has been released to 6.25 lakh beneficiaries in their Aadhaar-seeded bank accounts through DBT.
- Under Post-Matric Scholarship Scheme for SC students during FY2023-24, Central share amounting to Rs. 1516.84 Cr has been released to 12.70 lakh beneficiaries in their Aadhaar-seeded bank accounts through DBT.

News Snippets

<p>Kunbi Caste Certificates</p>	<ul style="list-style-type: none"> • Recently, the Maharashtra Cabinet decided that Kunbi caste certificates will be issued to members of the Maratha community who hail from the Marathwada region. • A five-member panel headed by (retired) judge Sandeep Shinde will determine the Standard Operating Procedure for giving caste certificates to members of the community referred to as Kunbis in Nizam-era documents. • Kunbis, the community associated with agriculture are grouped under the Other Backward Class category in Maharashtra. • Those belonging to the Maratha community in Marathwada region of Maharashtra with references of being Kunbis in the Nizam-era revenue and education documents will get Kunbi certificates.
<p>Sarna Religious Code</p>	<ul style="list-style-type: none"> • Recently, Jharkhand Chief Minister has written to the Prime Minister seeking recognition of the ‘Sarna’ religious code for tribals. • Sarna followers are demanding to include ‘Sarna’ as a separate religion for indigenous people in the next census. • Followers of Sarna faith regard themselves as belonging to a distinct religious group. • They are nature worshippers. The holy grail of the Sarna faith is “Jal (water), Jungle (forest), Zameen (land)”. • The followers of Sarna faith pray to the trees and hills while believing in protecting the forest areas. • Believers of Sarna faith do not practice idol worship, nor do they adhere to the concept of the Varna system, heaven-hell, etc. • The followers are largely concentrated in the tribal belt states of Odisha, Jharkhand, Bihar, West Bengal, and Assam.
<p>Ayushman Bhav Campaign</p>	<ul style="list-style-type: none"> • Recently, the Union government launched the Ayushman Bhav campaign. • Ayushman Bhav campaign is envisaged to saturate all health care services in every village/ town in line to ensure reach to the last mile and enable access to health care services to everyone in the society. • It involves a set of interventions that include Ayushman - Apke Dwar 3.0, Ayushman Sabhas, Ayushman Melas- at health and wellness level and medical camps by medical colleges at CHCs. • The campaign will ensure Gram/ Nagar Panchayat or Urban Ward attains the status of ‘Ayushman Panchayat’ or ‘Ayushman Urban Ward’ in a saturation mode.

Heritage Art & Culture

Art & Culture

- Two Indian Sites Join UNESCO World Heritage List
- India's Gift to G20 Leaders

Art & Culture

Two Indian Sites Join UNESCO World Heritage List

On 18th September, 2023, the historic West Bengal town of Santiniketan and the Sacred Ensembles of the Hoysalas were included in UNESCO's renowned World Heritage List.

- India now has 42 sites on the List.

Sacred Ensembles of the Hoysalas

- The Sacred Ensembles of the Hoysalas is a group of three Hoysala-style temples in South India.
- The temples are located in Belur, Halebidu and Somanathapura in the Hassan and Mysuru districts of Karnataka.
- The temples, often described as 'poetry carved in stone,' were recommended for inclusion in the list by India's Ministry of Culture in 2022-23.
- The temples included in the ensemble are:
 - ✓ Channakeshava Temple, Belur, Hassan district (Commissioned by King Vishnuvardhana, dedicated to God Vishnu).
 - ✓ Hoysalesvara Temple, Halebidu, Hassan district (Commissioned by King Vishnuvardhana, dedicated to God Shiva).
 - ✓ Kesava Temple, Somanathapura, Mysuru district (Consecrated by Somanatha Dandanayaka, a general of the Hoysala King Narasimha III, dedicated to God Vishnu)
- The temples were built by the followers of Vaishnavism, Shaivism, and Jainism, and they are richly decorated with stone sculptures and carvings.
- The site has been on UNESCO's tentative list since 2014.

Santiniketan

- Santiniketan was established in 1901 by Rabindranath Tagore, the Nobel Prize-winning poet and philosopher.

- Culture Corridor - G20 Digital Museum
- Konark Sun Temple Wheel
- Rayagada Shawl
- Phulkari Embroidery
- Tribal Art Forms
- Shore Temple: India's First Green Energy Archaeological Site

Personality

- Pandit Deendayal Upadhyaya

News Snippets

- Located in West Bengal's Birbhum district, Santiniketan has immense significance in human values, architectural and technological developments, monumental arts, town planning, and landscape design.
- Efforts to get Santiniketan listed as a UNESCO World Heritage Site date back to 2010, with the latest nomination proposal initiated in the 2020-21 fiscal year.



Important Facts

Selection Criteria for UNESCO World Heritage Sites

- The first step towards the listing is the nomination of a site by the respective government of a country.
- The site should have an Outstanding Universal Value (OUV) for World Heritage nomination.
- To determine the Outstanding Universal Value (OUV) for World Heritage nomination, there are ten enlisted criteria.
- The proposed nomination must satisfy at least one of these ten criteria.
- The Nomination File is then evaluated by the International Council on Monuments and Sites and the World Conservation Union.
- These bodies then make their recommendations to the World Heritage Committee on the basis of which the proposed site is included in the List.

India's Gift to G20 Leaders

During the 18th G20 Summit held in New Delhi, the G20 leaders were presented with different gifts by the Prime Minister representing India's rich traditional and cultural diversity. Details of some of these gifts are outlined here.

Kashmiri Pashmina Shawl

- The Kashmiri Pashmina shawl has many enchanting stories woven into its fabric.
- 'Pashm' means wool in Persian, but in Kashmiri, it refers to the raw unspun wool of the Changthangi goat (the world's most unique Cashmere goat) found only at a height of 14,000 feet above sea level.
- The wool is collected by combing (and not shearing) the undercoat of this goat.

Khadi Scarf

- Khadi is an eco-friendly clothing material beloved for its beautiful texture and versatility throughout the seasons.
- It can be spun from cotton, silk, jute or wool.
- Rural artisans of India, 70% of whom are women, hand-spin and hand-weave these intricate threads.

Banarasi Stole in Kadam Wood Box

- Handcrafted in Varanasi, luxurious silk threads are used to create intricate patterns, reflecting the city's cultural richness and its weaving heritage.
- The stole was presented in a Kadam wood box.
- Kadam is mentioned in the Bhagavata Purana. In North India, it is associated with Krishna while in the south it is known as "Parvati's tree".
- The kadam lends its name to the Kadamba Dynasty that ruled from Banavasi in what is now the state of Karnataka from 345 CE to 525 CE.

Assam Stole in Kadam Wood Box

- Assam stoles are traditional pieces of clothing woven in the northeastern state.
- The stole that was gifted was crafted by skilled artisans using Muga silk.
- Assam stoles are known for their intricate designs and motifs that often draw inspiration from the region's natural surroundings.
- Kadam (Burflower tree) wood is considered auspicious in Indian culture and is featured in Indian religions and mythologies.

Kanjivaram Stole in Kadam Wood Jali Box

- 'Kanjivaram' derives its name from Kanchipuram district in Tamil Nadu, from where the craft originated.
- The stole was handcrafted from pure mulberry silk threads by skilled weavers and presented in a Kadam wood jali box.

Culture Corridor - G20 Digital Museum

On 9th September, 2023, the Government of India unveiled the Cultural Corridor at the 'Bharat Mandapam', the venue for the G-20 Leaders' Summit.

- The Culture Corridor (a 'phygital' project) has been envisioned by the Ministry of Culture under India's presidency of the grouping.
- It displays several artifacts of the G-20 nations which have been outlined below.

Panini's Ashtadhyayi

- Written more than 2,000 years ago, Ashtadhyayi or 'Eight Chapters', is an ancient text written by the scholar Panini towards the end of the 4th century BC.
- It is a linguistic text that set the standard for how Sanskrit was meant to be written and spoken.
- It delves deep into the language's phonetics, syntax and grammar, and also offers a 'language machine', where one can feed in the root and suffix of any Sanskrit word, and get grammatically correct words and sentences in return.
- The Ashtadhyayi laid down more than 4,000 grammatical rules.

Magna Carta

- It is a royal charter of rights agreed to by King John of England at Runnymede in 1215.
- It was drafted by a group of rebel barons who were seeking to limit the power of the King.
- The charter guaranteed certain rights to the barons, including the right to a fair trial, the right to property, and the right to due process of law.

Gutenberg Bible

- This is the first major book printed using movable type in Germany.
- It was printed by Johannes Gutenberg in Mainz in the 1450s.
- The Gutenberg Bible is considered to be a major milestone in the history of printing and is one of the most important books in the world.

Coatlicue Statue

- This is an Aztec sculpture that represents the earth goddess.
- It is made of volcanic rock and is located in the National Museum of Anthropology in Mexico City.
- The Coatlicue statue is a powerful and imposing image that reflects the Aztecs' complex beliefs about the cosmos.
- Abrahamic Family House
- This is an interfaith complex in Abu Dhabi, United Arab Emirates.
- It was inaugurated in 2020 and is dedicated to the three Abrahamic faiths: Judaism, Christianity, and Islam.
- The Abrahamic Family House is a symbol of peace and understanding between different religions.

Kosode

- This is a short-sleeved garment that was the direct predecessor of the kimono in Japan.
- It was worn by both men and women and was made of a variety of materials, including silk, cotton, and hemp.
- The kosode was a popular garment for centuries and was eventually replaced by the kimono in the 17th century.

Konark Sun Temple Wheel

A replica of the Konark Wheel from Odisha's Sun Temple served as the backdrop for Indian Prime Minister's welcome handshake with G-20 leaders as they arrived at the summit venue, Bharat Mandapam, during the G20 meeting in New Delhi.

About Konark Sun Temple

- Konark Sun Temple is a 13th-century CE (year 1250) Sun temple built by king Narasimhadeva I of the Eastern Ganga dynasty at Konark, Puri, Odisha.
- Dedicated to the Hindu Sun God Surya, it is also called the Surya Devalaya & Black Pagoda.
- Declared a UNESCO World Heritage Site in 1984, it illustrates the Odisha style of Architecture or Kalinga architecture and follows the East-West alignment of the Sun.
- It is protected under the National Framework of India by the Ancient Monuments and Archaeological Sites and Remains (AMASR) Act (1958), under which construction around a 100 metres zone outside the property cannot be undertaken.

Konark Chakra

- **Symbolism:** The Konark Chakra represents the wheel of the Sun God's chariot. The Sun Temple itself is designed in the shape of a colossal chariot with 24 wheels, each about 10 feet in diameter, and is pulled by a set of seven horses. These wheels symbolize the 24 hours in a day.
- **Architectural Marvel:** The wheels are intricately carved and are considered masterpieces of Indian art and architecture. Each wheel is adorned with intricate designs, including floral motifs, human figures, and scenes from daily life.



- **Time-Telling Feature:** Interestingly, the spokes of the wheels can be used as a sundial. By observing the shadow cast by the spokes, one can determine the approximate time of day.
- **Spiritual Significance:** The wheels also have a spiritual connotation. They represent the cycle of creation, preservation, and destruction; the cycle of day and night; and the cycle of birth, life, and death.

Important Facts

- Konark Dance Festival is a five-day dance festival held every year in the month of December mostly from 1 to 5 in backdrop of the Sun temple in Konark, Odisha. It is one of the biggest dance festivals held in Odisha.
- The International Sand Art Festival was started in 2015 on the Chandrabhaga beach, a short distance from Konark. It was a part of the Konark Dance Festival that is organized during the same time.

Rayagada Shawl

Recently, the handwoven Rayagada Shawls crafted by the Dongria Kondhs of Odisha received Geographical Indication (GI) tag.

About Rayagada Shawl

- Also called Kapdaganda, the shawl is weaved and embroidered with their tribal motifs.
- Woven with excellent craftsmanship, Kapdaganda is prepared by spinsters of the community who gift it to their beloved ones as a token of love.
- The off-white coarse cloth used as raw material for Kapdaganda is procured from the Domb, a local community by bartering harvested crops.

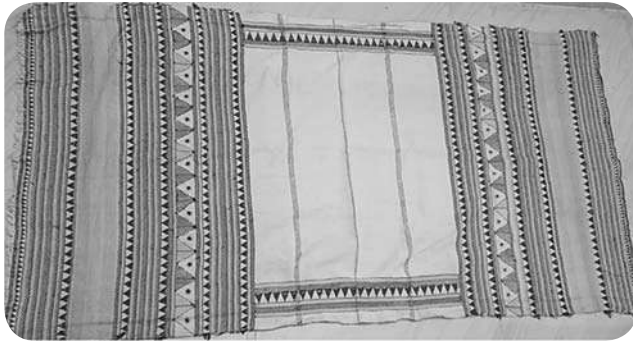
Characteristics

- The embroidery is worked with a long needle called suji and threads called nulu, and is started from one end of the cloth.
- Dongrias believe that red, green and yellow are the most auspicious colours. Red signifies blood, sacrifices and revenge while green symbolises fertile mountain ecology.
- Yellow symbolises the origin of the Kondh. It also represents prosperity and turmeric cultivation.

Kapdagunda Patterns

- Watta forms the three straight lines running at the bottom of the weave representing the imaginary boundary wall of their habitation. It symbolises social security.
- Karlikanna is an axe-shaped design symbolising the blade of an axe which indicates the aggressiveness, revenge, energy, power, territorial fights and proves that they are the real protectors of their Dongar (mountain).
- Keriwatta is the design is derived from tamarind leaf. Being forest dwellers, everything learned by them from the forest is culturally expressed in this design.

- Kuddilinga is the triangular design symbolising the abode of their household deity worshiped by them in all important rituals and ceremonial occasions.



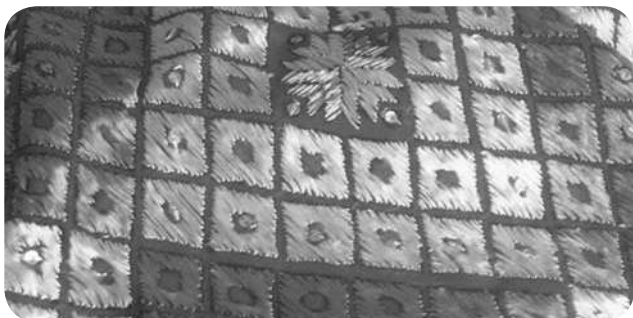
Important Facts

- The Dongrias are particularly vulnerable tribal group (PVTG) who live in Niyamgiri hills of Rayagada and Kalahandi districts of Odisha.
- They worship Niyam Raja (Niyamraja), the supreme god of the Niyamgiri jungle.
- They derive their name from dongar, meaning 'hill'.
- The people of Niyamgiri use Kui language. Kui language is not written, but it is spoken among the people of Kondh community.

Phulkari Embroidery

Patiala-based phulkari artist and Padma Shri awardee Lajwanti showcased phulkari embroidery at Bharat Mandapam's International Exhibition and Convention Centre during the G20 meeting.

- Phulkari refers to the folk embroidery of Punjab. Although Phulkari means floral work, the designs include not only flowers but also cover motifs and geometrical shapes.
- The main characteristics of Phulkari embroidery are use of darn stitch on the wrong side of coarse cotton cloth with coloured silken thread.
- Various coarse structured fabrics such as khaddar, Dasuti, and Khaddar casement are used for embroidery work, including Phulkari.
- The earliest reference to the word Phulkari is in Punjabi literature in the 18th century Waris Shah's version of Heer Ranjha (a legendary Punjabi tragic romance).



Types

Bagh

- Bagh is a style wherein the entire surface was embroidered. By working with darning stitch numerous designs were made by use of horizontal, vertical, and diagonal stitches.

Chope and Subhar

- Chope and Subhar style of embroidery work is worn by brides. The chope is embroidered on both sides in red with yellow. Shapes like triangles and small squares are made and edges are embroidered with fine arts.
- The Subhar has a central motif and four motifs on the corners.

Darshan Dwar

- Darshan Dwar is a type of embroidery from phulkari which was made as a gift material, offering or bheth.
- Its design contains mainly geometric shapes and patterns, pillars and human like structural embroideries.

Sainchi

- Sainchi style is the only style of phulkari where the figures are first drawn using black ink.
- It is then filled by embroidering with darn stitch. In other styles, there are no patterns drawn and the work is done only by counting the threads from the back.

Tribal Art Forms

The Tribal Cooperative Marketing Development Federation of India Ltd. (TRIFED) exhibited a wide range of traditional tribal art at the 'Tribes India' pavilion as part of the G-20 Leaders' Summit at Bharat Mandapam, New Delhi, from 9th to 10th September, 2023.

Tribal Art Forms Showcased at Tribes India Pavillion

- **Pithora Painting (Gujarat and Madhya Pradesh):** Ritualist art by Rathwa, Bhilala, Naik, and Bhil tribes.
- **Gond Painting (Madhya Pradesh):** Natural themes of gods, animals, birds and trees.
- **Saura Painting (Odisha):** Fishnet approach for natural elements.
- **Angora Shawls (Himachal Pradesh):** Made from light Angora Rabbit wool.
- **Pashmina Shawls (Ladakh):** Woven from wool of goat called Pashmina or 'Changthangi' by Bodh and Bhutia tribes.
- **Konyak Jewellery (Nagaland):** It is made of cowries, conch shells, and glass beadings.
- **Maheshwari Silk Sarees (Madhya Pradesh):** It has reversible border and worn during religious functions.
- **Eri or Millennium Silk (Assam):** Made by Bodo Tribes.
- **Dhokra Jewellery (West Bengal, Odisha, Chhattisgarh and Madhya Pradesh):** It is carved out of molten metals, beads, colorful glass pieces, wooden balls based on natural themes.

- **Metal Ambabari Craft (Rajasthan):** Meena tribal artisans use enameling- colouring a metal surface by designs of flowers, birds, etc. on the surface.

Shore Temple: India's First Green Energy Archaeological Site

Recently, the Shore Temple in Tamil Nadu's Mahabalipuram has become India's first Green Energy Archaeological Site, an honour conferred upon it by UNESCO for successfully implementing the Green Heritage Project.

Green Heritage Project

- The Green Heritage Project has been implemented in the Shore Temple by Renault Nissan Technology and Business Centre India with Hand in Hand India.
- As a result of the implementation, the lighting of the temple will now be powered by clean and sustainable solar energy.
- For this, three solar power plants with respective capacities of 10 kilowatts have been placed around the temple to harness solar energy from the vicinity.
- If there is any surplus energy, then it will be sent back into the grid to meet energy requirements in the future.
- There are other solar-powered essential amenities like a reverse osmosis plant which will provide drinking water to the tourists visiting the temple. Also, there is a dedicated parking shed with three charging units for electric vehicles (EVs).

Significance

- The transformation of the Shore Temple into India's first 'green energy archaeological site' not only preserves its historical and cultural significance, but also sets a remarkable example of sustainable heritage conservation.
- It will help to reduce the carbon footprint of the transportation used by the tourists in the region.

About Shore Temple

- It was the final piece of the architectural creations started by King Narasimhavarman II of the Pallava dynasty in the mid-7th century.
- The temple is a prime example of the Dravidian architectural style, characterized by its pyramid-shaped towers (shikharas), intricate carvings, and use of granite stones.
- There are three shrines in the temple, with two dedicated to Lord Shiva and the other one dedicated to Lord Vishnu.
- In the compound wall of the complex, there is a monolith sculpture of a partly carved and partly sculpted lion with a hole in its torso.
- Goddess Durga's miniature image is sculpted on the back of the lion, which is a depiction of Durga as Mahishasuramardini.
- Also, the compound wall has large sculptures of Nandi, the vehicle or mount of Lord Shiva, and also of Yalis and Varahas (boars).

- The Shore Temple, along with other monuments in Mahabalipuram, was designated as a UNESCO World Heritage Site in 1984.



Personality

Pandit Deendayal Upadhyaya

On 25th September, 2023, Prime Minister unveiled a 72-foot statue of Pandit Deendayal Upadhyaya in New Delhi on his 107th birth anniversary.

- Antyodaya Diwas is celebrated on September 26 every year to mark the birth anniversary of Pandit Deendayal Upadhyaya.

About Pandit Deendayal Upadhyaya

- He was a politician, a teacher, a writer, who was born on September 25, 1916, in Nagla Chandrabhan, Mathura, in Uttar Pradesh.
- He joined the Rashtriya Swayamsevak Sangh (RSS) in 1942.
- He joined the Bhartiya Jana Sangh (1951) founded by Dr. Syama Prasad Mookerjee, and became its President in 1967 (Calicut session).

Ideology

- He drafted Jan Sangh's official political doctrine by including values of cultural-nationalism and Gandhian socialist principles like Sarvodaya (progress of all) and Swadeshi (self-sufficiency).
- He visualized a decentralized polity and self-reliant economy with the village as the base but wanted modern technology to be adapted based on Indian requirements.
- He believed in a constructive approach and exhorted to cooperate with the government if it was right and opposed fearlessly when it erred.

Literary Work

- Samrat Chandragupta, Jagatguru Sankaracharya, Akhand Bharat Kyon?, Bharatiya Arthniti: Vikas Ki Disha, The Two Plans: Promises, Performances, Prospects.

News Snippets

The Statue of Oneness	<ul style="list-style-type: none"> Recently, Chief Minister of Madhya Pradesh unveiled the 108-foot tall 'Ekamata ki Pratima' or 'Statue of Oneness' of eighth century Hindu philosopher and saint Adi Shankaracharya in Omkareshwar in Khandwa district of Madhya Pradesh. This 108-foot statue is situated on the Mandhata Mountain in Omkareshwar. The idol itself is crafted from bronze, containing 88% copper, 4% zinc and 8% tin. Its internal structure is constructed from high-quality steel, ensuring its stability. The Mandhata island, nestled on the Narmada River, is home to two of the 12 Jyotirlingas – Omkareshwara and Amareshwara. The area is close to Mahakaleshwara Jyotirlinga at Ujjain, located 110 km to the northwest. The island is dotted with Shaivite, Vaisnavite, and Jain temples dating back to the 14th and 18th centuries. The name 'Omkareshwar' is derived from the shape of the island, which resembles the sacred syllable 'Om', and its name means 'the Lord of Omkara'.
Biswanath Ghat (Gupta Kashi)	<ul style="list-style-type: none"> Recently, the Ministry of Tourism declared Biswanath Ghat in Assam as the Best Tourism Village of India for the year 2023. Biswanath Ghat, situated to the south of Biswanath Chariali Town, is famously referred to as 'Gupta Kashi'. This name is derived from the ancient Biswanath temple in the town and draws a parallel with Kashi during the illustrious Gupta era. This picturesque ghat is adorned with a collection of temples dedicated to various deities. Notably, a Shiva temple graces the confluence of the Bridhaganga (Burigonga) River with the Brahmaputra.
Nadi Utsav	<ul style="list-style-type: none"> The fourth edition of 'Nadi Utsav' festival was celebrated from 22nd to 24th September, 2023, in Delhi. It was organized by the National Mission on Cultural Mapping of IGNCA (Indira Gandhi National Centre for the Arts) in collaboration with the Janapada Sampada on the banks of the sacred River Yamuna. Nadi Utsav embarked on its journey in 2018, with its inaugural event in Nashik, situated on the banks of the River Godavari. Subsequent editions were held in Vijayawada, on the banks of the River Krishna, and Munger, along the River Ganga. Each edition aimed to celebrate the unique cultural heritage associated with these rivers.
Women Odhuvars	<ul style="list-style-type: none"> Recently, Tamil Nadu government has appointed women Odhuvars in temples. Odhuvars are devotional singers dedicated to Siva Temples. They sing the sacred Thevaram hymns as musical offerings to the Deity as part of the structured temple worship. Rigorous training in the Thirumurai texts and Thevaram music is imparted to them at an early age. They have to sing from the Thirumurai during each puja and also during special functions and festivals. In the past, they were supported with honorariums by Kings. Thevaram are hymns sung by Saivite Saints roughly 1,300 years ago. Thevaram denotes the first seven volumes of the twelve-volume collection Tirumurai, a Shaiva narrative of epic and Puranic heroes, as well as a hagiographic account of early Saiva saints set in devotional poetry.
Banglar Mati, Banglar Jol	<ul style="list-style-type: none"> Recently, the West Bengal Assembly passed a resolution making Poila Baishakh (celebrated on April 15), the statehood day and declaring Banglar mati, Banglar jol as the state anthem. Banglar mati, Banglar jol was written by Rabindranath Tagore in 1905 during partition of Bengal. The song calls for unity for all Bengalis by invoking the beauty of Bengal — its natural environs, its language, its people, and its soul.
India's First Lighthouse Festival	<ul style="list-style-type: none"> Recently, India's First Lighthouse Festival was inaugurated from the Fort Aguada Lighthouse in Panjim, Goa, a 17th century Portuguese fort. The initiative aims to showcase the rich culture, significance, and allure of these magnificent structures whereby they can propel prospect of tourism and power local economy, the statement added. A campaign 'Lighthouse Heritage Tourism' was launched to transform 75 historic lighthouses into Tourism Spots by renovation with adequate facilities. Ministry of Ports, Shipping & Waterways (MoPSW) is the nodal agency that aims to showcase the rich culture and significance to propel tourism and power local economy.
Toto Shabda Sangraha	<ul style="list-style-type: none"> The dictionary, Toto Shabda Sangraha is a step in the direction of preserving the language that has been compiled by Bhakta Toto, a bank employee-cum-poet, and published jointly by the Calcutta Comparatists 1919 trust and Bhasha Samsad. Toto is a Sino-Tibetan language spoken by the tribal Toto people and is written in the Bengali script. Toto is a small tribal community having a population of only 1,632 people living in Toto Para in Alipurduar district, on the edge of northern Bengal near the India-Bhutan border, and speaking the eponymous language.

ECONOMY WATCH

Agriculture

- General Crop Estimation Survey Portal

Banking & Finance

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- Gold Exchange-Traded Funds
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- SEBI Amends Rules for Listing Non-Convertible Debt Securities Issuance
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Industry

- Promotion of Research and Innovation in Pharma MedTech Sector Scheme
- Mandatory Hallmarking
- Indian Green Building Council
- Government Upgrades IREDA to 'Schedule A' CPSE
- Industrial Development Scheme for Himachal Pradesh and Uttarakhand
- 17th International Congress on the Chemistry of Cement

Infrastructure

- Gati Shakti Vishwavidyalaya
- Jewar Airport Gets 'DXN' Code

Agriculture

General Crop Estimation Survey Portal

On 21st September, 2023, the secretary of the Department of Agriculture and Farmers Welfare (DA&FW) launched the mobile application and the web portal for GCES (General Crop Estimation Survey).

About General Crop Estimation Survey Portal

- It has been developed by Department of Agriculture and Farmers' Welfare.
- It has been developed for leveraging technology to enhance the reach, scope, and outcome of government actions in the course of development.
- The automation of the GCES process will ensure on time reporting of crop statistics and accuracy of the data.

Key Features

- **Comprehensive Information:** The portal and the app provide a comprehensive repository of yield estimation including village wise GCES plan and plot details where the crop cutting experiments are conducted, post-harvesting crop weight and drriage weight of the crop.
- **Geo-referencing:** It is one of the key features of the mobile application, which enables the primary worker to draw the boundary of the experimental plot and upload photos of the plot as well as of the crops through it. This feature will ensure transparency and accuracy of the data as well.

Impact

- **On Time Reporting of Crop Statistics:** Till date, data collection, compilation and yield estimation is a completely manual process which cause delay in reporting

by states. In the new process, the field data will be collected using GPS enabled mobile application and will be stored in the server which will ensure on time reporting of crop statistics.

- **Transparency:** GPS enabled devices provide precise latitude and longitude coordinates for data collection points. This information will ensure that data is linked to specific geographic locations, leaving no room for ambiguity or manipulation of data regarding where it was collected.

Important Facts

General Crop Estimation Survey (GCES)

- Estimates of crop production are obtained by multiplying the area under crop and the yield rate. The yield rate estimates are based on scientifically designed crop cutting experiments conducted under the General Crop Estimation Survey (GCES).
- The GCES covers around 68 crops (52 food and 16 non-food) in 22 States and 4 Union Territories.
- The survey design adopted is that of a stratified three stage random sampling with tehsil or taluka as the stratum, a village as the first stage unit, a field growing the specified crop as the second stage unit and a plot, usually 5m x 5m, as the ultimate unit.

Banking & Finance

Government Bond Index-Emerging Markets (GBI-EM) Index

On 22nd February, 2023, JPMorgan Chase & Co. (US financial holding company) decided to include India in its Government Bond Index-Emerging Markets (GBI-EM) index from June 2024.

- **Eligible Indian Government Bonds:** JP Morgan identified 23 Indian Government Bonds (IGBs) with a combined notional value of \$330 billion as eligible for inclusion. These bonds are classified as “fully accessible” for non-resident investors.
- **Weightage in Index:** India’s weight in the GBI-EM index is projected to reach a maximum of 10%. This means that Indian bonds will have a significant presence in this widely followed index.
- **Incremental Inclusion:** The process of inclusion will take place over ten months, beginning on June 28, 2024. It will involve gradual 1 per cent increments in the index weighting until India reaches the maximum 10% weighting.

Expected Impact

- **Sizeable Inflows Expected:** This inclusion is expected to attract billions of dollars in investments into India, which is currently the world’s fifth-largest economy.
- **Impact on India’s Funding Costs:** This development is expected to provide a substantial pool of passive foreign funding for India. In the medium term, it could help lower the country’s cost of funding, making it more attractive for investments.
- **Potential for Further Investments:** The inclusion of Indian bonds in JP Morgan’s index could encourage other investors and institutions to follow suit, leading to increased foreign investment in Indian bonds.

Important Facts

- The JPMorgan Government Bond Index-Emerging Markets (GBI-EM) indices are comprehensive emerging market debt benchmarks that track local currency bonds issued by Emerging market governments.
- Launched in 2005, it is the first comprehensive global local Emerging Markets index.
- The regional sub-division of the indices consists of Asia, Europe, Latin America, and Middle East/Africa.
- There are three root versions of the GBI-EM with a diversified overlay for each version:
 - ✓ GBI-EM Broad / GBI-EM Broad Diversified
 - ✓ GBI-EM Global / GBI-EM Global Diversified
 - ✓ GBI-EM / GBI-EM Diversified

Gold Exchange-Traded Funds

Gold exchange-traded funds (ETFs) attracted Rs 1,028 crore in August, 2023, making it the highest inflow in 16 months, amid continued hikes in interest rates in the US, which led to a slowing down in growth rate there.

About Gold ETF

- A Gold ETF is an exchange-traded fund (ETF) that aims to track the domestic physical gold price. They are passive investment instruments that are based on gold prices and invest in gold bullion.

- Gold ETFs are units representing physical gold which may be in paper or dematerialised form.
- One Gold ETF unit is equal to 1 gram of gold and is backed by physical gold of very high purity.
- Gold ETFs combine the flexibility of stock investment and the simplicity of gold investments.

Trading

- Gold ETFs are listed and traded on the National Stock Exchange of India (NSE) and Bombay Stock Exchange Ltd. (BSE) like a stock of any company.
- Gold ETFs trade on the cash segment of BSE & NSE, like any other company stock, and can be bought and sold continuously at market prices.

Charges

- Gold ETFs include no entry or exit charges. But there are three important costs that one must consider – expense ratio, broker cost, and tracking error.
- **Expense Ratio** – For managing fund, the expense ratio is of 1%.
- **Broker Cost** – Every time someone buys or sells gold ETF units, broker cost needs to be taken care of.
- **Tracking Error** – This is technically not a charge but it does impact returns. It occurs because of the fund’s expenses and cash holdings, thus not reflecting the actual gold rates.

Taxation

- When it comes to taxation, Gold ETFs are treated like a non-equity or debt mutual funds, which comes under the purview of capital gains taxation rules.
- **These rules are classified into two categories –**
- **Short-term Capital Gain (STCG):** It refers to profits made on an investment in a short duration, which is usually up to 3 years.
- **Long-term Capital Gain (LTCG):** It refers to profits made on an investment in a long term, which is more than 3 years.

Important Facts

Sovereign Gold Bond (SGB)

- SGBs are government securities issued by the Reserve Bank of India (RBI). They are the substitutes of physical gold and are thus denominated in grams of gold.
- These bonds give you an opportunity to own gold (not in physical form) and earn interest on it.
- The quantity of gold for which you pay remains protected as you get the ongoing market price at the time of redemption or premature redemption.

Gold ETFs vs. Sovereign Gold Bonds		
	Gold ETFs	SGBs
Liquidity	High	Lock in ends from 5th year
Returns	Lower than actual return on gold	Higher than actual return on gold

Capital Gains Tax	LTCGs applicable after 3 years	LTCGs applicable after 3 years. No capital gains tax if held till maturity
Collateral	Cannot be used as a collateral	Can be used as a collateral
Tradability/Exit Route	Tradable on exchange	Tradable on exchange. Withdrawal from 5th year

Urban Infrastructure Development Fund

Recently, the Union Housing and Urban Affairs Ministry said the first tranche of loans to fund ongoing projects under the Urban Infrastructure Development Fund (UIDF) will be disbursed soon.

About UIDF

- **Establishment:** UIDF was established through the use of priority sector lending shortfall on the lines of the Rural Infrastructure Development Fund (RIDF).
- **Coverage:** It currently covers 459 tier-2 cities and 580 tier-3 cities.
- **Fund:** The initial corpus for this Fund is Rs. 10,000 crore.
- **Usage:** The Fund will be used by public agencies to create urban infrastructure in tier-2 and tier-3 cities.
- **Focus:** The focus will be on basic services like sewerage and Solid Waste Management, water supply and sanitation, construction and improvement of drains/storm water drains, etc., and impact-oriented projects will be prioritised.
- **Management:** It is managed by the National Housing Bank (NHB).
- **States' Leverage:** States will be encouraged to leverage resources from the grants of the 15th Finance Commission, as well as existing schemes, to adopt appropriate user charges while accessing the UIDF.
- **Interest Rate:** The interest rate on UIDF loans has been kept at Bank Rate minus 1.5 per cent. The loan (Principal) will be repayable in five equal annual installments within seven years from the date of the draw, including a moratorium period of two years. Interest will be payable on a quarterly basis.

Important Facts

Tier-2 & Tier-3 Cities

- The NHB defines tier-2 cities as those with a population of 50,000 to less than a lakh and tier-3 cities as those between one lakh and less than a million as per the 2011 census.

Rural Infrastructure Development Fund (RIDF)

- It was set up in 1995-96 to finance ongoing rural Infrastructure projects.

- The Fund is maintained by the National Bank for Agriculture and Rural Development (NABARD).
- Domestic commercial banks contribute to the Fund to the extent of their shortfall in stipulated priority sector lending to agriculture.
- It provides loans to State Governments and State-owned corporations to enable them to complete ongoing rural infrastructure projects.
- Loan from RIDF are to be repaid in equal annual installments within seven years from the date of withdrawal, including a grace period of two years.

Self-Regulatory Organisation

Recently, Reserve Bank of India (RBI) Governor Shaktikanta Das has asked fintech entities to form a Self-Regulatory Organisation (SRO).

About SRO

- SRO is a non-governmental organisation that sets and enforces rules and standards relating to the conduct of entities in the industry (members).
- It is aimed at protecting the customer and promoting ethics, equality, and professionalism.
- It typically collaborates with all stakeholders in framing rules and regulations.
- Those entities who are interested in being recognised as SROs will have to apply to the RBI.
- Once the regulator finds an entity suitable, it will issue a letter of recognition.
- It is expected to address concerns beyond the narrow self-interests of the industry, such as to protect workers, customers or other participants in the ecosystem.
- Regulations, standards, and dispute resolution and enforcement by an SRO get legitimacy not just by mutual agreement of its members, but also by the efficiency with which self-regulation is perceived to be administered.
- Such regulations supplement, but do not replace, applicable laws or regulations, according to the Reserve Bank of India.
- The recognised SRO will serve as a two-way communication channel between its members and the RBI.

Benefits of an SRO

- SROs are widely considered experts in their fields and so have in-depth knowledge of the markets they operate in.
- This is helpful to their members as they can be called in to participate in deliberations and learn more about the nuances of the industry.
- It ensures member organisations follow a certain standard of conduct that helps promote ethical ways of doing business, which can lead to enhanced confidence in the ecosystem
- It can serve as a watchdog to guard against unprofessional practices within an industry or profession

- It could play a pivotal role in the fintech industry by promoting responsible practices and maintaining ethical standards.
- It can help in establishing codes of conduct for its members that foster transparency, fair competition, and consumer protection.
- It can act as a watchdog and encourage members to adopt responsible and ethical practices.
- It can provide a link between the regulator and market participants through a less formal set-up.

Important Facts

Financial Technology (Fintech)

- It is used to describe new technology that seeks to improve and automate the delivery and use of financial services.
- At its core, fintech is utilized to help companies, business owners, and consumers better manage their financial operations, processes, and lives.
- It is composed of specialized software and algorithms that are used on computers and smartphones.
- Fintech is transforming the financial sector landscape rapidly and is blurring the boundaries of both financial firms and the financial sector.

Rupee-denominated Social Bonds

Recently, the National Bank for Agriculture and Rural Development (NABARD) issued India's first 'AAA' rated Indian Rupee-denominated Social Bonds.

The bonds issued privately to eligible institutional investors got listed on the Bombay Stock Exchange (BSE) on September 29, 2023.

- The bonds of five-year tenure were issued privately to eligible institutional investors.
- They are redeemable, taxable, non-convertible, non-priority sector, unsecured, and social securities of face value Rs.1 lakh each.
- The base issue size of the social bonds was Rs.1,000 crore, with an option to retain oversubscription up to Rs. 2,000 crore, thereby aggregating up to Rs. 3,000 crore.
- The bonds have been rated AAA rating by Credit Rating Information Services of India Limited (CRISIL) and Investment Information and Credit Rating Agency (ICRA).
- **Coupon Rate:** 7.63 per cent.

Sustainability Bond Framework

- It seeks to finance and refinance new or existing eligible green and social projects.
- Eligible social projects include affordable basic infrastructure, access to essential services, affordable housing, employment generation, food security, socioeconomic advancement, and empowerment.
- Projects that promise energy efficiency, including green buildings, energy storage, and smart grids, would also be

eligible to get funding through the new breed of bonds that NABARD is rolling out.

- ✓ Social bonds, also known as social impact bonds (SIB), are the type of bond where the bond issuer is gathering funds for a project that had some socially beneficial implications.
- ✓ Similar to any other bond, social bonds imply that the bond issuer owes a debt to the bondholder.
- ✓ The Pimpri Chinchwad Municipal Corporation (PCMC) in Maharashtra's Pune and United Nations Development Programme (UNDP) in 2020 co-created India's inaugural SIB.

SEBI Amends Rules for Listing Non-Convertible Debt Securities Issuance

On 21st September, 2023, the Securities and Exchange Board of India (SEBI) amended the rules under which listed entities with outstanding non-convertible debt securities must list subsequent issuances of such securities on stock exchanges. This will come into effect from January 1, 2024

- The move is aimed at facilitating transparency in price discovery of non-convertible debt securities will be required to list subsequent issuance of such securities on stock exchanges.
- It also seeks to provide investors and the market with improved disclosures, thereby reducing confusion related to International Securities Identification Numbers (ISINs) and the potential mis-selling of unlisted bonds.
- These exemptions include debt securities subject to capital gains tax under Section 54EC of the Income Tax Act, 1961; Non-Convertible Debentures (NCDs) where parties have agreed to hold the securities until maturity, ensuring they remain unencumbered; and NCDs issued in compliance with orders from courts, tribunals, or regulatory requirements set by financial sector regulators, such as SEBI, RBI, IRDA, PFRDA, or IBBI.
- SEBI clarified that securities issued by listed entities will be locked in and held by investors until maturity, thus encumbering them.
 - ✓ Non-convertible debentures (NCDs) are a financial instrument that is used by companies to raise long-term capital. This is done through a public issue.
 - ✓ NCDs are a debt instrument with a fixed tenure and people who invest in these receive regular interest at a certain rate.
 - ✓ Some debentures can be converted into shares after a certain point in time. This is done at the discretion of the owner. However, this is not possible in the case of NCDs. That's why they are known as non-convertible.

One-hour Trade Settlement

Recently, Securities and Exchange Board of India (SEBI) announced it was working on launching real-time settlement of trades, is now planning to implement one-hour settlement of trades first.

About One-hour Trade Settlement

In one-hour settlement, if an investor sells a share, the money will be credited to their account in an hour, and the buyer will get the shares in their demat account within an hour.

- Trade settlement is a two-way process that involves the transfer of funds and securities on the settlement date.
- A trade settlement is said to be complete once purchased securities of a listed company are delivered to the buyer and the seller gets the money.
- The current cycle of T+1 means trade-related settlements happen within a day or 24 hours of the actual transactions.
- The migration to the T+1 cycle came into effect in January 2023.
- However, SEBI acknowledges that achieving instantaneous settlement is a more intricate task, requiring additional technology development.
- Therefore, they plan to focus on implementing one-hour trade settlement first and then proceed towards instantaneous settlement.
- The timeframe for launching instantaneous settlement is projected to be by the end of 2024.

Benefits

- **Faster Liquidity:** Investors can access the funds resulting from their sales more rapidly. This quick access to liquidity allows for more agile decision-making, such as reinvesting the proceeds in other assets or withdrawing profits for other purposes.
- **Reduced Market Risk:** Shorter settlement cycles significantly reduce the risk associated with market fluctuations and counterparty risk.
- **Increased Efficiency:** Quicker settlements enhance the overall efficiency of financial markets. Transactions are processed more swiftly, reducing administrative and operational overhead.

Important Facts

Demat Account

- A Demat Account or Dematerialised Account provides the facility of holding shares and securities in an electronic format.
- During online trading, shares are bought and held in a Demat Account, thus facilitating easy trade for the users.
- It holds all the investments an individual makes in shares, government securities, exchange-traded funds, bonds and mutual funds in one place.

Industry

Promotion of Research and Innovation in Pharma MedTech Sector Scheme

On 26th September, 2023, the Ministry of Chemicals and Fertilizers launched a scheme for promotion of Research and Innovation in Pharma MedTech Sector (PRIP).

Objective

- To transform Indian pharmaceuticals sector from cost based to innovation-based growth by strengthening the research infrastructure in the country.

Aim

- To promote industry-academia linkage for R&D in priority areas and to inculcate the culture of quality research and nurture our pool of scientists.

Time Period

- Five years (2023-24 to 2027-28).

Components

- **Component A:** Strengthening the research infrastructure by establishment of 7 Centre of Excellence (CoEs) at National Institutes of Pharmaceutical Education and Research (NIPERs). These CoEs would be set up in pre identified areas with a financial outlay of Rs. 700 Crores.
- **Component B:** Promoting research in pharmaceutical sector by encouraging research in six priority areas like New Chemical Entities, Complex generics including biosimilars, medical devices, stem cell therapy, orphan drugs, Anti-microbial resistance, etc.,
- Financial assistance will be provided for the Industries, MSME, SME, Startups working with government institutes and for both in- house and academic research.

Expected Benefits

- **Development of Research Infrastructure:** The scheme would help in building a world class research atmosphere at NIPERs and other institutes and help in creating talent pool of qualified trained students.
- **Promoting Industry-academia Linkages:** This scheme will promote industry-academia linkages by promoting collaboration between private sector and government institutes.
- **Making Market Leader:** Focus on certain priority areas which will help India's pharma industry leapfrog and radically strengthen its position in the world market as innovation accounts for 2/3rd of global pharmaceutical opportunities.
- **Employment:** The scheme would help in launching of commercially viable products which will accelerate the growth of Indian pharmaceutical sector by increased revenue and creating employment opportunities.

Important Facts

Indian Pharma Sector

- **Largest Pharm Industry:** Indian pharmaceutical industry is the 3rd largest pharmaceutical industry in the world by volume with current market size of around USD 50 billion.
- **Leading Vaccine Manufacturer:** India is one of the biggest suppliers of low-cost vaccines in the world. India accounts for 60 % of global vaccine production, contributing upto 70 % of the WHO demand for Diphtheria, Tetanus and Pertussis (DPT) and Bacillus Calmette–Guérin (BCG) vaccines, and 90% of the WHO demand for the measles vaccine.
- **Largest Provider of Generics:** It is the largest provider of generic medicines globally, occupying a 20% share in global supply by volume.
- **FDI:** 100% Foreign Direct Investment (FDI) in the pharmaceutical sector is allowed under the automatic route for Greenfield pharmaceuticals. 100% FDI in the pharmaceutical sector is allowed in brownfield pharmaceuticals; wherein 74% is allowed under the automatic route and thereafter through the government approval route.

Mandatory Hallmarking

The third phase of the mandatory hallmarking vide Hallmarking of Gold Jewellery and Gold Artifacts (Third Amendment) Order, 2023 came into force from 8th September, 2023.

Third Phase of Mandatory Hallmarking

- The third phase of the mandatory hallmarking will cover an additional 55 new districts under the mandatory hallmarking system.
- **Implementation:** Bureau of Indian Standards (BIS) has been successful in implementation of Mandatory Hallmarking in districts of the country.

HALLMARKING

- Hallmarking is the accurate determination and official recording of the proportionate content of precious metal in precious metal articles.
- Hallmarks are thus official marks used in many countries as a guarantee of purity or fineness of precious metal articles.
- The principle objectives of the Hallmarking Scheme are to protect the public against adulteration and to obligate manufacturers to maintain legal standards of fineness.
- In India, at present two precious metals namely gold and silver have been brought under the purview of Hallmarking.
- It helps protect consumers and enhance their confidence in buying gold jewellery with traceability and quality assurance.

- **BIS Care App:** To verify a hallmarked gold jewellery item, consumers can use the BIS CARE app, which allows them to check the authenticity of the item by entering its HUID (Hallmark Unique Identification) number.
- The app provides information about the jeweller who got the article hallmarked, their registration number, and purity of the article, type of article as well as details of the hallmarking centre that tests and hallmarks the article.

Important Facts

Standards National Action Plan (SNAP) 2022- 27

- It is a document that serves as foundation for standardization to meet emerging technologies and concerns of sustainability and climate change.
- Its implementation will ensure “Quality Culture” in the Nation.

BIS Product Certification Scheme

- It is one of the largest in the world, with over 26500 licensees covering more than 900 products.
- It allows the licensees to use the popular ISI mark on their product, which is synonymous with quality products.
- 90 products are under mandatory certification.

i-Care Programme

- It has been launched at national level for effectively engaging with all stakeholders especially consumers, industry and market.
- It aims at enhancing interaction with industries to solve their problem and encourage them to come forward to take licence from BIS.

Indian Green Building Council

Recently, Vijayawada Railway Station was awarded the ‘Green Railway Station’ certification with the highest rating of ‘Platinum’ by the Indian Green Building Council (IGBC).

- IGBC is part of the Confederation of Indian Industry (CII) and was formed in the year 2001.
- It is India’s Premier certification body.
- The council offers a wide array of services, which include developing new green building rating programmes, certification services and green building training programmes.
- The council also organises the Green Building Congress, its annual flagship event on green buildings.
- It is also among the 5 countries that are on the board of the World Green Building Council, discussing global issues at COP and similar global platforms.
- The rating is based on six environmental categories, which include sustainable station facility, health, hygiene and sanitation, energy efficiency, water efficiency, smart and green initiatives and innovation and development.
- **Headquarter:** Hyderabad.

Government Upgrades IREDA to 'Schedule A' CPSE

On 29th September, 2023, the Union government upgraded the Indian Renewable Energy Development Agency Ltd. (IREDA), the largest pure-play green financing Non-Banking Finance Company in India from 'Schedule B' to the 'Schedule A' category of Central Public Sector Enterprises.

Significance

- **Way to Navratna Status:** The elevation of IREDA to the 'Schedule A' category opens the door for its upgradation from "Mini Ratna (Category- I)" to "Navratna" status.
- **Increased Financial Autonomy:** This will grant increased financial autonomy to IREDA, allowing the organization to make more strategic decisions to further its commitment to accelerating the adoption of renewable energy solutions across the country.

Central Public Sector Enterprises (CPSEs)

Classification

Cognate Group-wise Classification

- The cognate group wise classification is based on the generic nature of work carried out by CPSEs and comes closest to the sectoral classification of industries in the private sector.

Classification (A, B, C & D)

- It was introduced in the year 1965, and essentially aimed at providing relativity between the compensation structures of Board level executives of CPSEs.
- The categorization of CPSEs into 4 Schedules, namely A, B, C & D on the basis of their importance to economy and complexities of problems.
- **Quantitative Parameters:** Investment (paid up capital + long term loans), capital employed (net block+net working capital), net sales, profit, number of employees, number of units, etc.
- **Qualitative Parameters:** National importance, complexities of problems, level of technology, prospects for expansion and diversification of activities and competition from other sectors.
- In addition, other factors like image of the CPSE (in terms of its share price, MOU ratings, classification as Navratna/Miniratna, ISO 9000/IS 14000 certification), productivity of the PSE (in terms of capacity utilisation) and value added per employee are also taken into account.

Classification as Navratna Company

- The criteria for classifying a CPSE as Navratna are
 - (i) The CPSE should be a Miniratna I and Schedule A company,
 - (ii) The CPSE should have obtained 'excellent' or 'very good' rating in three of the last five MOUs, and
 - (iii) The CPSE should have obtained a composite score of 60 or more, calculated with reference to seven specified parameters / ratios.

Industrial Development Scheme for Himachal Pradesh and Uttarakhand

On 6th September, 2023, the Union Cabinet approved an amount of Rs. 1164.53 cr. for Industrial Development Scheme (IDS), 2017 for Himachal Pradesh and Uttarakhand.

About IDS

- The Central government announced Industrial Development Scheme, 2017 for the state of Himachal Pradesh and Uttarakhand.
- Under this scheme, the total financial outlay was Rs.131.90 crore. This allocated fund has been exhausted during the financial year 2021-22.
- Further, the requirement of an additional fund to meet the committed liabilities up to 2028-2029 is Rs.1164.53 Crore.
- For allocation of this additional financial outlay, approval of the Cabinet was solicited under Industrial Development Scheme, 2017.
- As per the approval of additional funds under the above scheme, the following incentives would be benefitted under the scheme.

Two Incentives under IDS

- Central Capital Investment Incentive for Access to Credit (CCIIAC):** All eligible new industrial units and existing industrial units on their substantial expansion in the manufacturing and service sector located anywhere in the States of Himachal Pradesh (HP) and Uttarakhand will be provided Central Capital Investment Incentive for access to credit (CCIIAC) @ 30% of the investment in Plant and Machinery with an upper limit of Rs.5.00 crore.
- Central Comprehensive Insurance Incentive (CCII):** All eligible new industrial units and existing industrial units on their substantial expansion located anywhere in the states of HP and Uttarakhand will be eligible for reimbursement of 100% insurance premium on insurance of building and Plant & Machinery for a maximum period of 5 years from the date of commencement of commercial production/operation.

Expected Impact

- It is anticipated to generate direct employment opportunities for about 48607 people by 774 registered units.

17th International Congress on the Chemistry of Cement

On 21st September, 2023, India won the bid to host the International Congress on the Chemistry of Cement (ICCC) at New Delhi in 2027.

- The Bid was presented by India's National Council for Cement and Building Materials (NCCBM).

International Congress on the Chemistry of Cement (ICCC)

- It reviews the progress of research in the area of Cement and Concrete by providing a strong and fruitful link between the academic world and the cement industry.
- The congresses are held generally at intervals of four to six years. The first congress was held in 1918 at London. The 9th Congress was held at New Delhi in 1992. The present 16th ICCC is being held at Bangkok, Thailand in September 2023.
- **Permanent Secretariat:** Duesseldorf, Germany.

Cement Industry of India

- The first cement company became operational in Porbandar, Gujarat in 1914.
- India's cement industry is the second largest in the world (next only to China) with installed cement capacity of 600 million tonnes (8% of the global installed capacity).
- Of the total capacity, 98% lies with the private sector and the rest with the public sector.
- Several government schemes such as MGNREGA, PM Garib Kalyan Rozgar Abhiyan, 'PM Gati Shakti – National Master Plan (NMP)' and state-level schemes such as Matir Srisht (West Bengal) and public work schemes (Jharkhand) have aided demand for cement.

Important Facts

National Council for Cement and Building Materials (NCCBM)

- It was established in 1962 as the then Cement Research Institute of India (CRI).
- It is under the administrative control of DPIIT, Ministry of Commerce & Industry, Government of India.
- It is India's premier body for technology development, transfer, continuing education and industrial services for cement and construction industries.
- NCB has its corporate centre and main laboratories located at Ballabgarh (near New Delhi). Its regional centres are in Hyderabad (Telangana), Ahmedabad (Gujarat) & Bhubaneswar (Odisha).

Infrastructure

Gati Shakti Vishwavidyalaya

On 7th September, 2023, an Memorandum of Understanding (MoU) was signed between Indian Railways' Gati Shakti Vishwavidyalaya (GSV), Vadodara and Airbus (world's largest commercial aircraft manufacturer), for aerospace teaching and research.

Key Points

- This collaboration aims to develop a C295 aircraft production facility in Vadodara, Gujarat, indicating a renewed commitment to India's aerospace sector.

- It is poised to create abundant job opportunities for students aligned with the ever evolving aviation industry, further strengthening India's position in the Global aviation landscape.

Impact

- **Skilled Workforce:** The partnership will develop a strong pipeline of skilled workforce in the country that will be future ready to serve its fast-growing aerospace sector.
- **Job Opportunities:** It will create job opportunities for students as per the industry requirements.

GATI SHAKTI VISHWAVIDYALAYA (GSV)

- It is a central university sponsored by the Ministry of Railways.
- Gati Shakti Vishwavidyalaya (GSV), Vadodara was established through an Act of Parliament in 2022.
- It is a "first of its kind" university aiming to fulfill the mandate of the National Developmental Plans (PM Gati Shakti National Master Plan 2021 and National Logistics Policy 2022) across railways, shipping, ports, highways, roads, waterways, aviation, etc.

Important Facts

PM Gati Shakti

- PM Gati Shakti is a master plan for multi-modal connectivity (launched in October 2021), to give more speed (Gati) and power (Shakti) to infrastructure projects by connecting 16 Ministries, including Railways and Roadways, on one digital platform.
- It will incorporate the infrastructure schemes of various Ministries and State Governments like Bharatmala, Sagarmala, Inland Waterways, Dry/Land Ports, UDAN, etc.
- Economic Zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks, industrial corridors, fishing clusters, agri zones will be covered to improve connectivity and make Indian businesses more competitive.
- It will also leverage technology extensively including spatial planning tools with ISRO imagery developed by BiSAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).

6 Pillars

1. Comprehensiveness
2. Prioritisation
3. Optimization
4. Synchronisation
5. Analytical
6. Dynamic

Jewar Airport Gets 'DXN' Code

Recently, the upcoming Noida International Airport (NIA) in Jewar was awarded its own unique international three-letter code, 'DXN', by the International Air Transport Association (IATA).

About DXN Code

- The D in DXN signifies Delhi, which is the national capital, and N stands for Noida. X signifies connectivity within India and the world.
- The code acts as a location identifier that is unique to each airport and will be used on ticket bookings, boarding passes, bag tag designators, etc.
- It is similar to a pincode and is governed by IATA Resolution 763 (location code requirements).
- It will serve as a standardised communication between aviation stakeholders for smooth operations and reduced errors.

Airport Codes

- At present, each airport has two unique codes - one code is assigned by the IATA, and the other is assigned by the

International Civil Aviation Organization (ICAO).

- Both are used to accurately identify airports, but in different contexts.

IATA Code

- The three-digit codes assigned by the IATA are used for passenger facing operations — on tickets, boarding passes, signages, etc.
- For example, the newly built Jewar airport has been assigned ‘DXN’ code.

ICAO Code

- The four-digit codes assigned by the ICAO, on the other hand, are used by industry professionals such as pilots, air traffic controllers, planners, etc.
- For example, for the Indira Gandhi International Airport in Delhi, the IATA code is DEL whereas the ICAO code is VIDP.

News Snippets

<p>Asian Premium</p>	<ul style="list-style-type: none"> • Recently, Saudi Arabia, world’s second largest oil producer, slashed the premium charged on exports to India, citing India’s bulk sourcing from Russia. • Asian Premium is an extra amount levied by the Organization of the Petroleum Exporting Countries (OPEC) from Asian countries above the actual selling price. • Producer countries began issuing marker prices for their crude oil in the 1980s, such that it was higher for buyers in Asia, who were more dependent on imports, making them price-takers. • Asian buyers like India, made attempts to erode the premium, investing in refining capacity to boost their demand, and improve their negotiating power by asking for ‘Asian Discount’. • Saudi Arabia and other leading exporters reflected the current shifts by lowering the Official Selling Prices (OSPs) expressed as differentials to regional benchmarks.
<p>Vizhinjam International Seaport</p>	<ul style="list-style-type: none"> • Recently, the docking of the first ship at the Vizhinjam International Seaport has been deferred. Vizhinjam International Seaport is located at Vizhinjam, a coastal town in Thiruvananthapuram District, Kerala. • It is designed primarily to cater to container transshipment besides multi-purpose and break bulk cargo. • It is developed in a landlord model with a Public Private Partnership component on a design, build, finance, operate and transfer (“DBFOT”) basis.
<p>Koraput Kalajeera Rice</p>	<ul style="list-style-type: none"> • Recently, ‘Koraput Kalajeera Rice,’ an aromatic rice, has got Geographical Indications status. • The farmers of Koraput district in Odisha have domesticated Kalajeera rice over generations. • It is known as the ‘Prince of Rice’ and is an aromatic variety of rice. • It is popular among rice consumers for its black colour, good aroma, taste and texture. • It is believed to increase haemoglobin levels and the body’s metabolism. • This fragrant grain has antispasmodic, stomachic, carminative, antibacterial, astringent and sedative properties.
<p>Unified Portal for Agricultural Statistics</p>	<ul style="list-style-type: none"> • Recently, the Central government launched the Unified Portal for Agricultural Statistics (UPAg), an online platform for management of agricultural data. • It has been developed by the Department of Agriculture and Farmers’ Welfare (DA&FW). • The portal standardizes data on prices, production, area, yield, and trade, making it accessible in one location, eliminating the need to compile data from multiple sources. • UPAg Portal will perform advanced analytics, offering insights such as production trends, trade correlations, and consumption patterns, aiding policymakers in making informed decisions.
<p>SARFAESI Act, 2002</p>	<ul style="list-style-type: none"> • Recently, the Reserve Bank of India (RBI) asked banks to display information on borrowers linked to Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002. • The Act allows banks and other financial institutions for auctioning commercial or residential properties to recover a loan when a borrower fails to repay the loan amount. • It enables banks to reduce their Non-Performing Assets (NPA) through recovery methods and reconstruction. It is applicable only in the cases of secured loans where banks can enforce underlying securities such as hypothecation, mortgage, pledge etc. In the case of unsecured assets, the bank would have to go to court and file a civil case against the defaulters.

SCIENCE & TECHNOLOGY

Space Science

- ISRO Successfully Tests CE20 Engine for Gaganyaan Mission
- NASA's OSIRIS-REx Becomes OSIRIS-APEX for Asteroid Apophis Mission

Space Science

ISRO Successfully Tests CE20 Engine for Gaganyaan Mission

On 22nd September, 2023, the Indian Space Research Organisation (ISRO) achieved a significant milestone by successfully conducting a hot test of the CE20 E13 engine, a crucial step toward the qualification of the Gaganyaan mission and the 22-tonne thrust capability.

ISRO conducted the test at the ISRO Propulsion Complex (IPRC) in Mahendragiri, Tamil Nadu.

- The CE20 engine, developed by the Liquid Propulsion Systems Centre (LPSC), is an essential component of the **Cryogenic Upper Stage (CUS)** used in the Launch Vehicle Mark-3 (LVM3), which powers missions like Chandrayaan-2, Chandrayaan-3, and commercial One-Web missions.
- ISRO is upgrading the **CE20 engine** to increase the payload capacity of the LVM3 vehicle.
- It is being transformed into the **C32 stage** with enhanced propellant loading capacity.
- Simultaneously, modifications are being made to the engine to operate at a higher thrust level of 22 tonnes, a critical requirement for future missions.
- The journey toward achieving the 22-tonne thrust capability began with successful engine tuning tests (E13 HT-01 and E13 HT-02) that demonstrated reliability and stability.
- The **third hot test, E13 HT-03**, marked the completion of the CE20 engine qualification for the Gaganyaan program, with the engine operating at the coveted 22-tonne thrust level for 670 seconds.
- The successful completion of E13 HT-03 signifies the engine's readiness for the Gaganyaan program and future missions.

The CE20 engine is now prepared to meet the demanding requirements of the Gaganyaan mission and other upcoming endeavours.

- 'Catalogue of Indian Standards for Space Industry'
- NASA's MOXIE Completes Mars Mission

Defence Technology

- Indian Army Inducts 600 Indigenous 'Vibhav' Anti-Tank Mines
- Defence Ministry Approves Acquisition of Pralay Missiles

New Technology & Innovations

- String-Based Technology to Revolutionize Lithium Production
- Hybrid Nanoparticles for Cancer Detection and Treatment

Biotechnology

- Researchers Extract RNA from Preserved Specimen of Tasmanian Tiger
- Scientists Create Lab-Grown 'Human Embryo' without Egg or Sperm

NASA's OSIRIS-REx Becomes OSIRIS-APEX for Asteroid Apophis Mission

On 24th September, 2023, NASA's OSIRIS-REx spacecraft safely delivered a capsule to Earth, containing approximately 250 grams of rocks and dust collected from asteroid **101955 Benu**.

- This achievement holds the promise of unravelling secrets about our solar system's formation and potential strategies for planetary defence.

Key Points

- **Benu's Untouched Treasures:** The samples from Benu offer scientists a unique opportunity to investigate the **untouched remnants of the early solar system**, potentially providing crucial insights into how it formed and evolved.
- **Time Capsule of the Cosmos:** Benu, having remained largely unchanged for 4.5 billion years, is like a cosmic time capsule that can reveal the ingredients and processes that shaped our solar system.
- **Building Blocks of Life:** The study of Benu may also hold clues to the **origins of life on Earth**, with the theory that asteroids like Benu may have delivered essential compounds for life's formation.
- Benu's return close to Earth **every six years** and the possibility of a collision between 2178 and 2290 makes understanding its trajectory and composition vital for planetary defence.
- **NASA's 'New Frontiers':** OSIRIS-REx is part of NASA's broader 'New Frontiers' program, continuing the agency's pursuit of knowledge beyond our home planet.

Significance of the Mission

- **OSIRIS-REx's Dual Mission:** This mission isn't just about scientific exploration; it also encompasses commercial aspects such as space mining and impact mitigation technologies.
- **Embracing the Cosmos:** The successful return of OSIRIS-REx's capsule is symbolic of humanity's enduring curiosity and our quest to understand the cosmos.

- **The Cosmic Connection:** OSIRIS-REx’s mission not only bridges the gap between Earth and space but also brings us closer to answering profound questions about the origins of life and our place in the universe.

James Webb Telescope Detects Carbon Dioxide on Europa’s Surface

Recently, the James Webb Space Telescope identified the presence of carbon dioxide on the surface of Jupiter’s moon Europa, providing crucial insights into its potential as a host for extraterrestrial life.

- **Carbon**, a fundamental element for known life forms, raises the possibility of life existing on Europa.
- Researchers believe that the carbon found likely **originated from Europa’s subsurface ocean** rather than external sources like meteorites.
- Two studies published reveal that carbon dioxide is most abundant in a region known as **Tara Regio on Europa**.
- Tara Regio is a **young geological area** characterized by “**chaos terrain**,” where surface ice has been disrupted, possibly indicating material exchange between the ocean beneath and the icy surface.
- Europa has long been considered a **potential site for extraterrestrial life** within our solar system.
- NASA has contemplated a mission involving small robots capable of exploring the subsurface water beneath Europa’s thick icy shell, but such a mission remains in the distant future.
- The **Europa Clipper Mission by NASA**, set for launch in 2024 and arrival in 2030, aims to perform multiple flybys and gather detailed data using a suite of instruments.

The detection of carbon dioxide on Europa’s surface could influence the objectives and priorities of the Clipper Mission and other future missions.

Einstein Cross Reveals Distant Galaxies via Gravitational Lensing

Recently, a captivating image captured by the European Southern Observatory’s Very Large Telescope showcased the Einstein Cross, an astronomical phenomenon where a distant galaxy appears as four distinct images due to gravitational lensing.

- **Multi-Unit Spectroscopic Explorer (MUSE) at VLT** was used for these observations, which dissects the incoming light into a spectrum, providing extensive insights into the observed objects.
- The image displays multiple galaxies, with the most prominent being a central bright blob encircled by four smaller dots, resembling a **flower with blue petals**.
- The four dots represent images of a distant galaxy concealed behind the central orange galaxy.
- **Gravitational lensing**, a fascinating phenomenon, enables the detection of the hidden galaxy. It occurs when

the immense mass of the foreground orange galaxy bends and magnifies the light from the distant galaxy, akin to a gravitational magnifying glass.

- Gravitational lensing results in several distorted and magnified images of the concealed galaxy, with four of these images arranged around the lens galaxy in a unique configuration.
- The cross-like or flower-like pattern formed by this gravitational lensing is referred to as an Einstein Cross.
- Beyond its aesthetic appeal, the Einstein Cross serves as a valuable tool for astronomers to **study distant galaxies** that would otherwise remain inaccessible.

The light observed from this distant galaxy originated when the universe was at approximately 20% of its current age, offering valuable insights into early universe galaxy formation.

IN-SPACe unveils ‘Catalogue of Indian Standards for Space Industry’

On 14th September, 2023, IN-SPACe, the Indian Space Promotion and Authorisation Centre, launched the ‘Catalogue of Indian Standards for Space Industry’ as a significant step towards strengthening India’s position in the global space sector.

Key Points

- **Indian Space Policy - 2023:** IN-SPACe’s release of the catalogue aligns with the goals set forth in the Indian Space Policy - 2023, which entrusted IN-SPACe with the task of establishing space industry standards that meet global benchmarks.
- **Cultivating Excellence:** This initiative is designed to foster a culture of excellence within the Indian space industry, ultimately enhancing its global competitiveness.
- **Wide-ranging Standards:** The catalogue comprises 15 standards published by the Bureau of Indian Standards (BIS), spanning critical domains such as Space System Program Management, Systems Engineering, and Product Assurance Mechanisms.
- **Holistic Coverage:** These standards encompass all sectors of space activities, from satellites and launch systems to ground systems, ensuring comprehensive industry coverage.
- **Importance of the Catalogue**
- **Global Alignment:** By adopting internationally recognized best practices, the Indian space industry is poised to produce reliable space products, paving the way for enhanced competitiveness on a global scale.
- **Growing Standards:** IN-SPACe, in collaboration with BIS, intends to expand the catalogue of Indian standards. Future volumes will introduce additional Indian Standards across various domains, covering areas such as space program management, security, space transportation, design methodologies, production, and more.

Important Facts

IN-SPACe

- **Autonomous Nodal Agency:** IN-SPACe, established in 2020, operates as an autonomous nodal agency under the Department of Space, Government of India.
- **Mission:** Its mission is to enable and supervise non-government entities (NGEs) engaging in various space activities.
- **Diverse Activities:** IN-SPACe's mandate includes facilitating the manufacturing of launch vehicles and satellites, provision of space-based services, establishment of ground stations, sharing of space infrastructure, and the creation of new space facilities under the Department of Space.

NASA's Lucy Spacecraft captures First Images of Asteroid Dinkinesh

On 2nd and 5th September, 2023, NASA's Lucy spacecraft captured its first images of the main belt asteroid Dinkinesh. The spacecraft is on a 12-year voyage to explore 10 asteroids.

- Over the next two months, Lucy will approach Dinkinesh, with the closest encounter expected at a distance of 425 kilometers on November 1.
- This close encounter will allow testing of spacecraft systems, particularly **the terminal tracking system**, to maintain the asteroid within the instruments' fields of view.
- Lucy will continue imaging Dinkinesh as part of its optical navigation program, using the asteroid's apparent position against the star background for accurate flyby.
- The observations utilized Lucy's high-resolution camera, the L'LORRI instrument, provided by the Johns Hopkins Applied Physics Laboratory.
- The Lucy mission is a NASA probe that will explore a **set of asteroids near Jupiter** known as the **Trojans**.

These ancient space rocks hold important **clues to the creation of our solar system** and, potentially, the origin of life on Earth.

Japan launches Rocket to Explore Universe's Origins

On 7th September, 2023, Japan launched a rocket from the Tanegashima Space Center in southwestern Japan, carrying an X-ray telescope for exploring the origins of the universe and a lunar lander.

Key Points

- **Launch:** Japan's HII-A rocket successfully lifted off, marking the beginning of a mission to uncover the universe's secrets.
- **X-Ray Imaging Telescope:** The rocket carried the X-Ray Imaging and Spectroscopy Mission (XRISM), which will

measure the speed and composition of intergalactic space, contributing to understanding celestial object formation and the universe's creation.

- **Comprehensive Data:** JAXA will cooperate with NASA to study light strengths at different wavelengths, space temperatures, shapes, and brightness to gain insights into the properties of hot plasma, a crucial component of the universe.
- **Applications of Plasma Research:** Understanding hot plasma properties is not only important for astrophysics but also has practical applications on Earth, such as in wound healing, electronics, and environmental cleanup.
- Lunar Exploration Advancements
- **Smart Lander for Investigating Moon (SLIM):** SLIM aims for pinpoint precision in landing, addressing the need for safer and more accurate landings on celestial bodies.
- **Technological Advancements:** Japan's focus on developing precise landing technology demonstrates its dedication to enhancing lunar and planetary exploration capabilities.
- **Global Lunar Interest:** The mission aligns with renewed global interest in lunar exploration, with only a few nations having successfully landed on the moon. Only the U.S., Russia, China, and India have achieved lunar landings.

NASA's MOXIE Completes Mars Mission

Recently, in a significant achievement, NASA's MOXIE (Mars Oxygen In-Situ Resource Utilisation Experiment) has accomplished its mission by generating oxygen on Mars.

- MOXIE has successfully produced oxygen for the 16th time aboard NASA's Perseverance rover.
- This microwave-oven-sized device was designed to **convert Martian CO₂ into oxygen**, with potential applications for future human missions to Mars.
- Since its landing in 2021, MOXIE has exceeded expectations, generating a total of 122 grams of oxygen, surpassing NASA's original goals.
- The produced oxygen boasts **a purity of 98% or higher**, suitable for both breathing and rocket propellant purposes.
- MOXIE operates by using an electrochemical process to extract oxygen from Mars' thin atmosphere, subsequently analyzing the gas for purity and quantity.
- This achievement represents a crucial step towards the potential for astronauts to **utilize Mars' resources**, supporting the concept of in-situ resource utilization (ISRU).
- The next phase involves developing a full-scale system, including an **oxygen generator like MOXIE** and a method for liquefying and storing oxygen.

MOXIE has not only advanced Mars exploration but has also inspired the space resource industry and future technology investments in In-Situ Resource Utilisation experiments.

Defence Technology

Indian Army Inducts 600 Indigenous 'Vibhav' Anti-Tank Mines

Recently, the Indian Army added 600 domestically-produced self-neutralizing anti-tank mines called "Vibhav" to its arsenal, representing a significant boost to India's defence capabilities in countering armoured threats.

Key Points

- **Collaborative Creation:** The 'Vibhav' anti-tank mines are a result of collaboration between the Indian Army and the Defence Research and Development Organisation (DRDO).
- These mines are designed for point-attack against enemy armoured vehicles, showcasing India's commitment to independent defence capability development.
- **Cutting-Edge Technology:** 'Vibhav' mines are constructed using advanced plastic materials, ensuring durability and strength for storage, handling, and deployment in various field conditions.
- **Versatile Defence:** 'Vibhav' mines are specifically engineered to deliver mobility kill effects against all types of enemy armoured vehicles, offering formidable defence whether laid mechanically or manually.
- **Enhanced Safety Features:** Equipped with an electronic anti-handling and anti-lift device (EAHALD), 'Vibhav' remains active for 120 days once armed, increasing its effectiveness and safety.
- Mechanical timers are integrated, enabling self-neutralization after 120 days, minimizing the risk of unintended consequences.
- Multiple safety and actuation mechanisms ensure secure handling for operators while maintaining lethal capabilities against armoured vehicles.

Defence Ministry Approves Acquisition of Pralay Missiles

Recently, the Defence Ministry granted approval for the acquisition of a regiment of Pralay tactical ballistic missiles, marking the first-ever induction of a ballistic missile for conventional operations in the Indian military.

Key Points

- **New Capability:** The Defence Ministry's approval paves the way for the Indian Army to acquire a regiment of Pralay tactical ballistic missiles, capable of striking targets within a range of 150–500 km.
- **Historic Move:** This marks the inaugural deployment of a ballistic missile for conventional military operations, representing a significant development, as stated by senior defence officials.

- **Production Status:** The Pralay missiles are currently in the process of mass production and are expected to become operational in the near future.
- **Broad Strategy:** The acquisition of these missiles aligns with a broader strategic objective to establish a strategic rocket force.
- **Proven Effectiveness:** Pralay missiles underwent successful testing on two consecutive days in December, demonstrating their reliability and effectiveness.
- **Advanced Technology:** The Pralay missiles are propelled by a solid-propellant rocket motor and incorporate innovative technologies, poised to significantly enhance the Indian Army's offensive capabilities.

Important Facts

Tactical Ballistic Missiles

- These include ballistic missiles with a range of 300 km or less intended for battlefield use.
- They usually employ conventional warheads, but often have the capability for chemical or biological warheads to be installed as well.

New Technology & Innovations

Scientists Witness Antimatter Particles Falling due to Gravity

On 27th September, 2023, CERN, Europe's renowned physics laboratory, made a groundbreaking announcement that scientists have observed antimatter particles, the enigmatic counterparts of visible matter, falling downward under the influence of gravity for the very first time.

- Researchers at CERN have confirmed the existence of antimatter particles responding to gravity by falling downwards.
- This finding is a crucial confirmation of our understanding of the universe and dispels the notion that **gravity repels antimatter**.
- According to the widely accepted theory, the **Big Bang** approximately 13.8 billion years ago generated an equal quantity of matter (comprising everything visible) and antimatter (its corresponding but opposite counterpart).
- However, the presence of **antimatter in the universe** is nearly non-existent, giving rise to one of the greatest mysteries in physics: what happened to all the antimatter?
- A critical question regarding antimatter was whether gravity affects it in the same way as regular matter.
- While most physicists believed that antimatter would behave similarly under gravity, some had speculated otherwise.
- The results showed that around 80% of antihydrogen particles exited from the bottom of a bottle, a behaviour similar to that of normal hydrogen atoms.

- This confirmed **Einstein's 1915 theory of relativity**, which predicted that gravity would cause antimatter to fall downward.

While this experiment established that gravity affects antimatter in the same way as regular matter, it does not conclusively prove that antimatter behaves identically to matter in all aspects.

String-Based Technology to Revolutionize Lithium Production

Recently, scientists have developed a groundbreaking string-based technology with the potential to transform lithium production.

Key Points

- **String-Based Extraction:** Engineers developed a method using porous fibers twisted into strings.
- These strings have a core that attracts water (hydrophilic) and a water-repellent surface (hydrophobic).
- **Capillary Action:** When one end of the string is dipped in a saltwater solution, capillary action draws water up the string's core, similar to how trees transport water from roots to leaves.
- **Efficient Extraction:** As the water evaporates from the string's surface, it leaves behind salt ions, including lithium.
- Over time, sodium chloride and lithium chloride crystals form and can be harvested.
- **Lab-Scale Success:** While the technology has shown promise in the laboratory, researchers are working to make it commercially viable and durable.
- **Second-Generation Development:** The team is exploring enhancements to increase efficiency and control over the crystallization process. They are also researching the possibility of extracting lithium from seawater.

Unlocking New Lithium Sources

- This innovation has the potential to unlock previously untapped sources of lithium, including defunct oil wells and geothermal brines, significantly diversifying the supply chain.
- By making lithium extraction viable in more locations, the technology could reduce the industry's reliance on specific geographical conditions.

Future Scaling and Commercial Viability

- While promising in laboratory settings, the challenge lies in scaling up the technology for commercial use. Researchers are actively working on durability and scalability.
- The development of a second-generation technique and exploration of seawater extraction offer further avenues for improving efficiency and expanding the application of this revolutionary technology.

Hybrid Nanoparticles for Cancer Detection and Treatment

Recently, scientists at the Indian Institute of Science (IISc) have achieved a significant breakthrough in cancer research, developing hybrid nanoparticles capable of both detecting and destroying cancer cells.

- IISc researchers created **hybrid nanoparticles** composed of **gold and copper sulphide** with photothermal, oxidative stress, and photoacoustic properties.
- These nanoparticles, when exposed to light, generate heat, effectively killing cancer cells, and produce toxic singlet oxygen atoms contributing to cell destruction.
- In addition to treatment, the nanoparticles offer **diagnostic capabilities**, generating ultrasound waves when absorbing light, enabling cancer cell detection with **high contrast and accuracy**.
- The unique reduction method employed by the team results in **nanoparticles less than 8 nm in size**, allowing them to navigate tissues easily and leave the body naturally.
- Initial tests on lung and cervical cancer cell lines in laboratory settings have shown promising results.
- The IISc team aims to advance these findings towards clinical development, marking a significant step in cancer research.

Google's DeepMind AI Predicts Disease-Causing Genetic Mutations

Recently, scientists harnessed Google's DeepMind AI tool to create a program capable of predicting whether genetic mutations lead to diseases or remain harmless, offering a breakthrough in human genetics.

- DeepMind has introduced a catalogue of 'missense' mutations, which are genetic alterations affecting the function of human proteins, through their AI model **AlphaMissense**.
- Missense variants are **single-letter DNA substitutions** that can lead to different amino acids within a protein, potentially causing diseases such as cystic fibrosis, sickle-cell anemia, or cancer.
- AlphaMissense utilizes the **AlphaFold model** to distinguish between variants observed in human and related primate populations, categorizing commonly seen variants as benign and unseen ones as pathogenic.
- The AI assigns a likelihood score between 0 and 1 for a variant being pathogenic based on related protein sequences and structural context.
- AlphaMissense accurately categorized 89% of 71 million possible mutation variants as either likely pathogenic or likely benign, surpassing human experts who confirmed only 0.1% of these.
- The AI model's predictions, while not intended for direct clinical use, hold potential for advancing rare genetic disorder diagnosis and the discovery of new disease-causing genes.

- Google DeepMind is collaborating with Genomics England to explore how these predictions can aid research into rare diseases and improve diagnostic processes.

Biotechnology

Researchers Extract RNA from Preserved Specimen of Tasmanian Tiger

The Tasmanian tiger, a now-extinct carnivorous marsupial, has yielded an extraordinary scientific discovery as researchers recently recovered RNA from a preserved specimen dating back to 1891, shedding light on the biology and genetic makeup of this long-lost species.

Key Points

- Scientists extracted RNA from the preserved skin and muscle of a Tasmanian tiger specimen, a first for genetic research on an extinct species.
- While DNA has been retrieved from ancient organisms before, this marks the first time that RNA, a less stable genetic material, has been successfully recovered from an extinct species.

DNA vs. RNA

- DNA and RNA are fundamental molecules in biology. DNA, a double-stranded molecule, contains an organism's genetic code, while RNA, a single-stranded molecule, carries genetic information and regulates protein synthesis.
- RNA sequencing provides insights into the biology and metabolic processes of the Tasmanian tigers, shedding light on their gene complements and active genes.

About Tasmanian Tiger

- The Tasmanian tiger, or thylacine, was a carnivorous marsupial that resembled a wolf but had distinctive tiger-like stripes on its back.
- Human arrival in Australia and European colonization led to significant population declines, with the species declared extinct in 1936, following a bounty placed on them due to their perceived threat to livestock.
- The last-known Tasmanian tiger lived in captivity in Tasmania.

Implications for Understanding Extinct Species

- **Unlocking Genetic Secrets of Extinct Species:** The recovery of RNA from the Tasmanian tiger offers a remarkable opportunity to delve into the biology and genetic makeup of extinct species. This breakthrough opens new doors in genetic research, challenging previous limitations.
- **Potential for De-Extinction:** While the practicality of de-extinction remains uncertain, this discovery fuels the ongoing debate about the possibility of bringing back extinct species.

- **RNA's Surprising Resilience:** The revelation that RNA can survive longer than previously thought at room temperature when dried has implications beyond this study. It may inspire further exploration of genetic material in other historical specimens.

Scientists Create Lab-Grown 'Human Embryo' without Egg or Sperm

Recently, researchers from Israel achieved the successful growth of a "human embryo" in a laboratory environment, using a combination of stem cells that spontaneously formed an embryo-like structure, mimicking the early embryo's molecular characteristics, all without the use of eggs or sperm.

- The scientists developed one of the most comprehensive models of a 14-day-old human embryo using **stem cells and chemical compounds**.
 - This innovative model provides insights into early embryo development, which is challenging to study once implanted in the uterus.
 - Only 1% of the stem cell mixture was able to spontaneously assemble into an embryo-like structure, making the process relatively inefficient.
 - Research into early embryo development is essential as most **miscarriages and birth defects** occur during the initial stages.
 - Understanding the reasons behind normal embryo development, proper genetic coding, and successful implantation can improve **in vitro fertilization success rates**.
 - These lab-created embryo models do not have the potential to result in pregnancy and are intended solely for studying early fetal development.
 - The 14-day limit on embryo research is widely accepted and legally supported in many countries.
 - The ethical boundary aligns with the natural completion **of embryo implantation** and individual cell differentiation.
 - The **"Primitive Streak"** in embryo development marks the transition from radial symmetry (like an egg) to bilateral symmetry (like our bodies).
 - Lab-grown embryo models have helped researchers comprehend DNA duplication errors, chromosome imbalances, and gene functions during fetal development.
- Lab-grown embryo models offer invaluable insights into early human development, shedding light on genetic defects and embryo-related diseases while respecting ethical limitations that prevent attempts at implantation.

Indian Scientists Decode Genome of Indian Oil Sardine

Recently, scientists at the ICAR-Central Marine Fisheries Research Institute (CMFRI) achieved a significant milestone by decoding the entire genome of the Indian oil sardine (*Sardinella longiceps*), a widely consumed marine fish species.

- This marks the first complete genome sequencing of a marine fish species native to the Indian subcontinent.

Key Points

- The decoded genome is substantial, comprising 1.077 Gb in size and containing 46,316 protein-coding genes.
- The research has identified genes involved in the biosynthesis of polyunsaturated fatty acids (PUFA) in Indian oil sardines, shedding light on the nutritional quality of these fish.
- PUFA-rich oil sardines are recognized for their health benefits, and this genomic insight could lead to the development of dietary supplements or fortified foods high in PUFAs.
- The findings also support studies on PUFA synthesis through transgenesis or gene editing in other organisms, potentially improving nutritional quality.

Significance for Fisheries Management

- The decoded genome promises to be a valuable resource for fisheries management, enabling the development of improved conservation and sustainable utilization strategies for the Indian oil sardine.
- This genetic data will contribute to more effective management of the sardine population, a vital fisheries resource in the Indian subcontinent that contributes approximately 10% to the marine fisheries industry in India.

Insights into Climate Adaptation

- Indian oil sardines, as small pelagic fish, can serve as model organisms to study the impacts of climate and fishing on Indian Ocean resources.
- Understanding how these sardines adapt to changing environmental and oceanographic conditions is crucial, and their genome assembly aids in this research.

News Snippets

Zealandia	<ul style="list-style-type: none"> • Recently, a team of geoscientists finished mapping Earth's 8th continent Zealandia. • It is a vast continent of 1.89 million sq miles (4.9 million sq km), around six times the size of Madagascar. • Zealandia is 94 per cent underwater. • The new continent was originally part of the ancient supercontinent of Gondwana, which broke up around 100 million years ago. • Zealandia is a microcontinent, which means that it is smaller and less elevated than other continents. • Zealandia is a tectonically active region, with many volcanoes and earthquakes. • The mapping of Zealandia could help scientists to better understand the geological history of Earth and the formation of continents.
Vanadium	<ul style="list-style-type: none"> • India has recently made a significant discovery of the rare element Vanadium in sediment samples collected by the Geological Survey of India (GSI) from the Gulf of Khambhat near Alang town in Gujarat's Bhavnagar district. • Vanadium is found in 55 different minerals and is not typically found in pure form, making its extraction expensive. • It holds significant industrial value and finds applications across various sectors, including defence. • Vanadium is used to strengthen materials like steel and titanium and is employed in Vanadium redox batteries for energy storage. • When combined with titanium and aluminum, it is utilized in the production of jet engine components and electrical parts due to its resistance to corrosion and high-temperature tolerance.
Largest Time-Domain Survey Telescope	<ul style="list-style-type: none"> • China has launched the Wide Field Survey Telescope (WFST), the largest time-domain survey facility in the Northern Hemisphere, aiming to explore dynamic astronomical events and celestial signals. • The WFST features a 2.5-meter primary mirror and a prime-focus camera with a large field of view. • The telescope will enable researchers to detect faint celestial signals, including those from galaxies beyond the Milky Way and galaxy clusters. • It is located at the Lenghu astronomical observation base in Qinghai Province, China, known for its optimal stargazing conditions. • The base offers clear night skies, stable atmospheric conditions, a dry climate, and minimal light pollution. • The Lenghu base is now the largest astronomical observation base in Asia.
Hyades Cluster	<ul style="list-style-type: none"> • A recent study suggests the potential presence of several black holes in the Hyades cluster, the closest open star cluster to our solar system, making them the closest black holes to Earth ever identified. • The Hyades cluster is located approximately 150 light-years from the Sun and was observed using data from the European Space Agency's Gaia satellite. • Simulations indicated that two or three black holes might currently exist within the cluster, with even scenarios of all black holes being ejected less than 150 million years ago still aligning with the data. • These findings suggest the possibility of black holes originating within the Hyades cluster, potentially making them the nearest black holes to Earth. • The discovery sheds light on the impact of black holes on star cluster evolution and their role in generating gravitational wave events.



ECOLOGY & ENVIRONMENT

Sustainable Development

- 67 Countries Sign UN Treaty to Protect Oceans
- United Nations Climate Ambition Summit 2023
- Landmark Climate Justice Case Commences at UN Maritime Tribunal
- \$2.7 Trillion Needed for Net Zero Emissions by 2050

Sustainable Development

67 Countries Sign UN Treaty to Protect Oceans

On 20th September, 2023, the UN treaty to protect the world's oceans was signed by 67 countries as part of global efforts to address the deterioration of marine environments due to overfishing and human activities.

- The treaty, which aims to conserve biodiversity in the high seas, was agreed upon in March and formally adopted by the United Nations in June 2023.
- It plays a pivotal role in achieving the “**30 by 30**” target, an international objective to protect 30% of the planet's land and sea by 2030.
- While the countries signed the treaty at the United Nations General Assembly, it must undergo **national ratification** before becoming effective.
- The treaty will establish **ocean sanctuaries** where fishing activities are prohibited and mandate environmental impact assessments for human activities in the high seas.
- To initiate the treaty, an estimated **\$500 million in funding** is required, with an additional \$100 million per year for a special implementation and capacity-building fund, according to the International Union for the Conservation of Nature.
- Ocean environments have faced mounting threats due to overfishing, rising temperatures, ocean-bed mining, and the use of geo-engineering technologies to enhance carbon dioxide absorption.

Environmental organizations emphasize the need for full implementation of the treaty by 2025 at the latest to meet the 30-by-30 protection target, as the urgency to protect the oceans cannot be overstated.

Biodiversity

- Invasive Red Fire Ants Detected in Sicily, Italy
- Report on India's Cheetah Reintroduction Program
- Newly Discovered Pangolin Species Faces Immediate Threat

Government Policies/Initiatives

- India to Set Carbon Reduction Targets for Key Sectors

Climate Change

- Polar Regions witness Record Low Ice Cover
- Asia Faces Worst Hydropower Crisis in Decades

Disaster Management

- Land Subsidence affected 65% of Homes in Joshimath: Report
- Devastating Floods in Libya's Derna Claim Over 11,000 Lives

United Nations Climate Ambition Summit 2023

On 20th September, 2023, the United Nations Climate Ambition Summit (CAS) was held in New York. It aimed to accelerate climate action in preparation for COP28, featuring prominent speakers and critical discussions on climate leadership.

Nonetheless, the CAS did not see participation from China, the United States, and India, which collectively contribute to approximately 42% of global greenhouse gas emissions.

Key Points

- **Brazil's Reinstated NDC:** Brazil's decision to reinstate its original 2015 nationally determined contributions (NDC) was applauded, but further ambitious emission reduction measures are now required.
- **Revised Targets:** Nepal aims for Net Zero emissions by 2045, Thailand targets Net Zero by 2050, and Portugal strives for carbon neutrality by 2045, instead of 2050.
- **1.5 Degrees Celsius Target:** While countries reaffirmed their climate ambition targets, the Global Stocktake report warns that achieving the 1.5 degrees Celsius target is still elusive, with expectations for more ambitious NDCs by 2025.
- **Green Climate Fund Replenishments:** Several countries, including the UK, South Korea, Spain, Germany, Iceland, and Slovakia, pledged funds to replenish the Green Climate Fund. However, the \$100 billion promise remains unfulfilled.
- **Coal Phase-out Focus:** The CAS highlighted the need for a coal phase-out, but discussions on “all fossil fuels” remained limited, which could impact accountability for oil and gas producers.
- **Carbon Pricing:** The European Union and Canada called for carbon pricing to cover at least 60% of global emissions, emphasizing the potential for new revenue.

- **International Climate Club:** Germany introduced the International Climate Club, co-chaired with Chile, focusing on decarbonizing industrial sectors and green growth.
- **CAS as Momentum Builder:** The CAS served as a platform to build momentum for COP28, with debates on critical issues like the LDF and fossil fuel phase-out expected to take centre stage in future negotiations.

Landmark Climate Justice Case Commences at UN Maritime Tribunal

On 11th September, 2023, the International Tribunal for the Law of the Sea (Hamburg, Germany) witnessed the commencement of a ground-breaking climate justice case brought forth by a coalition of small island nations aiming to protect the world’s oceans from the devastating impacts of climate change.

Key Points

- **Small Island Nations vs. High-Emitting Nations:** Small Island Developing States (SIDS), home to 65 million people and responsible for less than 1% of global greenhouse gas emissions, are participating in this unprecedented case.
- **Participation and Witnesses:** The hearings involve 35 countries and three intergovernmental organizations, including the African Union, International Union for Conservation of Nature, and Pacific Community.
- **Legal Aspects and UNCLOS Obligations:** The International Tribunal for the Law of the Sea (ITLOS) is asked to provide an advisory opinion on nations’ obligations to prevent marine pollution from greenhouse gas absorption.
- The case seeks to define specific responsibilities under the United Nations Convention on the Law of the Sea (UNCLOS) regarding protection of marine environment.

Setting a Global Precedent

- This climate justice case marks a significant milestone in the fight against climate change as it brings together small island nations severely affected by rising sea levels and extreme weather events.
- By highlighting the issue of greenhouse gas absorption by the marine environment, it challenges the traditional understanding of pollution and pushes for a broader definition to reflect the realities of climate change.

A Test for International Environmental Law

- The involvement of the International Tribunal for the Law of the Sea (ITLOS) highlights the importance of international legal frameworks in addressing climate change.
- The case’s focus on defining responsibilities under UNCLOS underscores the need for clear guidelines to protect marine ecosystems from the effects of climate change.

Implications for Climate Action

- If the case succeeds, it could set a precedent for countries to take more aggressive measures to reduce carbon emissions, recognizing their impact on the world’s oceans.
- The case serves as a reminder of the urgency of addressing climate change, particularly in vulnerable regions like small island nations.

Important Facts

International Tribunal for the Law of the Sea

- It is an independent judicial body established by the 1982 United Nations Convention on the Law of the Sea.
- The seat of the Tribunal is in the City of Hamburg, Germany.

\$2.7 Trillion Needed for Net Zero Emissions by 2050

A recent report highlighted that there is a requirement of \$2.7 trillion in annual global investment to achieve net zero emissions by 2050 and limit global temperature rise to 1.5 degrees Celsius.

- Achieving net zero emissions by 2050 and limiting global warming to 1.5 degrees Celsius is critical to mitigating catastrophic climate change.
- The \$2.7 trillion annual investment represents a **150% increase** from the current \$1.9 trillion required yearly to decarbonize the energy sector.
- Many **countries are not on track** to meet their emissions reduction targets by 2030, and the existing pledges would likely lead to a 2.5-degree Celsius temperature increase by 2050.
- Net zero emissions involve **reducing greenhouse gas emissions** to nearly zero and offsetting any remaining emissions through natural sinks like forests and oceans.
- Approximately **75% of the necessary investment** should be directed toward the power and infrastructure sectors.
- Achieving the 1.5-degree Celsius target is challenging but feasible, primarily contingent on actions taken within this decade.
- The report underscores the **importance of renewable energy sources**, particularly wind and solar power, becoming the primary energy supply, supporting electric transportation and green hydrogen production.

While transitioning to net zero emissions, oil and gas still play a role in ensuring a stable supply as low and zero carbon options develop.

Earth Exceeds Safe Limits in Six Key Environmental Factors

A recent international study has raised concerns about the state of the planet, indicating that Earth is surpassing its “safe operating space for humanity” in six out of nine crucial environmental measurements.

Key Points

- **Alarming Findings:** The study, conducted by 29 scientists in eight nations, highlights that Earth is no longer within the “safe operating space for humanity.”
- **Planetary Boundaries Examined:** The researchers examined nine critical “planetary boundaries” that are essential for maintaining a liveable environment for humanity.
- **The Nine Planetary Boundaries:** The nine planetary boundaries include:
 - i) climate change,
 - ii) biosphere integrity,
 - iii) land system change,
 - iv) freshwater usage,
 - v) biogeochemical flows,
 - vi) novel entities (synthetic chemicals in the environment),
 - vii) stratospheric ozone depletion,
 - viii) atmospheric aerosol loading, and
 - ix) ocean acidification.

Breached and Endangered Boundaries

- The study reveals that human activities have breached six (i to vi) of these planetary boundaries.
- Two additional boundaries, air pollution and ocean acidification, are on the verge of being exceeded.
- Of particular concern is the high risk to the four biological boundaries (i to iv), with biodiversity, in particular, facing significant threats.

Interconnected Challenges

- The planetary boundaries are interconnected, and worsening one, such as climate change or biodiversity loss, exacerbates other environmental issues.
- Fixing one boundary can have positive ripple effects on others.

Solutions

- **Biodiversity Crisis:** The study underscores that biodiversity, often overshadowed by climate change in public discourse, is in critical condition and plays a fundamental role in maintaining the Earth’s carbon and water cycles.
- **Importance of Land Restoration:** The study identifies land restoration and forest preservation as crucial strategies to combat climate change, emphasizing that returning forests to late 20th-century levels could serve as effective carbon sinks.
- **Ozone Layer Improvement:** One positive aspect is the recovery of the ozone layer, due to global efforts to phase out certain chemicals.

Biodiversity**Invasive Red Fire Ants Detected in Sicily, Italy**

Red fire ants, a notorious invasive species, were recently found in Sicily, Italy, causing concerns about potential European spread.

- A group of ant experts confirmed their **presence in Sicily**, marking their first sighting in Europe.
- These ants, scientifically named **Solenopsis invicta**, are known for their painful stings, posing health risks to those allergic to their venom.
- They also **damage crops, infest electrical equipment**, causing technical malfunctions and costly repairs.
- *Solenopsis invicta* is considered one of the **worst invasive species** due to its rapid spread.
- Originating in **South America**, they have spread globally, aided by wind dispersal and human-assisted transportation.

Europe had previously avoided their invasion, but their presence in Sicily is a significant concern for researchers.

Report on India’s Cheetah Reintroduction Program

On 17th September, 2023, Government of India released a report on the eve of 1st anniversary of the cheetah reintroduction program. It reveals that the project has successfully achieved four of the six short-term success criteria.

Key Points

- **Overcoming Formidable Challenges:** The report acknowledges the formidable challenges facing the cheetah reintroduction program but emphasizes the concerted efforts of officials and managers from India, Namibia, and South Africa, as well as the support from the highest offices in these countries.
- **Short-Term Success Criteria:** The Cheetah Action Plan, published last year, outlines six short-term success criteria for the program, including:
 - i) the survival rate of introduced cheetahs,
 - ii) establishment of home ranges,
 - iii) successful reproduction in the wild,
 - iv) survival of wild-born cubs,
 - v) F1 generation breeding, and
 - vi) cheetah-based revenues contributing to local communities.

Achieved Success Criteria

- **The report indicates that four of the six success criteria have been met:**
 - i) Achieving a 50% survival rate for introduced cheetahs;
 - ii) Establishment of home ranges in Kuno National Park;
 - iii) Birth of cheetah cubs in the wild; and
 - iv) Direct revenue contributions to local communities through the engagement of cheetah trackers and indirect appreciation of land value in surrounding areas.

Challenges and Mortalities

- The project faced challenges and encountered some mortality.
- Six adult cheetahs have died due to various reasons.

- A heat wave in May resulted in the loss of three out of four cubs born to a female Namibian cheetah, with the remaining cub receiving human care for future release.

Natural Behaviour and Survival

- The report emphasizes that all cheetahs released in the wild displayed natural behaviours and had no notable deviations.
- Mortalities occurred due to factors such as bacterial infection, maggots, renal failure, injuries, and heat, but no unnatural deaths were reported in free-ranging conditions despite cheetahs traversing human-dominated areas.

The report notes that such post-release mortalities are common in large-scale conservation projects, even in Africa, and highlights that these challenges are being managed.

Newly Discovered Pangolin Species Faces Immediate Threat

Recently, a previously unknown species of pangolin, *Manis mysteria*, has been identified through genetic analysis of confiscated scales, expanding the pangolin family to nine species, although the discovery comes with warnings of its immediate vulnerability.

- Pangolins, **highly endangered** and often considered the world’s most trafficked mammal, were previously believed to consist of eight species – four Asian and four African.
- The new pangolin species, **Manis mysteria**, was identified through analysis of scales confiscated in China’s Yunnan province in 2015 and 2019.
- Scientists initially noticed a lineage unrelated to the known species in confiscated scales from Hong Kong in 2012 and 2013 but lacked sufficient evidence.
- *Manis mysteria* belongs to the **Asian or “Manis” branch of pangolins**, likely diverging from the Philippine and Malayan pangolins approximately five million years ago.
- Despite its discovery, the **new species faces immediate threats**, as genetic analysis indicated a declining population, low genetic diversity, high levels of inbreeding, and genetic load.
- Pangolin scales, despite being made of **keratin** (like human fingernails), are sought after for traditional medicine, and pangolins are hunted for their meat.
- Conservationists estimate that over a million pangolins were poached from the wild in the decade leading up to 2014.
- **All international trade in pangolins has been banned** since 2016 in an effort to protect the species.
- *Manis mysteria*’s existence was unveiled through samples confiscated from wildlife traffickers, but its geographical range and population size remain uncertain.

The discovery highlights the need for further research and effective conservation strategies to protect this newly identified pangolin species.

Unprecedented Plankton Bloom in Thailand Threatens Local Fisheries

Recently, off the eastern coast of Thailand, an unusually dense plankton bloom has emerged, creating an aquatic “dead zone” that poses a significant threat to the livelihoods of local mussel farmers and marine life.

- Marine scientists have observed that certain **areas in the Gulf of Thailand** are currently hosting plankton levels more than **ten times the normal amount**, resulting in the water taking on a vivid green hue and causing harm to marine organisms.
- They note that **plankton blooms typically occur once or twice a year** and typically last for two to three days, but the current situation is far more severe and long-lasting.
- Plankton blooms have the potential to **release toxins** that can negatively impact the environment and can also lead to marine life depletion by reducing oxygen levels in the water and obstructing sunlight penetration.
- The **coasts of Chonburi in Thailand** are renowned for their mussel farms, with over 80% of the nearly 300 plots in the area being affected by the plankton bloom.
- The exact cause of the intense plankton bloom remains unclear, but scientists suspect that **pollution and the intense heat** associated with climate change may be contributing factors.
- **El Niño** is causing drought and elevated sea temperatures, emphasizing the need for resource management, water conservation, and sustainable living practices to mitigate such issues.

Earlier in the year, another plankton bloom led to the discovery of thousands of dead fish along a stretch of beach in Thailand’s southern Chumphon province, with climate change being identified as a catalyst for this natural occurrence.

Government Policies/Initiatives

India to Set Carbon Reduction Targets for Key Sectors

Government of India’s recent reports highlight that the country is moving decisively towards its climate goals by setting carbon emission reduction targets for four major fossil fuel-dependent sectors.

Key Points

- **India’s Strategic Focus:** India is strategically targeting specific industries, including petrochemicals, iron and steel, cement, and pulp and paper, to align with its greenhouse emissions reduction objectives.
- **Setting Carbon Emission Benchmarks:** The government is planning to establish carbon emission benchmarks and reduction goals for these industrial sectors within the next three years.

CURRENT AFFAIRS

- **Introduction of Carbon Trading Cycle:** A significant initiative is the introduction of an annual market trading cycle, which will enable companies to engage in the buying and selling of carbon credits to meet their emissions targets.
- **Rewarding Exceeding Targets:** Companies that surpass their emissions reduction targets will earn carbon credits, which can be sold to those falling short of their goals, creating a dynamic market for emissions compliance.
- **Implementation Timeline:** These mandates are scheduled to take effect from 2024-25, with carbon trading expected to commence in 2025-26. This timeline aligns with India's emission intensity reduction commitments submitted to the United Nations.
- **India's Ambitious Climate Commitments:** India has made ambitious climate commitments, including reducing emissions relative to GDP by 45% of the 2005 level by 2030 and achieving net-zero emissions by 2070.
- **Unique Approach to Carbon Markets:** India's approach to carbon markets differs from that of developed countries. It involves a committee comprising key ministries that will set sector-specific emission reduction targets.
- **Upcoming Rules and Targets:** Rules and specific emission reduction targets for the identified industries will be announced before December.

These measures will complement India's existing market for trading certificates related to above-target energy savings in 13 sectors.

Climate Change

Polar Regions witness Record Low Ice Cover

Recently, the polar regions, facing the effects of global warming, have witnessed unprecedented changes, with the Arctic experiencing its sixth-lowest ice



cover in 2023, while the Antarctic saw record-low growth.

- On September 19, 2023, the **Arctic Sea ice** reached its annual minimum extent of 4.23 million square kilometers, marking the sixth-lowest year in satellite records, according to data from NASA and the National Snow and Ice Data Center (NSIDC).
- In contrast, on September 10, 2023, **Antarctic Sea ice** hit its lowest on record during a period that should have seen rapid growth during the coldest and darkest months.

- The Arctic ice cover **shrank from a peak area of 14.62 million** square kilometers in March to 4.23 million square kilometers in September, nearly 2 million square kilometers below the 1981–2010 average minimum.
- The Antarctic region also experienced a record low, with the winter maximum extent reaching only 16.96 million square kilometers, approximately 1.03 million square kilometers below the previous record low set in 1986.
- In the Arctic, low levels of ice in the Northwest Passage and an increase in loose, lower concentration ice near the North Pole were highlighted.
- These changes are attributed to **long-term responses to warming temperatures**, with sea ice declining in the Arctic since 1979.
- The **melting seasons** in the Arctic are becoming longer, with freeze-up occurring about a week later per decade.
- The meager growth of Antarctic Sea ice is still under investigation, with factors such as El Nino, wind patterns, and warming ocean temperatures being considered.

The melting of sea ice at both poles contributes to global warming through the “ice-albedo feedback” cycle, where open ocean water absorbs more solar energy, delaying sea ice growth.

Asia Faces Worst Hydropower Crisis in Decades

Currently, Asia is grappling with its most severe hydropower shortage in decades, with China and India witnessing significant drops in hydropower generation, leading to an increased reliance on fossil fuels.

- Hydropower output in Asia **declined by 17.9%** in the seven months leading up to July, while power generated from fossil fuels increased by 4.5%.
- The drop in hydropower is **attributed to extreme weather conditions**, including intense heatwaves and reduced rainfall, causing low reservoir levels in northern China, Vietnam, and parts of India.
- China's hydroelectricity generation saw its steepest drop since 1989, falling by 15.9% in the eight months ending in August.
- **India's hydropower generation fell by 6.2%** during the same period, marking the sharpest decline since 2016, leading both countries to increase their reliance on fossil fuels.
- Despite the growth of solar and wind power generation, the decline in hydropower has led to **increased reliance on fossil-fuel thermal power plants** to meet electricity demand.
- Other Asian economies, including Vietnam, the Philippines, and Malaysia, have also witnessed a decrease in hydropower output due to drier weather conditions.

Chinese authorities have pushed dam operators to maintain water levels as power consumption surged during heat waves, emphasizing the need for hydropower's regulating function.

Disaster Management

Land Subsidence affected 65% of Homes in Joshimath: Report

A report released by government agencies on 27th September, 2023, stated that approximately 65% of houses in Joshimath, a sacred pilgrimage town in Uttarakhand, have been impacted by land subsidence, posing a severe threat to the community.

Background

- Commencing on January 2, signs of significant land subsidence emerged near the Joshimath-Auli road, resulting in substantial cracks in houses and civil structures.
- This alarming development forced the evacuation of 355 families from the area.
- Locals acknowledge that land subsidence had been a gradual concern over several years but intensified drastically between January 2 and January 8.

Post-Disaster Assessment: The Grim Reality

- A 35-member team, comprising professionals from various organizations, conducted a “Post Disaster Needs Assessment” from April 22 to April 25 to evaluate the destruction and determine the necessary support for long-term recovery and reconstruction.
- Their assessment revealed that out of the total 2,152 houses in Joshimath, 1,403 have been affected by land subsidence and require immediate intervention.
- The report underscores the importance of retrofitting partially damaged houses according to “build back better” principles to enhance their resilience not only to landslides but also to other potential disasters.
- Joshimath is situated in seismic zone V, the area most susceptible to earthquakes, and is prone to landslides and flash floods.
- The region’s precarious geological characteristics necessitate vigilant planning and structural resilience to mitigate risks effectively.

Underlying Causes of Structural Damage

- Weak building materials, inadequate reinforcement, structural deficiencies, and the construction of buildings on steep slopes were identified as the primary contributors to the damage.
- The use of weak mud-based mortar to bind bricks or stones together exacerbated the impact of minor ground subsidence.
- Moreover, insufficient support structures, long unsupported walls, and lightweight roofs all rendered buildings susceptible to damage during ground movement.

Recommendations

- In light of these findings, the agencies have urged the state government to impose a complete ban on new construction in Joshimath until the conclusion of the monsoon season.
- Subsequently, they recommend allowing only lightweight structures after reassessing ground conditions post-monsoon.
- The report underscores the necessity for risk-based building bylaws, as the absence of such regulations and the lack of compliance have significantly contributed to the crisis.
- The report strongly emphasizes the immediate need for a prospective plan aimed at creating a safe and resilient Joshimath over the next 10-15 years.

Deadly Earthquake Strikes Morocco

On 8th September, 2023, Morocco experienced its most powerful earthquake ever, measuring 6.8 in magnitude, devastating the historic city of Marrakech and its surroundings, claiming over 2,400 lives, and causing extensive destruction.



- The catastrophic earthquake struck Morocco with a magnitude of 6.8, **centred in the Al-Haouz province, Atlas Mountains**, near Marrakech, according to the US Geological Survey.
- The region witnessed more than 24 aftershocks in 48 hours, with the strongest measuring 4.9 in magnitude.
- Rescuers faced difficulties reaching remote villages in the Atlas Mountains due to blocked roads, contributing to a steadily increasing death toll.
- Survivors in affected areas were left without essential supplies like food, electricity, and phone services, leading to criticism of the Moroccan government.
- **Shallow earthquakes**, like the one in Morocco, are generally more dangerous due to the **higher energy they carry** when emerging at the surface compared to deeper quakes.
- The energy release of an earthquake increases significantly with each whole number increase in magnitude.
- The earthquake damaged many houses in the ancient city of Marrakech and caused collapses in the UNESCO World Heritage Site.
- Remote villages in the Atlas Mountains, such as Asni, suffered extensive damage, complicating rescue efforts.
- The earthquake **resulted from oblique-reverse faulting at a shallow depth** within the Moroccan High Atlas Mountain range.

Earthquakes are relatively uncommon in North Africa, and Morocco was ill-prepared for such a catastrophe, particularly in rural and older urban areas.

Devastating Floods in Libya’s Derna Claim Over 11,000 Lives

On 10th September, 2023, torrential rains and severe flooding claimed 11,300 lives in the eastern Libyan city of Derna. It also left around 10,100 people missing.

Key Points

- **Extreme Weather:** Unprecedented rainfall occurred in Libya’s eastern region, with cities like Al-Bayda and Derna experiencing record-breaking precipitation levels.
- **Medicane:** Storm Daniel, a **tropical-like cyclone originating in Greece**, transformed into a “medicane” over the unusually warm Mediterranean waters, leading to intensified rainfall and wind as it approached Libya.
- **Vulnerable Geography:** Derna, a coastal city with around 100,000 inhabitants, suffered the most devastation due to its geographical location.
- Situated at the end of a valley, Derna was bisected by the Wadi Derna, a seasonal river protected by dams. However, these dams failed during the storm, resulting in flash floods that inundated the city.

Cause of Floods

- The **collapse of the dams** in Derna revealed the deteriorating infrastructure in Libya, which has endured a decade-long war between rival factions.
- **Socio-economic issues**, including infrastructure maintenance, have been neglected amid the political turmoil, leaving vital structures in disrepair.
- Libya’s **lack of preparedness for flooding**, absence of flood-resilient infrastructure, and early-warning systems exacerbated the calamity.

Aid Challenges

- **Two Governments, Two PMs:** Libya’s ongoing political turmoil, with two rival governments led by Prime Ministers Abdul Hamid Dbeibah in Tripoli and Ossama Hamad in Benghazi, has hindered effective cooperation in responding to the flood disaster.
- **International Divisions:** The support of regional and global powers has exacerbated Libya’s divisions.
- While one administration receives support from Turkey, Qatar, and Italy, the other enjoys backing from Egypt, Russia, Jordan, and the United Arab Emirates.
- While some of these countries are involved in rescue operations, reaching the flood-affected areas, particularly Derna, has proven challenging due to logistical issues and the need for approvals from rival authorities.
- **Growing Unrest and Discontent:** Recent protests calling for Dbeibah’s resignation and sporadic fighting between rival militia groups highlight the ongoing instability and the power wielded by rogue armed groups.
- Additionally, Libya’s status as a transit point for migrants and its rich oil reserves have been marred by conflict, corruption, and a lack of equitable oil revenue distribution.
- **Tale of a Neglected City:** Derna, once known for its scenic beauty, has suffered neglect and destruction since the ousting of Muammar Gaddafi in 2011.

The mistrust and political divisions between the rival governments and international players could complicate post-disaster recovery efforts in Libya. Effective coordination and allocation of resources are crucial to addressing the immediate needs of flood-affected areas and rebuilding critical infrastructure.

News Snippets

<p>Marine Sand</p>	<ul style="list-style-type: none"> • The extraction of marine sand, a critical natural resource following water, is rampant and largely unregulated, primarily for use in industries such as construction. • The United Nations Environment Programme (UNEP) has released findings highlighting the significant impact of marine sand extraction, emphasizing its status as one of the most exploited natural resources. • Recognizing the need for more sustainable mining practices, the United Nations passed a resolution last year to encourage responsible sand extraction. • Prominent countries engaged in this industry include China, the Netherlands, the United States, and Belgium, which are among the most active participants in marine sand extraction.
<p>Solar Panels in Arctic Darkness</p>	<ul style="list-style-type: none"> • Norway has initiated a groundbreaking pilot project by installing 360 solar panels on its Svalbard archipelago, known for its relentless winter darkness, aiming to facilitate the transition to green energy for remote Arctic communities. • This solar installation is believed to be the world’s northernmost ground-mounted photovoltaic (PV) system and represents the first large-scale deployment of its kind in the Arctic. • The initiative aims to serve as a pilot project, evaluating the feasibility of implementing similar technology in approximately 1,500 other Arctic sites and communities lacking access to traditional electricity grids. • The goal is to develop Arctic-tested technology that can be applied in various remote locations, advancing the global transition toward renewable energy.

<p>Sahara Desert “Greenings”</p>	<ul style="list-style-type: none"> • A recent study provides insights into the cyclic greening of the Sahara Desert over the past 800,000 years, uncovering the role of Earth’s orbital changes and their impact on this phenomenon. • The study, simulating these “greenings,” offers evidence that Earth’s orbital changes influenced the timing and intensity of humid Sahara events. • Changes in Earth’s orbital precession, causing shifts in the Earth’s axis and seasonality, played a significant role in driving North African Humid Periods. • These orbital changes affect the African Monsoon’s strength, leading to increased Saharan precipitation and the spread of savannah-like vegetation across the desert. • This study highlights a connection between distant regions, possibly influencing species dispersal, including early humans, out of Africa during glacial periods.
<p>Kaimur Wild-life Sanctuary</p>	<ul style="list-style-type: none"> • Bihar’s State Forest Department is actively pursuing approval from the National Tiger Conservation Authority (NTCA) to declare Kaimur district a tiger reserve. • The NTCA granted preliminary approval to Bihar’s proposal for the tiger reserve in July, and the department has initiated preparations for the final proposal submission. • The necessity for a second tiger reserve in Bihar arises from the Valmiki reserve reaching its capacity, designed to accommodate around 50 tigers while currently hosting 54. • Kaimur district exhibits diverse geography, encompassing the hilly Kaimur plateau and a plain area to the west, flanked by the Karmnasa and Durgavati rivers. • The district boasts a significant forest cover that provides a habitat for tigers, leopards, and chinkaras. • Kaimur district shares its boundaries with neighboring states, including Jharkhand, Uttar Pradesh, and Madhya Pradesh.
<p>Herpetofaunal Survey in South Wayanad</p>	<ul style="list-style-type: none"> • A comprehensive herpetofaunal survey concluded in the South Wayanad Forest Division, revealing the presence of 67 reptile species and 59 amphibian species, marking a significant contribution to the understanding of the region’s biodiversity. • Notably, this survey led to the discovery of four amphibian and three reptile species that had not been previously documented in the forest division. • An interesting find was the sighting of the Naked Dancing Frog, previously believed to be restricted to the Wayanad Wildlife Sanctuary. • Among the 67 reptile species encountered, 21 are exclusive to the Western Ghats, underscoring the region’s ecological importance. • The presence of species like the Wayanad Dravidogecko, Nilgiri Spiny Lizard, and the Nilgiri Forest Lizard further accentuated the survey’s significance, highlighting the South Wayanad Forest Division’s role in global conservation efforts.
<p>Reusable Bamboo Straw</p>	<ul style="list-style-type: none"> • The Government of India’s patent office has awarded a patent to the Botanical Survey of India (BSI) for a “reusable straw and its manufacturing” made from an endemic bamboo species found in the Andaman and Nicobar Islands. • This bamboo species, known for its thin, large, hollow culm (stem) with long internodes, has shown economic potential as a sustainable alternative to plastic straws. • The patent for the reusable bamboo straw is seen as a significant development that could enhance the livelihoods of local farmers and bamboo growers on the islands. • While the germplasm of this bamboo species is limited to specific forested areas in the Andamans, large-scale production of the bamboo straw would depend on the commercial cultivation of the species.
<p>Nilgiri Tahr</p>	<ul style="list-style-type: none"> • Tamil Nadu is devising a standardized protocol for counting the endangered Nilgiri tahr population, which is found exclusively in select habitats in Tamil Nadu and Kerala. • Drones may be employed for the census, as Nilgiri tahrs inhabit montane grasslands with steep, rocky terrains at altitudes ranging from 300 to 2,600 meters above sea level. • Tamil Nadu intends to count tahrs across various habitats in November, including the Nilgiris hills, Anamalais, Palani hills, Srivillipudur, Theni, Tirunelveli hills, Kalakad Mundanthurai Tiger Reserve, and Ashambu hills. • Tahrs in the Anamalai hills and Nilgiris, particularly in the Mukurthi National Park, represent the highest populations. • Threats to Nilgiri tahr habitats include invasive plants like wattles, pines, and eucalyptus in the grasslands. • Project Nilgiri Tahr seeks to investigate the causes of lumpy skin disease observed in the animal and propose remedies.



WORLD WATCH

International Relations

- India and Argentina sign Agreement to Protect Professionals' Legal Rights
- India and Saudi Arabia Strengthen Ties
- ASEAN-India and East Asia Summits

International Relations

India and Argentina sign Agreement to Protect Professionals' Legal Rights

On 29th September, 2023, India and Argentina joined hands to secure the legal rights of professionals working in each other's countries, promoting risk-free international mobility through a 'Social Security Agreement' signed between the two nations.

Key Points

- **Enhancing International Mobility:** The Social Security Agreement will enable risk-free international mobility among professionals of both the countries.
- **Protection of Rights:** This agreement aims to ensure the rights of the growing number of Indian nationals employed in various Indian and international companies in Argentina, as well as Argentine nationals seeking employment opportunities in India.

Benefits

- The growing number of Indian professionals working in Argentina and Argentine nationals seeking employment in India necessitated the establishment of a legal framework to protect their rights, particularly related to social security contributions.
- The agreement, which follows detailed and expedited negotiations, particularly in the past year, is designed to protect the rights of professionals and workers, preventing the loss of social security benefits or contributions made in both countries.
- The Social Security Agreement (SSA) covers various aspects, including old age and survivor's pensions for professionals on both sides, permanent and total disability pension for employed individuals, and compliance with Argentine legislation regarding contributory benefits of the Social Security System.

- India and UN Launch Capacity Building Initiative for Global South
- India-Canada Standoff: Shaping of Bilateral Ties

World Issues

- China's Barricade near South China Sea Reignites Dispute
- US Recognizes Cook Islands and Niue Independence
- China and Syria Forge Strategic Partnership
- Mali, Burkina Faso and Niger sign Mutual Defence Pact

International Treaties

- India-Middle East-Europe Economic Corridor
- African Union: New Permanent Member of G20

News Snippets

- It also addresses factors like rent, subsidies, and lump sum payments in accordance with the national laws of both countries.
- Bilateral Relations
- India and Argentina have strengthened their bilateral relations over the years.
- Both countries elevated their relationship to a strategic partnership in February 2019 during the India visit of then-Argentine President Mauricio Macri.
- In 2018, Prime Minister Narendra Modi visited Buenos Aires for the G20 summit hosted by Argentina.
- India and Argentina have seen an expansion of trade ties in sectors such as IT, agriculture, automobiles, and pharmaceuticals.
- India is the fourth-largest trading partner of Argentina, with bilateral trade reaching \$6.4 billion in 2022, reflecting a 12% growth compared to 2021.

India and Saudi Arabia Strengthen Ties

Recently, Saudi Arabia's Crown Prince and Indian Prime Minister conducted extensive talks to enhance trade and security relations. They also co-chaired the inaugural summit-level meeting of the India-Saudi Arabia Strategic Partnership Council (SPC).

Key Points

- **Establishment of the India-Saudi Arabia Strategic Partnership Council:** The SPC was established in 2019 during Prime Minister Modi's visit to Saudi Arabia.
- It aimed to create a high-level council to oversee and steer the Indo-Saudi relationship across various dimensions, including trade, investment, security, and defence cooperation.
- **Components of the SPC:** The SPC consists of two main pillars:
 - (i) the Committee on Political, Security, Social, and Cultural Cooperation, and
 - (ii) the Committee on Economy and Investments.

- The sub-committees operate at four functional levels, including summit level, ministerial level, senior officials' meetings, and Joint Working Groups (JWGs).
- **Areas of Focus:** Four JWGs exist under each sub-committee:
 - i) Political and consular matters
 - ii) Legal and security issues
 - iii) Social and cultural cooperation
 - iv) Joint defence cooperation
- Those under the Economic committee address issues related to agriculture and food security, energy, technology and information technology, and industry and infrastructure.
- **Recent Developments:** India and Saudi Arabia agreed to expedite the \$50-billion West Coast refinery project and identified energy, defence, semiconductor, and space as areas for intensified cooperation.
- The two nations also diversified their hydrocarbons relationship into a comprehensive energy partnership, signing eight agreements to enhance cooperation in various fields, including digitization and investment.
- **Future Cooperation:** The discussions between the leaders identified cooperation in multiple sectors, including energy, defence, security, education, technology, transportation, healthcare, tourism, and culture.
- **Infrastructure and Technology Focus:** The talks included deliberations on power grids, gas grids, optical grids, and fibre networks for potential cooperation.

India and Saudi Arabia Relations

- **Oil and Gas:** Currently, Saudi Arabia stands as India's second-largest provider of crude oil, with Iraq being the primary supplier. India sources over 18% of its crude oil demand from Saudi Arabia, and the majority of its Liquefied Petroleum Gas (LPG) imports also originate from the Kingdom.
- **Bilateral Trade:** Saudi Arabia holds the position of India's fourth-largest trading partner, following the United States, China, and the United Arab Emirates (UAE). The fiscal year 2022 witnessed substantial bilateral trade valued at USD 29.28 billion, encompassing significant imports and exports.
- **Cultural Connections:** Cultural bonds are evident through activities like the Hajj pilgrimage and the modernization of Hajj processes.
- **Naval Collaboration:** In 2021, India and Saudi Arabia embarked on their inaugural joint naval exercise known as the Al-Mohed Al-Hindi Exercise, marking a significant milestone in their bilateral relations.
- **Indian Diaspora in Saudi Arabia:** The Indian community in Saudi Arabia, consisting of a robust 2.6 million members, stands as the Kingdom's largest expatriate community.

India and UN Launch Capacity Building Initiative for Global South

On 24th September, 2023, India and the United Nations collaboratively launched an initiative aimed at enhancing the capabilities of nations in the Global South, enabling them to benefit from India's development expertise and best practices through training programs and capacity-building efforts.

- The '**India-UN Capacity Building Initiative**' is an effort to extend the **success of India's G20 Presidency**, which prioritized the representation of Global South voices in the G20 agenda.
- This initiative leverages **India's existing bilateral cooperation** in development and capacity building with partner countries.
- The collaboration involves the UN-India team and the Gates Foundation, which will utilize India's platform for technical and economic cooperation to disseminate India's development experiences and best practices on a global scale.
- The initiative aligns with the development goals established during India's G20 Presidency, including the **G20 Action Plan** for advancing Sustainable Development Goals (SDGs) and strengthening technology and digital infrastructure.
- **South-South Cooperation** is at the core of this initiative, demonstrating India's commitment to bolstering its development partnership with the Global South.
- The Global South encompasses regions such as Africa, Latin America and the Caribbean, Asia (excluding Israel, Japan, and South Korea), and Oceania (excluding Australia and New Zealand).
- These regions generally exhibit lower levels of economic and industrial development, making capacity building and development cooperation crucial.

The initiative aims to empower nations in the Global South with the knowledge and tools needed to accelerate their progress towards achieving the Sustainable Development Goals (SDGs).

ASEAN-India and East Asia Summits

On 7th September, 2023, India's Prime Minister attended the 20th ASEAN-India Summit and the 18th East Asia Summit (EAS) in Jakarta, emphasizing the significance of regional partnerships.

- At the ASEAN-India Summit, Prime Minister engaged in extensive discussions with ASEAN partners to reinforce the ASEAN-India Comprehensive Strategic Partnership and set future directions.
- PM reaffirmed the centrality of **ASEAN in the Indo-Pacific** and highlighted the synergy between India's Indo-Pacific Ocean's Initiative (IPOI) and ASEAN's Outlook on the Indo-Pacific (AOIP).
- The need for a prompt review of ASEAN-India FTA was stressed by the Prime Minister.

- Prime Minister presented a **12-point proposal to strengthen India-ASEAN cooperation**, covering connectivity, digital transformation, trade, contemporary challenges, people-to-people contacts, and strategic engagement.
- Proposals included establishing multi-modal connectivity and economic corridors, sharing India's Digital Public Infrastructure Stack, creating the ASEAN-India fund for Digital Future, and supporting the Economic and Research Institute of ASEAN and East Asia (ERIA).
- PM called for addressing **Global South issues** collectively and invited ASEAN countries to join the Global Centre for Traditional Medicine and the Coalition for Disaster Resilient Infrastructure.
- Cooperation areas encompassed affordable medicine provision, counter-terrorism efforts, disaster management, maritime safety, and security.
- **Two Joint Statements on Maritime Cooperation and Food Security** were adopted.
- **Timor-Leste** participated in the Summit as an Observer.
- At the 18th East Asia Summit, Prime Minister reiterated the importance of the EAS mechanism, supporting its further strengthening.
- A cooperative approach to global challenges like terrorism, climate change, resilient supply chains, and energy security was advocated.

The Prime Minister's participation in the ASEAN-India and East Asia Summits reflects India's commitment to regional cooperation and strengthening partnerships, particularly in the Indo-Pacific, with an emphasis on shared interests and addressing global challenges.

India-Canada Standoff: Shaping of Bilateral Ties

Recently, Canadian Prime Minister alleged India's involvement in the killing of Hardeep Singh Nijjar, a terrorist and head of the Khalistani Tiger Force (KTF) in India.

Despite ongoing investigations, the Canadian government decided to expel a senior diplomat from the Indian High Commission.

Key Points

- **India's Response:** India responded by expelling a Canadian diplomat, issuing a demarche to the Canadian High Commissioner, and downsizing the diplomatic mission, citing interference in domestic matters.
- India has suspended visa services between India and Canada that could affect hundreds of thousands of people.
- **Evidence and Diplomatic Protocol:** Canada has not released specific evidence tying India to the killing, potentially violating Canadian sovereignty and international rule of law.
- **Reaction of the 'Five Eyes' Alliance:** Members of the 'Five Eyes' alliance expressed concern over Canada's

allegations and called on India to cooperate with the investigation.

- The alliance includes the U.S., the U.K., Canada, Australia, and New Zealand.

Recent Flashpoints in Relations

- Recent tensions in India-Canada relations stem from pro-Khalistan groups operating in Canada, organizing crimes in both countries, and engaging in anti-India activities.
- Pro-Khalistani groups, including the banned organization Sikh for Justice, have been involved in attacks on Indian Missions, anti-India activities, and desecrating temples in Canada.
- Inaction on addressing these issues by Canada has strained relations further, with India expressing concerns over increasing Khalistani activities.
- Canada's unwillingness to rein in separatist Khalistani elements and its defence of freedom of expression have contributed to the deterioration of relations.

India-Canada Relations: An Overview

Status of CEPA Negotiations

- Earlier this month, Canada announced the pause of talks on the Comprehensive Economic Partnership Agreement (CEPA) with India.
- CEPA agreements typically involve the significant reduction or elimination of customs duties on traded goods, liberalization of trade in services, and provisions to attract investments.
- India sought duty-free access for products like textiles and leather, while Canada had interests in dairy and agricultural products.
- The CEPA between Canada and India could potentially boost two-way trade by up to \$6.5 billion, with GDP gains projected for Canada.

Bilateral Trade Growth

- Bilateral trade between India and Canada has steadily grown, reaching \$8 billion in 2022.
- Indian exports to Canada touched \$4 billion, making India Canada's 10th largest trading partner.
- Imports from Canada were also valued at \$4 billion.

Canadian Investments in India

- Canada has been a foreign investor in India, pouring in over \$3.6 billion since 2000.
- Canadian portfolio investors have also invested significantly in Indian stock and debt markets.

Human Ties

- Canada has a substantial Indian diaspora, accounting for 3% of its population, with over 1.6 million people of Indian origin.
- The Sikh population in Canada is the highest outside of Punjab, comprising about 2% of the total population.
- India has been the largest source of international students in Canada since 2018, with their number rising by 47% in 2022 to nearly 320,000.

Important Facts

Five Eyes Alliance

- The Five Eyes is a coalition of countries, namely Australia, Canada, New Zealand, the United Kingdom, and the United States, united for intelligence sharing.
- These nations are signatories to the UK-USA Agreement, a multinational treaty focused on cooperative efforts in signals intelligence.
- These allied countries engage in extensive intelligence exchange through one of the world’s most closely integrated multinational pacts as part of their collaboration.
- Originating from its inception, the organization later expanded its central membership to include the ‘Nine Eyes’ and ‘14 Eyes’ coalitions, involving additional nations as security partners.

World Issues

China’s Barricade near South China Sea Reignites Dispute

Recently, a new controversy arose as China installed a barricade near the Scarborough Shoal in the South China Sea, renewing tensions in the territorial dispute with other nations.

Key Points

- The recent dispute arose when a 300-meter floating barrier was discovered at the shoal’s entrance during a Philippine government resupply mission.
- The Philippines strongly condemned the barrier and successfully removed it from the reef, known as Bajo de Masinloc in Manila, through a special operation ordered by President Ferdinand Marcos.
- China has also issued a warning to Philippine Coast Guard, alleging it was deployed by China to restrict Filipino fishermen’s access.
- Scarborough Shoal, a longstanding point of contention, was seized by China from the Philippines in 2012, with ongoing tensions and Chinese patrol boat deployments.

Analysis of the South China Sea Dispute

Geopolitical Significance

- The South China Sea, surrounded by Brunei, China, Indonesia, Malaysia, the Philippines, Taiwan, and Vietnam, has been a historic battleground for territorial control. Recent escalations can be attributed to China’s ascent as a global power.
- The sea’s strategic location and abundant resources have drawn the attention of nations seeking to assert dominance in the region.

Historical Claims and the Nine-Dash Line

- China’s claims over the South China Sea are rooted in the controversial “nine-dash line” depicted on its maps.

- This line encircles extensive portions of the sea and islands, constituting up to 90% of the region.
- These claims are primarily based on historical maritime rights, but the exact coordinates of the line have never been clearly defined.
- The United Nations treaty on maritime territorial issues, to which China is a signatory, imposes limitations on such claims.

Island Expansion and Militarization

- China’s assertive territorial claims have led to the physical expansion of islands and the creation of new ones in the South China Sea.
- These actions include constructing ports, military installations, airstrips, and deploying fighter jets, missiles, and radar systems.
- This militarization has heightened concerns among neighbouring nations and escalated tensions.

Global Significance

- The South China Sea holds vast reserves of oil and natural gas, making it a crucial energy resource.
- Rich fishing grounds also provide livelihoods for millions in the region.
- Moreover, it serves as a vital trade route, with a substantial percentage of global trade passing through its waters.

International Involvement

- The United States has intervened in the dispute to challenge China’s territorial claims and protect its political and economic interests.
- The US has increased its military presence in the region, provided aid and weapons to China’s opponents, and engaged in naval activities in South Asia.

A swift resolution to the South China Sea dispute appears unlikely, particularly after China refused to abide by an international tribunal’s ruling in 2016. There is a growing fear that this dispute could escalate into a global conflict, with profound consequences for international maritime laws and regional stability.

US Recognizes Cook Islands and Niue Independence

On 25th September, 2023, US President confirmed the United States’ recognition of the independence of the Cook Islands and Niue, two small Pacific nations, ahead of a summit with Pacific Island leaders aimed at countering China’s influence in the region.

- The United States has a **longstanding history of cooperation with the Cook Islands**, dating back to World War II, when the U.S. military constructed airport runways on one of the atolls in the chain.
- The summit with Pacific Island leaders, initiated by the US, will centre on key priorities such as climate change, economic growth, sustainable development, public health, and the prevention of illegal fishing.

CURRENT AFFAIRS

- The move to recognize the independence of the Cook Islands and Niue underscores the **U.S.'s commitment to enhancing its presence in the Pacific** and strengthening diplomatic ties.
- This diplomatic gesture is part of a broader strategy to **counter China's efforts** to gain influence in the region through infrastructure development and economic partnerships.
- The Cook Islands and Niue have a history of close association with New Zealand, which has been responsible for their defence and foreign affairs.
- By recognizing their independence, the US seeks to engage more directly with these island nations and bolster its role in the Pacific.
- Countering illegal fishing is another vital aspect of the summit, as the Pacific's vast maritime zones are targets for unlawful fishing activities that threaten marine ecosystems.

Climate change is a pressing concern for Pacific nations, and this recognition signifies the US' commitment to collaborating on climate mitigation and adaptation efforts.

China and Syria Forge Strategic Partnership

On 22nd September, 2023, China and Syria established a strategic partnership, with Chinese leader meeting Syrian President as part of a series of diplomatic engagements leading up to the Asian Games.

- China's President held discussions with Syrian President in Hangzhou in China, coinciding with the city hosting the 15-day Asian Games.
- In a video message shared by state broadcaster CCTV, the President expressed China's willingness to support and cooperate with Syria to jointly uphold international fairness and justice, particularly in an unstable global environment.
- Syrian President's rare overseas trip aims to navigate Syria's international isolation resulting from a prolonged and ongoing domestic conflict.
- Syria expressed gratitude for China's unwavering support during its crisis, with China using its **UN Security Council veto eight times** to block resolutions against Assad's government.
- China's President emphasized China's backing for Syria against external interference and unilateral bullying, endorsing a Syrian-led and owned political solution.

China and Syria have solidified a strategic partnership, signifying an important milestone in their relationship, while China continued its diplomatic engagements in the lead-up to the Asian Games.

France and Germany Propose EU Enlargement and Reform Plans

Recently, France and Germany, the EU's largest economies, have introduced new proposals for expanding the 27-member

European Union, addressing concerns arising from Russia's invasion of Ukraine.

- A policy paper, drafted by a group of 12 experts commissioned by the European ministers of France and Germany, was presented during a European ministerial meeting, offering potential paths for **EU enlargement and reform**.
- The policy paper, initiated in January, is a response to increasing calls for EU expansion and suggests four tiers of participation within the union.
- While countries like **Ukraine, the Western Balkans, and Moldova** are considered prime candidates for EU membership, ten countries are already in the process of aligning their laws with EU regulations.
- The paper acknowledges that the EU is currently unprepared, both institutionally and policy-wise, to admit new members, proposing a flexible approach to enlargement and the necessity for reform.
- The report explores strategies for the EU to function effectively with over 30 member states, suggesting measures such as limiting the number of EU legislators, modifying the voting system to incorporate majority voting, and enhancing the EU's budget.
- In the absence of unanimous support for altering the EU Treaty (required for enlargement), the paper recommends a **supplementary treaty among a willing subset of member states** to enable differentiation within the EU.
- Differentiation within the EU would have limits, especially concerning core values and the rule of law, as per the Franco-German report.
- The **proposed differentiation could lead to four tiers**: an inner circle comprising Eurozone and Schengen Area members, the EU itself, Associate Members participating in the single market and adhering to common principles, and the European Political Community, a group cooperating with the EU but not bound by its laws.

These proposals are anticipated to be formally discussed at an upcoming meeting of EU heads of state in Spain next month.

Mali, Burkina Faso and Niger sign Mutual Defence Pact

On 16th September, 2023, military leaders from Mali, Burkina Faso, and Niger formalized a mutual defence pact known as the Liptako-Gourma Charter, establishing the Alliance of Sahel States (AES), with the goal of enhancing collective defence and mutual assistance for the benefit of their populations, according to Mali's junta leader.

- **The Liptako-Gourma Charter** was signed during a ministerial meeting in Bamako, Mali.
- The focus of this alliance is to **build a framework for collective defence and mutual support**, particularly in addressing the challenges posed by jihadist activities in the Liptako-Gourma region, where the borders of Mali, Burkina Faso, and Niger converge.

- The **jihadi insurgency**, which initially emerged in northern Mali in 2012, has progressively spread to Niger and Burkina Faso since 2015.
- All three nations have experienced **coups since 2020**, with the most recent occurring in Niger, where President Mohamed Bazoum was overthrown by soldiers in July.
- **ECOWAS, the West African regional bloc**, has threatened military intervention in Niger in response to the coup, a move strongly opposed by Mali and Burkina Faso, who view it as a potential declaration of war against them.
- The Liptako-Gourma Charter commits the signatory countries to providing assistance, including military support, in the event of an attack on any of them.
- Any assault on the sovereignty and territorial integrity of one or more signatory parties is considered an aggression against all, requiring a duty of assistance, potentially involving the use of armed force to restore and maintain security.
- The charter also obligates the three nations to collaborate in preventing or resolving armed rebellions within their territories.
- The alliance between three West African states, all ruled by military juntas and former French colonies, has been formalised amid souring ties between the three states and France.
- All three signatory nations of the newly-formed Alliance of Sahel States were also the members of France-supported G5 Sahel alliance joint force with Chad and Mauritania being the other two allies.

The alliance is envisioned to encompass both military and economic cooperation among the three countries, with a primary emphasis on combating terrorism within their borders.

International Treaties

India-Middle East-Europe Economic Corridor (IMEC)

On 9th Sept, on the sidelines of the G20 Summit in India, an agreement was reached among India, the US, Saudi Arabia, the European Union, the UAE, France, Germany, and Italy to create the India – Middle East – Europe Economic Corridor (IMEC), aimed at enhancing economic growth through integrated transport corridors.

Key Points

- **Shared Vision:** The corridor aims to enhance connectivity by developing railways and ports linking Europe, the Middle East, and Asia.
- **Global Infrastructure Investment:** The corridor is a component of the Partnership for Global Infrastructure Investment, collaboration among G7 nations to finance infrastructure projects in developing nations.

- **Strategic Counter:** This collaboration is viewed as a response to China’s Belt and Road Initiative, aiming to provide alternative infrastructure development options.
- **Multi-Nation Rail Link:** The project encompasses a railway connection facilitating the movement of goods and services between India, the United Arab Emirates, Saudi Arabia, Jordan, Israel, and Europe.
- **Economic and Environmental Focus:** It aims to secure regional supply chains, enhance trade accessibility, improve trade facilitation, and emphasize environmental, social, and governance impacts.

IMEC: An Analysis

IMEC: A Multi-Faceted Initiative

- **Partnership for Global Infrastructure and Investment (PGII):** IMEC is part of the PGII, focusing on funding infrastructure projects in developing nations, with an underlying objective to counter China’s influence.
- **Dual Corridors:** IMEC comprises two corridors – the east corridor connecting India to the Gulf and the northern corridor linking the Gulf to Europe. It envisions a comprehensive transport network, including railways, ship-to-rail systems, and road routes.

Geopolitical Implications

- **Countering China:** IMEC is seen as a strategic response to China’s Belt and Road Initiative (BRI), aiming to provide an alternative infrastructure development framework.
- **US Influence:** The project can serve as a means for the US to counterbalance China’s growing influence; especially as traditional Arab partners strengthen ties with Asian powers.
- **Israel-Gulf Relations:** The corridor’s passage through Jordan and Israel could potentially normalize relations between Israel and Gulf countries, influencing Saudi Arabia to consider diplomatic ties.

Economic Benefits and Regional Integration

- **Efficiency and Cost Reduction:** IMEC seeks to enhance transit efficiency, reduce costs, and promote economic unity among participating nations.
- **Environmental Focus:** The initiative emphasizes environmental sustainability, aiming to lower greenhouse gas emissions.
- **Digital:** It also includes plans for digital connectivity and clean hydrogen export along the railway route.

Changing Regional Dynamics

- **Saudi Arabia and UAE as Key Players:** Both Saudi Arabia and UAE are keen on projecting themselves as vital logistics and trade hubs between East and West, leveraging their positions as top oil exporters and financial centres.
- **Shifting Alliances:** IMEC reflects a significant shift in regional alliances and economic strategies, impacting not only transportation but also geopolitics and diplomacy.

African Union: New Permanent Member of G20

On 9th September, 2023, the African Union achieved full membership of the G20, a move hailed by Indian Prime Minister as enhancing the G20’s effectiveness and amplifying the Global South’s voice.

Key Points

- India Prime Minister extended a warm welcome to African Union marking the African bloc’s inclusion as a full member of the G20.
- The African Union is the second regional bloc to join the G20 after the European Union.
- The AU’s advocacy for G20 membership received backing from various member states.
- In addition to supporting the African Union’s full membership in the G20, India invited Nigeria, Egypt, and Mauritius as “Guest Countries” to participate in the G20 summit.

Implications for India

- This development reaffirms India’s prominent role in global governance, emphasizing its commitment to inclusivity and diversity on the world stage.
- India’s support for the African Union (AU) represents the logical evolution of their partnership, extending beyond symbolism into a strategic alliance built on a longstanding history of collaboration encompassing trade, education, healthcare, and technology.
- India’s endorsement carries significant influence within the G20, leveraging its expanding economy and geopolitical prowess.
- India seizes a distinctive opportunity to foster a more diverse and representative platform, aligning seamlessly

- with its global aspirations to promote a multipolar world.
- This move adds momentum to the broader push for an all-encompassing G20, mirroring a larger shift in the global order toward greater inclusivity.

Implications for G20

- The inclusion of the African Union (AU) as the 21st entity in the G20 significantly bolsters the group’s weight and potential.
- The G20 now encompasses nearly 80% of the world’s population, includes 97 out of the UN’s 193 countries, and accounts for 88% of global GDP and 79% of international trade.
- The AU’s inclusion in the G20 strengthens partnerships and coordination in multilateral forums such as the UN, WTO, World Bank, and IMF.

Implications for Africa

- This development grants Africa a vital voice, participation, and leadership role at the global high table. It allows African nations to have a say in matters related to their developmental, financial, economic, and environmental challenges and solutions.
- It is particularly crucial as Africa faces issues like poverty, conflict, political instability, climate stress, environmental degradation, and the socioeconomic fallout from various crises.
- Africa’s entry into the G20 provides an avenue for the continent to seek support in terms of global public goods, including finance, technology, investment, and capacity building.
- The concept of an Economic Security Council (ESC), similar in stature to the United Nations Security Council (UNSC), gains traction with Africa’s entry into the G20.

News Snippets

<p>Northern Sea Route</p>	<ul style="list-style-type: none"> • Recently, India and Russia engaged in discussions to expand maritime cooperation and explored the prospects of new transport corridors during talks held on the sidelines of the Eastern Economic Forum in Vladivostok. • The discussions involved exploring new transport corridors such as the Northern Sea Route (NSR) and the Eastern Maritime Corridor (EMC) linking Vladivostok and Chennai. • India and Russia also reached an agreement to provide training to Indian seafarers in Polar and Arctic waters at the Russian Maritime Training Institute in Vladivostok, which boasts advanced simulators. • Both nations discussed the development of the NSR and recognized its potential for enhancing connectivity and trade. • The potential cargo base for alternate routes includes coking coal, oil, LNG, and fertilizers, primarily available in sufficient quantities in the Far East.
<p>Hai Kun</p>	<ul style="list-style-type: none"> • Taiwan’s President launched the island’s first domestically made submarine for testing on September 28, 2023, a major breakthrough in shipbuilding and design. • The submarine, named Hai Kun, is the first to be designed and built by Taiwan. The submarine will only be handed over to the military after passing both its harbour and ocean-faring tests. • Taiwan began building its own submarines after Beijing prevented it from purchasing such craft from abroad through economic and diplomatic threats. • Taiwan’s launch of its first domestically made submarine is a significant development in its defence strategy and a sign of its growing self-reliance.

STATE WATCH

Karnataka

Karnataka State Gig Workers Insurance Scheme

- In a significant move aimed at safeguarding the interests and well-being of platform-based gig workers, the Karnataka government unveiled a groundbreaking initiative that offers a comprehensive insurance package worth Rs 4 lakh, including Rs 2 lakh in life insurance and an additional Rs 2 lakh in accidental insurance.
- Its primary objective is to provide essential social security to workers under labour laws, a long-awaited measure that has been warmly received by gig workers throughout the state.
- The newly introduced initiative is set to be implemented with immediate effect through the Karnataka State Unorganised Workers' Social Security Board.
- One of the most commendable aspects of this scheme is that the entire financial burden will be borne by the government, ensuring that gig workers can access much-needed protection without worrying about financial constraints.

Maharashtra

Maharashtra Leads in Attracting FDI During 1st Quarter of FY 2023-24

- In the first quarter of 2023-24, Maharashtra has emerged as the front-runner in attracting Foreign Direct Investment (FDI).
- The State secured the top position by attracting FDI amounting to Rs 36,634 crore.
- This noteworthy achievement places Maharashtra ahead of other prominent states like Delhi, Karnataka, and Telangana, whose cumulative FDI values trail behind.

Pandharpur Temples Act of 1973

- Recently, the Maharashtra government told the Bombay High Court that the Vitthal and Rukmini temples in Solapur are open to people of all faiths.
- The Pandharpur Temples Act was instituted in 1973 and abolished all hereditary rights and privileges of priests for the governance and administration of the temples of Lord Vitthal and Rukmini in Pandharpur.
- It also enabled the government to control its administration and management of funds.

Chhatrapati Sambhajinagar and Dharashiv

- Recently, the Maharashtra government issued an official notification regarding the renaming of Aurangabad and Osmanabad districts to Chhatrapati Sambhajinagar and Dharashiv, respectively.
- Aurangabad, a historic city in Maharashtra, derived its name from the Mughal emperor Aurangzeb.
- Similarly, Osmanabad was named after a 20th-century ruler of the princely state of Hyderabad.
- The decision to rename 'Aurangabad' as 'Sambhajinagar' carries historical and cultural significance. Chhatrapati Sambhaji, the eldest son of the renowned warrior king Chhatrapati Shivaji Maharaj, was the second ruler of the Maratha state established by his father. His execution on Aurangzeb's orders in 1689 remains a significant chapter in Maratha history.

Kerala

Truenat Test

- Recently, the Indian Council for Medical Research (ICMR) granted approval for the use of the Truenat test to diagnose Nipah virus (NiV) in Kerala.
- This development is significant as hospitals equipped with Biosafety Level 2 (BSL 2) laboratories can now conduct the test. With the ICMR's approval, more laboratories in the state of Kerala will have the capacity to perform NiV diagnostics using the Truenat test.
- Samples testing positive for NiV through the Truenat method can be further analyzed at designated facilities such as Kozhikode or Thiruvananthapuram Medical College Hospitals or the Institute of Advanced Virology in the capital.

Madhya Pradesh

Mob Lynching Victim Compensation Scheme 2023

- Recently, Madhya Pradesh's cabinet has unveiled a multifaceted plan, including a Rs. 10 lakh compensation scheme for mob lynching victims, addressing recent incidents and the Supreme Court's scrutiny.
- These initiatives encompass compensation for mob lynching victims, housing schemes for homeless families, enhanced honorarium for guest faculty, flood relief packages, and the expansion of public services.
- Under this scheme, families of individuals who fall victim to mob lynching incidents will receive substantial financial support.
- Notably, a compensation of Rs. 10 lakh will be provided to the kin of the deceased.
- Furthermore, there will be provisions for compensations ranging from Rs. 4 to Rs. 6 lakh for the injured in such incidents.

Telangana

Kalyana-Karnataka Liberation Day

- Kalyana-Karnataka Liberation Day, or Hyderabad-Karnataka Liberation Day, is an annual gathering held on September 17th, uniting Karnataka and Telangana to celebrate their shared past and future goals.
- This event commemorates the integration of Hyderabad into India in 1948.
- The historical significance of this day dates back to September 17, 1948, when the formerly Nizam-ruled Hyderabad state became a part of the Indian union, marking a pivotal moment in India's post-independence history.
- In 2022, the Government of Telangana made a decision to broaden the significance of this day by designating it as "Telangana National Integration Day" or "Telangana Jathiya Samaikyatha Vajrotsavam."
- This move demonstrates a commitment to fostering unity and integration among the diverse communities in the state, emphasizing the importance of India's diverse cultural fabric.

India's First Gorilla Glass Factory

- Corning Inc., a multinational technology company based in the United States, is set to establish its Gorilla Glass manufacturing facility in the state of Telangana with an investment of Rs. 934 crore.
- The proposed manufacturing unit will specialize in producing cover glass for leading players in the smartphone market.
- This manufacturing facility holds the potential to be a pivotal force in propelling the smartphone manufacturing ecosystem in Telangana and the wider nation.

Jharkhand

Mukhyamantri Rajya Samajik Suraksha Pension Yojana for Transgender People

- Recently, Jharkhand government has incorporated the transgender community into its universal pension scheme along with the OBC Status to foster inclusivity and enhance social security.
- The eligible beneficiaries will receive Rs. 1,000 each per month as financial aid.
- To benefit from the pension scheme, transgender individuals are required to obtain a certificate from the Deputy Commissioner's office.
- Eligibility criteria include being 18 years of age or older and possessing a valid voter ID card. These measures are put in place to ensure that the support reaches those who genuinely need it.
- The transgender population in Jharkhand has been on the rise, and according to the Department of Women, Child Development, and Social Security (WCDSS), it was estimated to be around 11,900 in 2011.
- Current figures suggest that this population has grown to nearly 14,000 individuals. Recognizing the changing demographic landscape, the government's decision to extend social security measures is not only timely but also imperative.

Punjab

Mission Intensified IndraDhanush 5.0

- Recently, Punjab's Health Minister, Balbir Singh, launched "Mission Intensified IndraDhanush" 5.0 in Mohali, aimed at vaccinating pregnant women and unvaccinated children (0-5 years).
- The mission intends to cover pregnant women who have received partial vaccination or remain unvaccinated.
- Additionally, it seeks to reach out to children aged 0-5 years who may have missed their vaccinations.

AGRICULTURE

An Optional One Can Rely Upon

S. A. Hussain,
Career Care, Kolkata

As an optional subject, Agriculture has become extremely popular in Civil Services Examination, especially for the candidates preparing for the Indian Forest Service (IFoS) Exam. Candidates from streams like Engineering, Geology, Forestry and Botany are preparing for the UPSC Exams with Agriculture as their optional subject both for the IAS and the IFoS. And success rate in IFoS Exam is quite satisfactory. In IAS Exam also, success rate of candidates with Agriculture optional is high (% of candidates per optional).

Its popularity is because of its scoring aspect, scientific approach and also because Agriculture as a subject is helpful in General Studies (being part of Indian Economy and Indian Geography).

It is difficult to conclude about the standards of different optional subjects. However, Agriculture as an optional is a boon especially to those candidates who have done their graduation/ post-graduation in Agriculture. This is because in all the Agricultural Universities in India, the academic session is based on the Trimester or Semester system. Both these systems cater to the need of civil services aspirants with Agriculture as optional. For Indian Forest Services (IFoS) Exam, in Botany and Agriculture- 40% syllabus is common. Thus it is a very scoring and rewarding combination for the IFoS Exam. From this angle, Agriculture as optional is becoming very popular. In this write-up, my suggestions are relevant for both the Exams- IAS as well as IFoS.

There are two papers (syllabus with the suggested books for both the papers are mentioned at the end of this write-up). Both papers contain questions in which 5-6 questions have to be attempted. Sometimes, in each paper, question No. 1 is compulsory and the compulsory question may be from the entire syllabus.

All the questions are conventional type. Sometimes, each question consists of 3-4 parts or 3-4 subquestions. As the word limits are prescribed for the questions, it is important to stick to it while writing answers. One should integrate maximum information in compact and organized way within the word limit. Answer should be scientific, systematic, to the point with impressive language so as to fetch good marks. It is always advisable to pay attention to factual and analytical approach while answering the questions. Wherever special emphasis on clarity of views is required, data, table, diagram, graph or sketch should be given. Better to avoid long sentences and long paragraphs.

During the course of my guidance and teaching, I have observed that the candidates are usually obsessed with the idea of consulting a large number of books. The main factors/ consideration behind this obsession is their false notion that the larger the number of books they would read or consult, greater would be the information or facts they would come across. There should be a limitation to the number of books to be referred or consulted. Our strategy should be to first go through the minimum number of books with chapter specifications and later if time is available, consult other books. It is better to consult one book ten times than to consult ten books one time.

APPROACH AND STRATEGY FOR STUDY

Now, we will discuss the approach for preparation of Agriculture optional in brief. We all know that the most important aspect of preparation is "STRATEGY". 'HARD WORK' is of course very important but with proper direction. This proper direction is 'STRATEGY'. In Civil Services Examination, if you waste your time or energy on studying something which is not much important for scoring, you become a hurdle for yourself. You must put your time and energy in a ratio that gives you maximum marginal productivity.

Choosing good books is very important. So, the first step is the choice of books. Books of Indian authors are always preferable because they incorporate Indian examples with valuable information and their applied part in the Indian context. Most books are oriented towards University Examination.

The pattern of the questions of Civil Services Exam/ Indian Forest Services Exam (Mains) is totally different from the University Examinations. So, analysis of previous years' questions helps a lot. One should make notes based on these questions. Based on the pattern, we can divide the entire syllabus into three parts:

1. Very important;
2. Important; and
3. Least important.

Writing answers helps a lot in boosting your confidence. For this, you can join a test series programme.

A list of suggested books is given below.

Expert Advice

Paper-I	
Syllabus/Chapter	Recommended Books
Ecology, pollution, GIS	Manuals of Plant Ecology by <i>K.C. Mishra</i>
Factors determining agro-geographical distribution	Agricultural Problems of India by <i>C.B. Memoria</i>
Cropping pattern, inter-cropping, food production:	(a) Crop Production & Management by <i>Y.B. Mochan</i> (b) Cropping Systems by <i>Maity & Chatterjee</i>
Packages of practices of different crops	(a) Crop Production by <i>C. P. Thakur</i> (b) Principles of Crop Husbandry in India by <i>Aiyer</i> (c) Handbook of Agriculture by <i>ICAR Publication</i>
Weeds control	(a) Crop Production by <i>C. P. Thakur</i> (b) Handbook of Agriculture by <i>ICAR Publication</i>
Soil erosion and its management	(a) Nature and Properties of Soil by <i>Buckman & Brady</i> (b) Fundamental of Soil by <i>B. N. Sahay</i>
Manures, nutrients	Manures & Fertilizers by <i>K. S. Yawalkar</i>
Dryland agriculture, rainfed agriculture	Physiology of Dryland Farming by <i>Gupta</i>
Water use efficiency, water pollution	Principles of Irrigation by <i>Michael</i>
Farm management types, systems of farming	(a) Farm Management by <i>Johl & Kapoor</i> (b) Elements of Farm Management by <i>Sharma & Sharma</i> . Indian Economy by <i>Dutta & Sundaram</i> Rural Economics by <i>I. C. Dhingra</i>
Agricultural extension, SHG approach for rural development	(a) Extension Education by <i>O. P. Dhama</i> (b) Rural Economics by <i>I. C. Dhingra</i>

Paper-II	
Cell structure, sex-linked character	(a) Cell Biology by <i>Powar</i> (b) Genetics by <i>Birbala Rastogi</i>
History of plant breeding, composites of crops	(a) Principles of plant breeding by <i>Allard</i> (b) Principles of Plant Breeding by <i>B. D. Singh</i>
Seed technology in India	Seed Technology by <i>R. L. Agarwala</i>
Principles of plant physiology, carbohydrates, proteins, water stress	Plant Physiology by <i>Srivastava</i>
Major fruits' production and their economic importance	Physiology of Fruit Production by <i>Singh</i>
Classification of pests, modes of action	(a) Diseases of Crop Plants in India by <i>Rangaswamy & Mahadewan</i> (b) Hand book of Agriculture by <i>ICAR Publication</i>
Food Production, food security	(a) Indian Economy by <i>Datta & Sundaram</i> (b) Indian Economy by <i>Mishra & Puri</i>

CSE Prelims Special GS Roundup-2

Dear Readers,

In this November issue of Civil Services Chronicle, we have come up with the **CSE Prelims GS Roundup-2**. The **CSE Prelims GS Roundup Series** was started from the last issue of the magazine (**CSE Prelims GS Roundup-1, October 2023**). The content published in this section will cater to the needs of the UPSC/State PCS Civil Services Prelims exams.

A careful analysis of the past 10-15 years Prelims questions reveals that the questions (especially in UPSC CSE) are never repeated but the topics are repeated. Questions are framed from different dimensions of the topics.

Accordingly, the **CSE Prelims GS Roundup-2** covers **32 most important topics** from which **questions are frequently asked** in the Civil Services Preliminary Examination.

The GS Roundup Series will cover the entire syllabus of the Prelims exam, comprising Indian History, Art & Culture, Geography, Indian Polity & Governance, Economy, General Science & Science & Technology, and Ecology & Environment.

We hope you find the content helpful in your preparation for the Civil Services Examinations.

We encourage you to send us your feedback at cscenglish@chronicleindia.in

Happy reading!

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Indian History, Art and Culture

Vedic Civilization: Social, Economic & Political Systems

Early Vedic Social System

- **Family Life:** The Vedic family was joint and patriarchal, i.e. organized under the headship of the eldest person (grihapati) in the family. The head of the family looked after the religious duties, financial duties and hospitality of the guests.
- **Education:** The learning was conducted at teachers' houses and funded by rulers. The doors were open for both the boys and girls; a separate woman-teacher was also provided in the case of latter. In such gurukulas, the students received vocational education, as also of learning in moral values. There are no evidences of writing; however, the knowledge was preserved through oral tradition.
- **The Social Division or Varna System:** The earliest evidence of social division is mentioned in the purush-sukta (of 10th mandala) of Rig-Veda. In this sukta, we witness a clear division of society into four Varnas, viz. Brahman, Kshatriya, Vaishya, and Shudra.
- **Diet:** As the early Vedic people followed pastoralism, naturally, their main diet comprised various milk products and meat. They also used various items in their diets, viz. oilseed, barley, wheat, vegetables, fruits etc. Generally, the non-vegetarian feasts were organized at the time of ceremonies, festivals, marriages etc.
- **Houses:** Originally, the early Vedic people were pastoralists and always travelled in search of fresh pasture. Most were living in wattle-and-daub huts. Some affluent families lived in wooden houses.
- **Dress:** Vedic people wore clothes made from cotton, wool and animal hide. The cloths were called as 'nivi', 'vasam', 'adhivasam', 'drapi' etc. They coloured with natural colours. They wore upper (a long piece of cloth: uparane) and lower garments (dhoti) and a headgear (of soft cloth).
- **Ornaments:** Generally, both women and men were fond of various types of ornaments. The ornaments made of bronze, ivory, gold and jewels. Women wore bangles, earrings, rings, armllet, etc.
- **Entertainment:** Generally, Vedic people enjoyed themselves with race and fights of animals. They also went for hunting for amusement. They were fond of music. We find reference of various musical instruments like string-instruments and percussion instruments made of animal hide. They also enjoyed community-dance.

Early Vedic Economic System

- **Pastoralism:** The early Vedic people were of pastoral community. For milk-products, wools, leather, agricul-

ture, drawing chariots, the animals were raised. They resorted to cattle Pastoralism; hence, 'cattle' was the wealth for them.

- **Agriculture:** The main crops consisted of wheat and barely, whereas, the cultivation of rice/paddy was in early stage. However, it should be noted that the cultivation at this stage was only of subsistence-type.
- **Craft-Industry:** These comprised mainly carpentry i.e. making agricultural equipments, chariots, bullock carts, boats, homes, toys etc.
- **Weaving:** Vedic Aryans used to wear colourful clothes of cotton and wool. The colours were added by dyers. Such colourful clothes were then embroidered by women, known as 'Peshaskari'. The weaver was called as 'Vaya'; whereas the Charakha was called as 'Tasar'.
- **Smithy:** The smithy was related to copper only. Iron was not entirely unknown (krishnaayas), however, the metallurgy was not known. Goldsmith was called as 'Hiranyakar'. He used to make jewellery of gold, both for human and horses.
- **Cobbler:** Cobbler used to make water bags, shoes, bridle, whips, thread for bows etc.
- **Trade:** The trade was on the levels of exchanges only and that was of 'barter-system'. Generally, clothes and leathers were items of such exchanges. It was undertaken with the help of bullock-carts, pack-bulls; sometimes boats were also used. The people involved in trade were called as 'Pani'.

Early Vedic Political System

- **Units of Vedic Tribe:** Each tribe consisted of group of families. A family was called as 'Kula'. The group of such 'Kulas' was called as 'Visha'. That means the Visha comprised all the people of that specific tribe; which was called as 'Jana'. The larger form was the 'Rashtra'.
- **Emergence of King and Polity**
 - ✓ Tribes (or the 'Janas') were always busy in fighting with each other.
 - ✓ The wars/fights were related to the issue of 'cattle-theft' and 'defend from cattle-theft'; in total called as 'Gavishti'.
 - ✓ The warrior people of Vedic tribes used to undertake the responsibility to fight such wars. In due course of time, these warrior people got related with each other through matrimonial alliances. Thus, a separate class of 'warriors' was emerged from within the Vedic tribe.
 - ✓ The regular fights/wars created the need of one brave leader who could lead the warriors in the battlefield. Hence, a need of 'king' was felt by the Vedic people.
 - ✓ Hence, the 'Sabha' (or the assembly of people-visha) decided to select a king. The king was selected from the lineage of warriors.

Indian History, Art and Culture

- **Ministry:** For the smooth governance, the king was assisted with ministers or mantris. The Purohit (priest) was the main minister of the king. He was appointed to give political and religious advices to the king.
- **Sabha and Samiti:** The Visha (or the people), to govern their grama, used to gather at some specific place in their grama. The place or the gathering was called as 'Sabha' and 'Samiti'. The 'Samiti' was an assembly of all the people (visha) of that tribe.
- **Taxation System:** There was no specific taxation system; instead the government (and their salary) was based upon the gifts given voluntarily by the visha/people. The raids were another source of income. Such income came in the form of cattle, food-grains, gold, horses, etc.
- **Judiciary:** The King used to solve judicial matters with the help of his ministry and Samiti. The source of law was Vedic literature, tradition and experiences of elder people. The crimes included theft, banditry, forgery, cattle-lifting, indebtedness and the criminals were subjected to severe punishments.
- **Military System:** There are references of military comprising infantry, cavalry and war chariots; however, they were not of permanent nature and not properly systemized. The weapons comprised mainly the bow and arrow, swords, mace, spears, swingball, etc.
- **Dress:** People of this period wore coloured clothes of cotton, wool, silk, etc. The soft cotton cloth was weaved in gold and provided with beautiful embroidery. The dressing style remained similar to previous period.
- **Dietary Habits:** The dietary habits of early Vedic period continued during this period. However, the proportion of non-vegetarian food increased in this period. This was the period of large and time-consuming Vedic sacrifices. Hence, considerable amount of animals sacrificed were made during such occasions.
- **Entertainment:** Similar to the previous period, the Vedic people amused themselves with various kinds of items and activities. This was the period of big rulers and time consuming festivals. Race, hunting, gambling became part of every gathering of people.

Later Vedic Economic System

- **Agriculture:** During this period, agricultural practices were developed. All the stages were undertaken thoroughly and systematically like, ploughing, seeding, cutting, thrashing etc. The farmers started ploughing lands with the help of 6 to 24 bulls. Rivers and streams were bunded and water was preserved for the entire year.
- **Craft/Industry:** The earlier crafts were continued. In addition more specialization can be seen in this stage. However, the nature of such crafts was mostly of cottage type. The weaving and dying industry, along with leather works, flourished.
- **Trade:** The growth of agricultural produce and consequent development of crafts led to progress in trade. Now, the Vedic Aryans controlled extensive region than earlier. Hence, with regions, the markets were also expanded. Now, the exchange of previous period developed into proper trade in goods, like, goats, leather, clothes, ornaments, etc.

Later Vedic Political System

- **Emergence of King as an Autocrat:** The wars also became wider in scope and dangerous in nature. Hence, the need of king became very crucial in the changed scenario. The king drew benefits of such situation. He started performing large-scale sacrifices like Rajasuya, Ashvamedha and making heavy donations to priests.
 - **Ministry:** The king was assisted by advisors in the administration. The early ministers were remained there but some new ministers were included like Mahishi, Senani (commander), Sangrahit (treasurer), Bhagdut (tax-collector), Gramini (Village-headman), Suta (Chariot driver).
 - **Sabha and Samiti:** As the king was divine, naturally, the power became hereditary and remained in his family. Thus, no need remained for him to get sanctions from Sabha-Samiti. Now there was no selection per se. Hence, the importance of Sabha and Samiti dwindled.
- **Patriarchal Family System:** Similar to previous period, the later Vedic people followed patriarchal family system. The eldest of male members of the family, perceived as the head of family, was called as 'grihapati'. He held total control over the family.
 - **Concept of Purushartha:** It was expected from every man to follow four main duties in his life, viz. Dharma, Artha, Kama and Moksha.
 - ✓ **Dharma:** He was expected to follow religious rules/regulations, prescribed by Vedic canons. Besides, he should perform sacrifices, regularly in his life. Thus by following 'Dharma' he could become free from the 'Rina' (loan) of Gods.
 - ✓ **Artha:** He was also expected to follow some kind of occupation and earn money in his life.
 - ✓ **Kama:** He was expected to marry and generated progeny. It is perceived that by the marriage and giving birth to children, he could become free from the 'Rina' of his parents.
 - ✓ **Moksha:** After 'kama' and 'artha', he was also expected to strive for Moksha or salvation. While performing his duties, he should always keep his eye on his ultimate goal, i.e. freedom from illusions of mundane life and uniting himself with the Gods.
 - **Concept of Varna:** Due to the cultural cohesion, the spiritual authority codified the social discrimination and came up with a clear-cut division of the society, termed as Varna.

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Ashokan Rock Edicts

James Prinsep, a British antiquary and colonial administrator was the first person to decipher Ashoka's edicts. These Ashoka's inscriptions are the first tangible evidence of Buddhism.

- They were kept in public places and along trade routes so that the maximum number of people would read them. More than religious discourses, they talk about the moral duties of the people, how to conduct life, Ashoka's desire to be a good and benevolent ruler, and about Ashoka's work towards this end.

Major Rocks Edicts

- There are 14 major rock edicts. They are significantly detailed and extensive.
- Major rock edicts deal with Ashoka's vision of peaceful existence by following the Dhamma.
- All of the major rock edicts of Ashoka were inscribed on large rocks except for the Kandahar edict.
- These Ashokan edicts were located on the frontiers of the territory controlled by the emperor Ashoka.

Ashokan Major Rocks Edicts	♦ Details and Features Inscribed
Major Rock Edict I	♦ Prohibits animal slaughter ♦ Bans festive gatherings
Major Rock Edict II	♦ Mentions the South Indian kingdoms such as Cholas, Pandya, Satyaputras and Keralaputras ♦ Deals with social welfare measures
Major Rock Edict III	♦ Liberty to Brahmanas ♦ Every five years Yukatas, Pradesikas along Rajukas visit all the areas of the kingdom to spread Dhamma
Major Rock Edict IV	♦ Preference of Dhammaghosa (Sound of peace) over Berighosa (Sound of wandrums) ♦ Impact of Dhamma on society
Major Rock Edict V	♦ Humane treatment of slaves by their masters ♦ Mentions about the appointment of Dhamma Mahamatras.
Major Rock Edict VI	♦ Deals with the welfare measures ♦ King's wish to know about the condition of the people
Major Rock Edict VII	♦ Tolerance towards all religions and sects
Major Rock Edict VIII	♦ Mentions about Ashoka's visit to Bodhi Gaya and Bodhi tree ♦ Maintaining contact with rural people via Dharmayatras.
Major Rock Edict IX	♦ Stresses on the moral conduct of people ♦ Avoiding expensive ceremonies
Major Rock Edict X	♦ Condemns the desire for fame and glory

Major Rock Edict XI	♦ Elaborate explanation of Dhamma
Major Rock Edict XII	♦ Appeal for developing tolerance towards all religious sects
Major Rock Edict XIII	♦ Explains about Kalinga war and conquest through Dhamma
Major Rock Edict XIV	♦ Deals with the purpose of engraving inscriptions in various parts of the country

Minor Rock Edicts

- Ashoka minor rock edicts predate the major rock edicts.
- These edicts deal with the personal history of Ashoka and his summary of his Dhamma.
- Minor rock edicts are found on 15 rocks across the country and in Afghanistan.
- The texts of these inscriptions are short and the technical quality of engraving these inscriptions are also poor.
- Ashoka uses his name only in four of these places namely:
 - ✓ Maski (Karnataka)
 - ✓ Brahmagiri (Karnataka)
 - ✓ Gujjara (MP)
 - ✓ Nettur (AP).

Mughal Era Land Revenue System

The Land Revenue System

- Land revenue formed the main source of the income of the Mughal state. It was called Maal. It was not a tax on land but was a tax on crops. It was realised as surplus produce from the peasants by the state.
- Abul Fazl in Ain-i-Akbari justifies the imposition of tax by the state saying that no moral limits could be set for the demand of rulers from his subjects. The subject ought to be thankful even if he were made to part with all his possessions by the protector of his life and honour.
- Abul Fazl further writes that just sovereigns do not exact more than what is required for their purposes which of course they would themselves determine.
- There were two stages of revenue assessments during the cultivation season. The first assessment was done at the Kharif harvest and second assessment was done on Rabi harvest.
- First of all the assessment (tashkhis) was estimated (jama) and then actual collection (hasil) was obtained.
- After assessment a written document was prepared by the state officials called patta which contained the revenue demand. At the same time the assessee gave, in acknowledgement, his qabuliyat (acceptance) of the obligation upon him.

Important Terminologies and Concepts

- **Zabt System:** The Zabt system was the central revenue collection system introduced by the Mughals. It aimed to fix and standardize land revenue assessments.

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- **Khalisa Land:** Khalisa lands were areas directly controlled by the Mughal emperor. The revenue from these lands went directly to the imperial treasury.
- **Mansabdar:** A Mansabdar was a Mughal noble or officer who held a mansab, a rank or position in the imperial administration. Mansabdars were often granted revenue assignments in lieu of a salary.
- **Zamindar:** A Zamindar was a local revenue collector responsible for collecting land revenue from the peasants in a specific region. Zamindars were intermediaries between the state and the peasants.
- **Jamabandi:** Jamabandi was an annual revenue record that detailed the land revenue assessment, landholdings, crops sown, and revenue payments for a particular year.
- **Musha:** Musha was a practice where multiple individuals jointly owned and cultivated a piece of land. The revenue for such land was assessed collectively.
- **Batai System:** Under the Batai system, the revenue was collected in the form of a share of the agricultural produce. It was often applied to certain types of crops, like sugarcane.
- **Todarmal Bandobast:** Raja Todar Mal, a finance minister in Akbar's court, introduced a revenue settlement system known as the Todarmal Bandobast. It aimed to re-assess land revenue based on land productivity.
- **Qanungo:** A Qanungo was a revenue official responsible for land measurement and maintaining land records. They played a crucial role in determining land revenue assessments.
- **Dastur-ul-Amal:** Dastur-ul-Amal was a revenue manual that outlined the administrative procedures and rules for revenue collection. It provided guidelines for revenue officials.
- **Nankar:** Nankar was a form of cess or revenue collected by the state on certain categories of land, especially orchards or gardens.
- **Mawasala:** Mawasala was the term used for the traditional land revenue settlement system before the introduction of the Zabt system. It was based on customary practices.
- **Jama:** Jama referred to the total revenue collected from a region or district. It included land revenue, cesses, and other charges.
- **Agricultural Seasons:** The revenue assessments often took into account the Kharif (summer) and Rabi (winter) agricultural seasons, as crop patterns and yields varied.
- **Dewani and Diwani Lands:** Dewani lands referred to revenue assignments granted by the Mughal emperor for the support of nobles and officials. Diwani lands were those from which the emperor derived direct revenue.
- **Jagir System:** The Jagir system involved granting revenue assignments or land rights to nobles, military officers, or officials in exchange for their services, often including military service.
- **Kankut:** Kankut was a land record that provided details about the land's measurement, classification, and revenue assessment. It played a role in determining land revenue.
- **Ain-i-Akbari:** The Ain-i-Akbari was a comprehensive document compiled by Abu'l-Fazl ibn Mubarak during Akbar's reign. It included details about land revenue assessments, administration, and governance.
- **Sawar and Sowar-Khas:** Sawar referred to cavalrymen, while Sowar-Khas were special cavalrymen who received revenue assignments as part of their military service.
- **Dakhil-kharaj:** Dakhil-kharaj was an additional land tax levied on non-Muslims in some regions. It was a source of revenue for the state.
- **Inam Lands:** Inam lands were land grants given as rewards or for charitable purposes. These lands were exempt from revenue payments.
- **Malikana:** Malikana was a form of rent or allowance paid to revenue collectors (zamindars) for their services.
- **Mahals:** Mahals were revenue districts or subdivisions within a region. Each mahal had its revenue assessment and administration.
- **Khudkasht:** Khudkasht referred to the land that was directly cultivated by the state or the emperor. The revenue from these lands went to the state treasury.
- **Chakbandi:** Chakbandi was a land consolidation and reorganization process aimed at improving land revenue collection efficiency. It involved redistributing land holdings to eliminate scattered plots.
- **Amil:** An Amil was a revenue officer responsible for overseeing revenue collection in a specific district or region. They played a critical role in the revenue administration.
- **Kist:** Kist was a periodic installment of revenue payment. Peasants often paid their land revenue in installments, typically twice a year, in accordance with the agricultural seasons.
- **Bishisht-i-dar:** Bishisht-i-dar lands were premium lands that enjoyed certain privileges, such as reduced revenue assessments, often granted to nobles or favoured officials.
- **Muzaraa:** Muzaraa was a system where the state and the peasant shared the produce equally. It was often applied to specific crops or situations.
- **Taluqdar:** Taluqdars were landowners who held substantial land holdings and often collected revenue from the peasants in their taluq (estate).
- **Jama Bandobast:** Jama Bandobast was the revenue settlement or assessment conducted periodically, often every ten years, to determine land revenue dues.
- **Mukasa:** Mukasa was a document that recorded changes in land ownership, transfers, or revenue assessments. It played a role in maintaining land records.

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Development of Art & Literature during Mughal Period

Development of Art

Babur (1526-1530)

- Babur's reign marked the beginning of the Mughal dynasty in India.
- While his reign was relatively brief, it set the stage for later Mughal artistic endeavours.
- Babur was known for his love of gardens, which later became an integral part of Mughal landscape design.
- **Important Artistic Examples**
 - ✓ **Sultan Ibrahim Lodhi's Garden in Agra (Bagh-e Sultan Ibrahim):** Before ascending to the Mughal throne, Babur captured Agra from Sultan Ibrahim Lodhi. He is believed to have laid out a garden near the Yamuna River in Agra during his brief rule in the area.
 - ✓ **Gardens in Sambhal and Badaun:** Babur established gardens in Sambhal and Badaun, both in northern India. These gardens were known for their Persian-style layout and the introduction of new plant species to the region.
 - ✓ **Garden in Dholpur:** Babur is credited with creating a garden in Dholpur, Rajasthan. The garden was characterized by the Mughal tradition of carefully planned and landscaped green spaces.

Humayun (1530-1556)

- Humayun's reign saw the introduction of Persian artistic influences.
- He brought Persian artists and calligraphers to his court, contributing to the development of Mughal miniature painting.
- The construction of Humayun's Tomb in Delhi began during his reign, representing early Mughal architectural style.
- **Important Artistic Examples**
 - ✓ **Din Panah (Refuge of the Faith) Paintings:** Humayun's reign in India saw the continued development of Persian and Central Asian artistic traditions. The art produced during this time often combined Persian and Indian influences.
 - ✓ **Illuminated Manuscripts:** Humayun and his court were patrons of illuminated manuscripts, including religious texts and poetry. These manuscripts featured intricate calligraphy and decorative elements.

Akbar (1556-1605)

- Akbar's rule is often considered the golden era of Mughal art and culture.
- He established the Mughal painting studio, which became a hub for miniature painting.
- Akbar's patronage of art led to the synthesis of Indian and Persian artistic styles.

- The creation of illustrated manuscripts like the Akbarnama marked a high point in Mughal miniature painting.
- Architectural marvels like Fatehpur Sikri and the Agra Fort were built during his reign, showcasing Mughal architectural excellence.
- Akbar's engagement with various religions and cultures influenced the development of eclectic and inclusive Mughal art.
- **Important Artistic Examples**
 - ✓ **Portraits of Akbar:** Akbar's reign marked the development of portraiture in Mughal art. Portraits of Akbar, often depicted in various poses, reflect the emperor's keen interest in capturing his likeness.
 - ✓ **Ibadat Khana Frescoes:** The Ibadat Khana (House of Worship) at Fatehpur Sikri, a city built by Akbar, features frescoes that depict various religious debates and discussions. These frescoes showcase Akbar's interest in religious pluralism and his attempts to foster religious tolerance.
 - ✓ **Din-i Ilahi Artifacts:** Akbar founded the Din-i Ilahi, a syncretic religion that sought to unify elements of various faiths. While the religion did not gain widespread acceptance, artefacts related to it, including paintings and manuscripts, reflect Akbar's spiritual interests.
 - ✓ **Deccan Paintings:** Akbar's reign saw the absorption of Deccani art styles into Mughal painting. Paintings from this period, often featuring vibrant colours and intricate details, reflect the influence of the Deccan region.

Jahangir (1605-1627)

- Jahangir's reign continued to witness the flourishing of Mughal miniature painting.
- His interest in flora and fauna led to the creation of the "Jahangirnama," a richly illustrated memoir.
- Portraiture became prominent during his rule, with detailed depictions of individuals.
- Jahangir's fascination with the European style of painting and the arrival of European artists contributed to new artistic influences.
- **Important Artistic Examples**
 - ✓ **Jahangir Preferring a Sufi Shaikh to Kings (Jahangirnama):** This miniature painting is part of the Jahangirnama, an illustrated memoir created during Jahangir's reign. It depicts Jahangir seated on his throne, showing respect to a Sufi Shaikh, illustrating his interest in spiritual matters.
 - ✓ **Jahangir with a Falcon (Jahangirnama):** Another remarkable painting from the Jahangirnama shows Jahangir holding a falcon on his wrist. This painting reflects Jahangir's passion for falconry, a popular pastime during his time.

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- ✓ **Piscean Zodiac Sign Painting:** Jahangir was known for his fascination with astrology and the zodiac signs. He commissioned a series of paintings depicting the zodiac signs, with the Piscean Zodiac Sign painting being one of the most notable.
- ✓ **Lal Qila (Red Fort) Paintings:** Jahangir was involved in the artistic embellishment of the Lal Qila (Red Fort) in Agra. The fort features intricate frescoes and paintings, some of which depict courtly scenes and royal activities.

Shah Jahan (1628-1658)

- Shah Jahan is most famous for commissioning the construction of the Taj Mahal, a masterpiece of Mughal architecture.
- He continued the tradition of Mughal miniature painting, although with a focus on refined details.
- The Red Fort in Delhi and the Jama Masjid in Delhi are other architectural marvels from his reign.
- His patronage of calligraphy and jewellery artistry further enriched Mughal artistic traditions.
- **Important Artistic Examples**
 - ✓ **Taj Mahal:** The most famous and enduring art piece associated with Shah Jahan is the Taj Mahal in Agra. It is a white marble mausoleum built in memory of his beloved wife, Mumtaz Mahal, who passed away during childbirth.
 - ✓ **Peacock Throne:** Shah Jahan commissioned the famous Peacock Throne, a royal throne of exceptional opulence. It was known for its elaborate design, including peacock-shaped armrests and precious gems and jewels embedded in its structure.
 - ✓ **Shah Jahan Album (Padshahnama):** Shah Jahan was an avid patron of the arts, and he commissioned several illustrated manuscripts during his reign. It contains exquisite miniature paintings that depict scenes from Shah Jahan's life and reign.
 - ✓ **Shah Jahan's Portrait:** His own portrait, painted during his rule, is an important example of Mughal portraiture.
 - ✓ **Jama Masjid in Delhi:** While primarily an architectural masterpiece, the Jama Masjid in Delhi, commissioned by Shah Jahan, features intricate calligraphy and decorative elements. The mosque is an important work of art in its own right.

Aurangzeb (1658-1707)

- Aurangzeb's reign marked a shift towards a more conservative and austere approach.
- He was less interested in art and focused on expanding the empire.
- Art and architecture saw a relative decline during his rule compared to his predecessors.
- **Important Artistic Examples**
 - ✓ **Illustrated Manuscripts:** Aurangzeb was known for his interest in Islamic calligraphy, and his reign saw the creation of illuminated manuscripts featuring Quranic verses and religious texts.

- ✓ **Frescoes in Badshahi Mosque:** The Badshahi Mosque in Lahore, built during Aurangzeb's reign, features beautiful frescoes on its interior walls. These frescoes include geometric designs and Quranic inscriptions, reflecting the emperor's commitment to Islamic art.

Development of Literature

Babur (1526-1530)

- **Baburnama:** Babur's memoir, known as the "Baburnama," is one of the earliest and most important works of Mughal literature. It offers a vivid account of his life, conquests, and the early days of the Mughal Empire.

Humayun (1530-1556)

- **"Humayunama":** Humayun's Persian biography, known as the "Humayunama," was commissioned by his sister, Gulbadan Begum. It provides valuable insights into his life and reign.

Akbar (1556-1605)

- **"Ain-i-Akbari" by Abu'l-Fazl ibn Mubarak:** This monumental work is an administrative and cultural survey of Akbar's reign. It covers topics such as governance, culture, and religion in the Mughal Empire.
- **"Tutinama" by Zahir al-Din:** This Persian manuscript is a collection of tales and poetry and is believed to have been created during Akbar's reign.
- **"Badauni," "Gulzar-e-Rahim," and "Prem Bagh":** Rahim Khan-i-Khana was a prolific poet and composer in both Persian and Braj Bhasha (a regional Indian language). His works include ghazals, dohas, and poetry on various themes, including love and morality.
- **"Sur Sagar":** Surdas, a prominent Bhakti poet, composed the "Sur Sagar," a collection of devotional songs and verses dedicated to Lord Krishna. His works are highly regarded in the Bhakti tradition.
- **"Raasik Priya" and "Sujan Charit":** Bhushan, a Braj Bhasha poet, composed a variety of literary works, including plays, poems, and narratives. His works are known for their vibrant portrayal of life and emotions.

Jahangir (1605-1627)

- **"Tuzuk-e-Jahangiri" by Jahangir:** Jahangir's own memoir, the "Tuzuk-e-Jahangiri," provides a detailed account of his life, reign, and his love for the arts.
- **"Iqbalnama" by Muhammad Saleh Kamboh:** This Persian manuscript contains the history of Jahangir's reign and his reign's chronicles.

Shah Jahan (1628-1658)

- **"Badshahnama" by Abdul Hamid Lahori:** This is an official history of Shah Jahan's reign, covering the architectural achievements and cultural aspects of his era.
- **"Padshahnama" by Abdul Hamid Lahori:** Another work by Lahori, it provides a detailed account of Shah Jahan's reign, including the construction of the Taj Mahal.

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Aurangzeb (1658-1707)

- “**Alamgirnama**” by **Mirza Muhammad Kazim**: This work is a historical chronicle of Aurangzeb’s reign and his military campaigns.
- “**Makhzan-ul-Asrar**” and “**Khushalnama**”: Khushal Khan Khattak, a Pashto poet, wrote extensively in his native language. His works cover themes of valour, honour, and Pashtun culture.

British Proposals and Missions during National Movement

August Offer

- To secure the Support of Indian Leadership, on 8 August, 1940, Viceroy of India Lord Linlithgow made a statement of behalf of British parliament which came to be known as the ‘August Offer’, which:
- Proposed Dominion status as the objective for India;
 - ✓ Promised that a Constituent Assembly would be set up after the war to determine India’s constitutional future with a caveat: no future system of government would be instituted that did not have the support of minority political and religious groups; and
 - ✓ Proposed to expand the Viceroy’s council to include a certain number of Indian political representatives, as a token towards Indian Self-Government.
- The Offer was significant as this was the first time that the British acknowledged the demand for Constituent Assembly.
- In July 1941, the viceroy’s executive council was enlarged to give the Indians a majority of 8 out of 12 for the first time, but the British remained in charge of defence, finance and home.
- Also, a National Defence Council was set up with purely advisory functions.

Cripps Mission

- The British Government sent a mission to India in 1942 under Stafford Cripps, the Lord Privy Seal, to achieve Hindu-Muslim consensus on some constitutional arrangement and to convince the Indians to postpone their struggle till the end of the Second World War.
- The main proposals of the mission were:
 - ✓ During the war, the British would retain their hold on India. Once the war finished, India would be granted dominion status with complete external and internal autonomy. It would, however, be associated with the United Kingdom and other Dominions by a common allegiance to the Crown.
 - ✓ At the end of the war, a Constituent Assembly would be set up with the power to frame the future constitution of India. The members of the assembly were to be elected based on proportional representation by the provincial assemblies. The Princely States would also be given representation in the Constituent Assembly.

- ✓ The provinces not agreeing to the new Constitution would have the right to keep themselves out of the proposed Union. Such provinces would also be entitled to create their own separate Union. The British government would also invite them to join the commonwealth.
- ✓ During the war, an interim government comprising of different parties of India would be constituted. However, defence and external affairs would be the sole responsibility of the viceroy.
- Congress rejected it, because there was no plan for immediate transfer of power and absence of any real share in defence; the governor-general’s supremacy had been retained. Whereas Muslim League rejected proposals denied the Muslims the right to self-determination and the creation of Pakistan.
- Congress Launched “Quit India Movement” in the response of Cripps Mission.

Wavell Plan and Simla Conference 1945

- Wavell started discussion with Indian leaders in June, 1945. The major proposals offered were:
 - ✓ With the exception of the Governor-General and the Commander-in-Chief, all members of the executive council were to be Indians.
 - ✓ Caste Hindus and Muslims were to have equal representation.
 - ✓ The reconstructed council was to function as an interim government within the framework of the 1935 Act (i.e. not responsible to the Central Assembly).
 - ✓ The governor-general was to exercise his veto on the advice of ministers.
 - ✓ Representatives of different parties were to submit a joint list to the viceroy for nominations to the executive council. If a joint list was not possible, then separate lists were to be submitted.
 - ✓ Possibilities were to be kept open for negotiations on a new Constitution once the war was finally won.
- Congress objected the communal line-up of parties whereas Muslim League wanted all Muslim members to be leagues nominees, because it feared that since the aims of other minorities depressed classes, Sikhs, Christians, etc.—were the same as those of the Congress, this arrangement would reduce the League to a one-third minority.
- The Shimla Conference, held to discuss the plan, failed as Wavell could not break the deadlock over communal representation.

Cabinet Mission Plan 1946

- The Cabinet Mission was a high-powered mission sent to India by the Atlee government in February 1946.
- Three British cabinet members served on the mission (Pethick Lawrence, Secretary of State for India; Stafford Cripps, President of the Board of Trade; and A.V. Alexander, First Lord of the Admiralty) to find ways and means for a negotiated, peaceful transfer of power to India.

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- The plan's recommendations included the following:
 - ✓ There should be a Union of India, embracing both British India and the States which should deal with the following subjects: Foreign Affairs, Defence, and Communications; and should have the powers necessary to raise the finances required for the above subjects.
 - ✓ The Union should have an Executive and a Legislature constituted from British Indian and States' representatives. Any question raising a major communal issue in the Legislature should require for its decision a majority of the representatives present and voting of each of the two major communities as well as a majority of all members present and voting.
 - ✓ All subjects other than the Union subjects and all residuary powers should vest in the Provinces.
 - ✓ The States will retain all subjects and powers other than those ceded to the Union.
 - ✓ Provinces should be free to form groups with Executives and Legislatures, and each group could determine the Provincial subjects to be taken in common.
 - ✓ The Constitutions of the Union and of the groups should contain a provision, whereby any Province could by majority vote of its Legislative Assembly call for a reconsideration of the terms of the Constitution after an initial period of ten years and at ten-yearly intervals thereafter.
 - ✓ Rejection of the demand for a full-fledged Pakistan.
 - ✓ Grouping of existing provincial assemblies into three sections, Section A – Hindu Majority provinces, Section B & C – Muslim majority provinces.
 - ✓ Princely states were no longer to be under paramountcy of the British government. They would be free to enter into an arrangement with successor governments or the British government.
- The Plan was initially accepted by the Muslim League and the Congress Party. However, the Congress Party soon rejected the 'grouping' part of the plan specifically, as it was concerned about and opposed the grouping of provinces on the basis of religion. The Muslim League was not open to changing any part of the Plan and so any consensus between the Congress and the Muslim League broke down.

Mountbatten Plan and Indian Independence Act

- Mountbatten Plan was the final plan for Indian independence. The Indian Independence Act, 1947 gave it legal shape.
- In May, 1947 Mountbatten came with the "Dickie Bird Plan" which proposed provinces should be declared independent successor state and then be allowed to choose whether to join Constituent Assembly or not. But, it was dropped due to opposition from Congress leadership.
- The Indian Independence Act was passed by British Parliament in 1947 having following features;

- The Act provided for the creation of two independent Dominions, namely, India and Pakistan from 15th August, 1947.
- Two Boundary Commissions were set up to determine the boundaries of the newly created dominions. The territories of Pakistan were to include the areas covered by the Provinces of East Bengal, West Bengal, West Punjab, Sind, Baluchistan and the North West Frontier Province.
- Both the Dominions were to have Governor Generals appointed by His Majesty to represent him for the purposes of the Governments of the Dominions.
- The Act also provided for one common General if both the Dominions so agreed.
- The Legislature of each Dominion was empowered to frame the laws for the governance of the Dominion.
- The Constituent Assembly of each Dominion were to exercise all powers exercised by the Legislature of the Dominion.
- It proclaimed the lapse of British paramountcy over the Indian princely states and treaty relations with tribal areas from August 15, 1947. It granted freedom to the Indian princely states either to join the Dominion of India or Dominion of Pakistan or to remain independent.
- Due to prevailing communal situations in the country, Congress was convinced that formation of Pakistan is unavoidable and accepted the partition of India.

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CSE Prelims GS Roundup-2

Important British Proposals and Missions - Other Important Developments				
Name of Committee/ Commission	Year	Governor-General/ Viceroy	Subjects of the Committee/ Commission	Recommendations
Charles Wood Despatch	1854	Lord Dalhousie	Education	<ul style="list-style-type: none"> According to the recommendations, it was declared that the aim of the Government's policy was the promotion of western education. In his despatch, he emphasized on the education of art, science, philosophy and literature of Europe.
Hunter Commission	1882	Lord Ripon	Education	<ul style="list-style-type: none"> There should be two types of education arrangements at the high school level, in which emphasis should be given on giving a vocational and business education and other such literary education should be given, which will help in admission to the university. Arrangement for emphasis on the importance of education at the primary level and education in local language and useful subjects. Private efforts should be welcomed in the field of education, but primary education should be given without him. Control of education at the primary level should be handed over to the district and city boards.
Raleigh Commission	1902	Lord Curzon	Education	<ul style="list-style-type: none"> Universities were empowered to appoint their own staff including the teaching staff. The number of Fellows of a University was limited within 50 to 100. The number of elected Fellows was fixed at 20 for the Bombay, Madras and Calcutta Universities and 15 for others. The Governor-General was now empowered to decide a University's territorial limits and also affiliation between the universities and colleges. After the implementation of the provisions of the University Act, though the number of colleges declined, yet the number of students increased considerably.
Sadler Commission	1917	Lord Chelmsford	Education	<ul style="list-style-type: none"> All the teaching resources in the city of Calcutta should be organized so that the Calcutta University may become entirely a teaching university. A separate teaching and residential university should be established at Dacca. There was a need for a coordinating agency. Hence an inter-University Board should be set up. Honours courses should be instituted and they should be distinctly different from the Pass courses. Full time and salaried Vice-Chancellor should be appointed to be the administrative head of the university. The Senate and the syndicate should be replaced by the Court and the Executive Council respectively. Universities should be freed from excessive official control. Government interference in the academic matters of universities should stop.
Hartog Commission	1929	Lord Irwin	Education	<ul style="list-style-type: none"> The Hartog committee highlighted the problem of wastage and stagnation in education at the primary level. It recommended the policy of consolidation instead of multiplication of schools. The duration of the primary course was to be fixed to four years. It recommended for the improvements in quality, pay, and service conditions of teachers and relating the syllabus and teaching methods to the local environment of villages and locality The Hartog committee on education recommended for the promotion of technical and commercial education by universities to control the problem of unemployment.

Indian History, Art and Culture

Sargent Plan	1944	Lord Wavell	Education	<ul style="list-style-type: none"> ◆ Pre-primary education for children between 3 to 6 years of age. Universal, compulsory and free primary or basic education for all children between the ages 6—11 (junior basic) and 11—14 (senior basic). ◆ High school education for six years for selected children between the years 11—17. ◆ Degree course for three years beginning after the higher secondary examination for selected students ◆ Technical, commercial, agricultural and art education for full time and part-time students; girl schools are to teach domestic science.
Strachey Commission	1880	Lord Lytton	Famine	<ul style="list-style-type: none"> ◆ The commission recommended state interference in food trade in the event of famine. India witnessed another major famine in 1896-97.
Lyall Commission	1886	Lord d Elgin-II	Famine	<ul style="list-style-type: none"> ◆ The commission recommended the development of irrigation facilities.
MacDonnell Commission	1900	Lord Curzon	Famine	<ul style="list-style-type: none"> ◆ The Commission recommended that the official machinery dealing with a famine must work around the year so that the scarcity of food grains could be controlled well in time.
Mansfield Commission	1886	Lord Dufferin	Currency	<ul style="list-style-type: none"> ◆ The committee made recommendations related to the Indian currency system, which included issues like currency denominations, exchange rates, and currency management.
Fowler Commission	1898	Lord Elgin-II	Currency	<ul style="list-style-type: none"> ◆ The committee recommended that the official Indian rupee be based on the gold standard and the official exchange rate of the rupee be established at 15 rupees per British sovereign, or 1 shilling and 4 pence per rupee. The British Imperial Government accepted the recommendations of the commission in July 1899.
Fraser Commission	1902	Lord Curzon	Police	<ul style="list-style-type: none"> ◆ It recommended the appointment of Indians at the officer level in the police.
Hunter Committee Report	1919	Lord Chelmsford	Punjab Disturbances	<ul style="list-style-type: none"> ◆ The report reprimanded Colonel Reginald Dyer for a 'mistaken concept of duty' in connection with the Jallianwala Bagh massacre, which occurred on April 13, 1919.
Muddiman Committee	1924	Lord Reading	To examine the working of Diarchy of the Montague-Chelmsford reforms	<ul style="list-style-type: none"> ◆ The committee criticized the dyarchy and suggested small adjustments to the responsibilities of non-official Indians.
Butler Commission	1927	Lord Irwin	Indian States	<ul style="list-style-type: none"> ◆ The committee recommended that British paramountcy should be preserved to safeguard the interests of the Princely States.
Simon Commission	1927	Lord Irwin	To investigate the progress of the governance scheme and suggest new steps for reform	<ul style="list-style-type: none"> ◆ It recommended the abolition of dyarchy, the establishment of representative government in the provinces, the Governor's discretion in administrative power and internal security, and the Government of India's complete control over the High Court.
Sapru Commission	1935	Lord Linlithgow	Unemployment	<ul style="list-style-type: none"> ◆ It recommended measures related to employment generation, vocational training, and other strategies to address unemployment.
Hilton young Commission	1935	Lord Linlithgow	Currency	<ul style="list-style-type: none"> ◆ Led to the establishment of RBI.
Flood Commission	1940	Lord Linlithgow	Tenancy in Bengal	<ul style="list-style-type: none"> ◆ The Commission recommended the abolition of the Permanent Settlement, a historical land revenue system that had been in place since the British colonial era.

Geography

Primary, Secondary & Tertiary Wind Systems

Primary Wind Systems

Trade Winds

- Trade winds refer to the prevailing winds that blow from the subtropical high-pressure areas towards the equatorial low-pressure belt.
- These winds are typically found in a belt between approximately 30°N and 30°S latitude across the Earth's surface.
- In the Northern Hemisphere, they are known as the northeastern trades, while in the Southern Hemisphere, they are referred to as the southeastern trades.
- The deviation of these winds from their expected north-south direction is a result of the Coriolis force and Farrel's law.
- Initially, trade winds are stable and descending in regions of their origin, which is the subtropical high-pressure belt. However, as they approach the equator, they become warmer and more humid as they pick up moisture during their journey.
- **Examples**
 - ✓ **Northeast Trade Winds:** These are the trade winds that blow from the northeast towards the equator in the Northern Hemisphere. They are especially prominent in regions like the Caribbean Sea.
 - ✓ **Southeast Trade Winds:** These trade winds blow from the southeast towards the equator in the Southern Hemisphere. They affect regions like the South Pacific and the Indian Ocean.

Westerlies

- Westerlies are winds that originate from the subtropical high-pressure belts and move towards the subpolar low-pressure belts.
- In the Northern Hemisphere, these winds blow from the southwest to the northeast, while in the Southern Hemisphere, they flow from the northwest to the southeast.
- The westerlies in the Southern Hemisphere are notably stronger and more consistent due to the vast expanses of ocean, whereas those in the Northern Hemisphere tend to be more erratic because of the uneven distribution of landmasses.
- The prime zone for well-developed westerlies falls roughly between 40° and 65°S latitudes, often referred to as the Roaring Forties, Furious Fifties, and Shrieking Sixties, which are challenging regions for sailors.

Polar Easterlies

- The Polar easterlies are characterized by their cold and dry nature, and they consistently blow from the northeast to the southwest in the Northern Hemisphere and from the southeast to the northwest in the Southern Hemisphere.
- These winds originate from the regions of polar high-pressure and move towards the sub-polar lows.

Secondary Wind Systems

- These winds change their direction with change in season.
- Monsoons are the best example of large-scale modification of the planetary wind system.
- Other examples of periodic winds include land and sea breeze, mountain and valley breeze, cyclones and anti-cyclones, and air masses.

Monsoon

- Traditionally, monsoons were described as large-scale land and sea breezes. They were thought to be a massive convectational circulation system.
- Monsoons are characterized by the seasonal reversal of wind direction.
- In summer, the trade winds from the southern hemisphere are drawn northward due to the apparent northward movement of the sun and the presence of a low-pressure core in the north-western region of the Indian subcontinent.
- As these winds cross the equator, they are deflected to the right due to the Coriolis force.
- These winds arrive at the Asian landmass as south-west monsoons. After traveling a great distance over vast oceans, particularly the Indian Ocean, they become moisture-laden. By the time they reach the southwestern coast of India, they are saturated with moisture, leading to heavy rainfall in India and neighbouring regions.
- The monsoon winds traverse regions including India, Pakistan, Bangladesh, Myanmar, Sri Lanka, the Arabian Sea, the Bay of Bengal, southeastern Asia, Northern Australia, and China.

Land and Sea Breeze

- Land and sea respond differently to heat absorption and transfer. During the daytime, land heats up more quickly and becomes warmer than the sea.
- Consequently, over the land, warm air rises, creating a low-pressure area, while the sea remains relatively cooler, resulting in higher atmospheric pressure over the sea.
- This difference in pressure between the sea and land creates a pressure gradient, causing the wind to blow from the sea towards the land, known as the sea breeze.
- During the night, the situation reverses. The land loses heat rapidly and becomes cooler than the sea. This leads to a pressure gradient from the land towards the sea, resulting in the land breeze.

Valley and Mountain Breeze

- In areas with mountains, a specific wind pattern emerges. During the daytime, the mountain slopes warm up, causing the air to rise up the slopes. To replace this rising air, valley winds blow up the valleys.
- This uphill-moving wind is referred to as the valley breeze.
- At night, the mountain slopes cool down, causing the denser air to descend into the valleys. This descending mountain wind is known as the mountain breeze.
- In regions with high plateaus and ice fields, cold air drains into the valleys, creating a type of cold wind known as katabatic wind. This wind is also associated with leeward sides of mountain ranges.

Tertiary Wind Systems

- Local differences of temperature and pressure produce local winds.
- Such winds are local in extent and are confined to the lowest levels of the troposphere. Some examples of local winds are discussed below.

Loo

- They are considered harmful wind.
- In the northern plains of India and Pakistan, a scorching and arid wind, known as “Loo,” occasionally blows from the west during May and June, typically in the afternoons.
- This wind can reach temperatures between 45°C and 50°C and poses a risk of causing sunstroke.

Foehn or Fohn

- They are considered beneficial wind.
- Foehn is a noteworthy warm wind that occurs in the Alps. It is a robust, gusty, dry, and warm wind originating on the leeward side of a mountain range.
- Since the windward side of the mountains captures the moisture from the incoming wind in the form of orographic precipitation, the descending air on the leeward side is dry and warm, resembling a katabatic wind.
- Foehn wind temperatures typically range from 15°C to 20°C. This wind aids in animal grazing by melting snow and contributes to the ripening of grapes.

Chinook

- They are considered beneficial wind.
- In the USA and Canada, there are Foehn-like winds that descend from the western slopes of the Rockies and are referred to as Chinook winds.
- These winds benefit ranchers east of the Rockies by preventing snow accumulation in the grasslands for much of the winter.

Mistral

- They are considered harmful wind.
- The Mistral is one of the local names given to winds that blow from the Alps over France toward the Mediterranean Sea.

- These winds are very cold and dry, often reaching high speeds. Mistral winds can bring blizzards to southern France.

Sirocco

- They are considered harmful wind.
- Sirocco is a Mediterranean wind that originates from the Sahara and can reach hurricane speeds in North Africa and Southern Europe.
- It results from warm, dry tropical air moving northward due to eastward-moving low-pressure systems across the Mediterranean Sea, originating in the Arabian or Sahara deserts.
- This wind causes dry, dusty conditions along the northern coast of Africa, storms in the Mediterranean Sea, and cool, wet weather in Europe.

Major Minerals of India & the World

Mineral Reserves of India

Distribution of Minerals in India

- **The North-Eastern Plateau Region:** This belt covers Chotanagpur (Jharkhand), Odisha Plateau, West Bengal and parts of Chhattisgarh. It has variety of minerals viz. iron ore coal, manganese, bauxite, mica.
- **The South-Western Plateau Region:** This belt extends over Karnataka, Goa and contiguous Tamil Nadu uplands and Kerala. This belt is rich in ferrous metals and bauxite. It also contains high grade iron ore, manganese and limestone. This belt lacks in coal deposits except Neyveli lignite. This belt does not have as diversified mineral deposits as the north-eastern belt. Kerala has deposits of monazite and thorium, bauxite clay. Goa has iron ore deposits.
- **The North-Western Region:** This belt extends along Aravali in Rajasthan and part of Gujarat and minerals are associated with Dharwar system of rocks. Copper and zinc are the major minerals. Rajasthan is rich in building stones i.e. sandstone, granite, marble. Gypsum and Fuller’s earth deposits are also extensive. Dolomite and limestone provide raw materials for cement industry. Gujarat is known for its petroleum deposits.
- **The Himalayan Belt:** The Himalayan belt is another mineral belt where copper, lead, zinc, cobalt and tungsten are known to occur. They occur on both the eastern and western parts.

Major Minerals of India

Iron Ore

- Haematite and magnetite are the most important iron ores in India. About 79% haematite ore deposits are found in the Eastern Sector (Assam, Bihar, Chhattisgarh, Jharkhand, Odisha & Uttar Pradesh) while about 93% magnetite ore deposits occur in Southern Sector (Andhra Pradesh, Goa, Karnataka, Kerala & Tamil Nadu).

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- Karnataka alone contributes 72% of magnetite deposit in India.
- Of these, haematite is considered to be superior because of its higher grade.
- As per National Mineral Inventory (NMI) database, the total reserves/resources of haematite as on 1.4.2020 have been estimated at 24,057 million tonnes.
- Major reserves/resources of haematite are located in Odisha (9,409 million tonnes or 39%), Jharkhand (4,710 million tonnes or 20%), Chhattisgarh (4,592 million tonnes or 19%), Karnataka (2,835 million tonnes or 12%) and Goa (1,197 million tonnes or 5%).
- The balance 5% resources of haematite are spread in Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan, Telangana and Uttar Pradesh.

Manganese

- The total reserves/resources of manganese ore in the country as on 1.04.2020 has been placed at 503.62 million tonnes as per NMI database.
- Statewise, Odisha tops the total reserves/ resources with 34% share followed by Karnataka (24%), Madhya Pradesh (12%), Maharashtra (12%) & Goa (7%), Andhra Pradesh (6%) and Jharkhand (3%). Rajasthan, Gujarat, Telangana and West Bengal together shared the remaining 2% resources.
- Major mines in Odisha are located in the central part of the iron ore belt of India, particularly in Bonai, Kendujhar, Sundergarh, Koraput, Kalahandi and Bolangir.
- Karnataka is another major producer and here the mines are located in Dharwar, Ballari, Belagavi, North Canara, Chikmagalur, Shivamogga, Chitradurga and Tumakuru.
- Maharashtra is also an important producer of manganese, which is mined in Nagpur, Bhandara and Ratnagiri districts. The disadvantage to these mines is that they are located far from steel plants.
- The manganese belt of Madhya Pradesh extends in a belt in Balaghat-Chhindwara-Nimar-Mandla and Jabua districts.
- Telangana, Goa, and Jharkhand are other minor producers of manganese.

Bauxite

- Reserves/ resources of bauxite in the country as on 1.4.2020, as per NMI database, have been placed at 4958 million tonnes.
- Among states, Odisha alone accounts for 41% of country's resources of bauxite followed by Chhattisgarh 20%, Andhra Pradesh (12%), Gujarat (8%), Jharkhand (6%), Maharashtra (5%) and Madhya Pradesh (4%).
- Odisha happens to be the largest producer of Bauxite. Kalahandi and Sambalpur are the leading producers. The other two areas which have been increasing their production are Bolangir and Koraput.

- The patlands of Lohardaga in Jharkhand have rich deposits.
- Bhavnagar and Jamnagar in Gujarat have the major deposits. Chhattisgarh has bauxite deposits in Amarkantak plateau while KatniJabalpur area and Balaghat in M.P. have important deposits of bauxite. Kolaba, Thane, Ratnagiri, Satara, Pune and Kolhapur in Maharashtra are important producers.

Copper

- Madhya Pradesh is the leading producer state of copper concentrates accounting for more than half of the production, followed by Rajasthan and Jharkhand.
- The copper deposits mainly occur in Singhbhum district in Jharkhand, Balaghat district in Madhya Pradesh and Jhunjhunu and Alwar districts in Rajasthan.
- Minor producers of copper are Agnigundala in Guntur District (Andhra Pradesh), Chitradurg and Hasan districts (Karnataka) and South Arcot district (Tamil Nadu).

Mica

- Andhra Pradesh leads the production of Mica followed by Rajasthan and Odisha.
- In Jharkhand, high quality mica is obtained in a belt extending over a distance of about 150 km, in length and about 22 km, in width in lower Hazaribagh plateau.
- In Andhra Pradesh, Nellore district produces the best quality mica. In Rajasthan, mica belt extends for about 320 kms from Jaipur to Bhilwara and around Udaipur.
- Mica deposits also occur in Mysuru and Hasan districts of Karnataka, Coimbatore, Tiruchirapalli, Madurai and Kanniyakumari in Tamil Nadu, Alleppey in Kerala, Ratnagiri in Maharashtra, Purulia and Bankura in West Bengal.

Coal

- The total reported production (provisional) of coal in 2020-21 was 716.083 million tonnes decreased by about 2% in comparison to that of the previous year.
- Chhattisgarh is the largest coal producing state with a share of about 22.12% followed by Odisha and Madhya Pradesh having contribution of 21.53% and 18.51% respectively in the national output.
- About 80% of the coal deposits in India is of bituminous type and is of non-coking grade. The most important Gondwana coal fields of India are located in Damodar Valley. They lie in Jharkhand-Bengal coal belt and the important coal fields in this region are Raniganj, Jharia, Bokaro, Giridih, Karanpura.

Reserves & Production of Minerals in the World

Coal

- **Reserves:** The world's proven coal reserves are estimated to be over 1.16 trillion metric tons, with major reserves in the United States, Russia, Australia, China, and India.

- **Production:** In recent years, global coal production has been around 8 billion metric tons annually, with China, India, and the United States being the largest producers.

Iron Ore

- **Reserves:** Major iron ore reserves are found in Australia, Brazil, Russia, China, and India. Australia has the largest reserves.
- **Production:** In 2022, the total volume of usable iron ore produced worldwide amounted to an estimated 2.6 billion metric tons. Australia produced 880 million metric tons of usable iron ore.

Copper

- **Reserves:** Chile, Australia, Peru, Mexico, and the United States have significant copper reserves.
- **Production:** The total worldwide copper mine production amounted to an estimated 22 million metric tons in 2022 with Chile, China, and Peru as the top producers.

Bauxite

- **Reserves:** Guinea, Australia, Brazil, and Vietnam are the largest holders of bauxite reserves.
- **Production:** In 2022, the global production of bauxite amounted to approximately 380 million metric tons with Australia (producing around 100 MMT), China and Guinea being the major producers.

Gold

- **Reserves:** South Africa, Russia, Australia, and the United States have substantial gold reserves.
- **Production:** In 2022, worldwide gold production stood at 3,100 metric tons with China (around 10% of total production), Russia, and Australia among the leading producers.

Silver

- **Reserves:** Mexico, Peru, China, and Australia have significant silver reserves.
- **Production:** The estimated global production of silver in 2022 amounted to 26,000 metric tons with Mexico (around 6300 metric tons), Peru, and China as the top producers.

Zinc

- **Reserves:** China, Australia, and Peru are among the leading holders of zinc reserves.
- **Production:** In 2022, China's zinc mines produced approximately 4.2 million metric tons of zinc. Accordingly, China is the world's largest producer of the base metal zinc. Peru and Australia were the second and third-largest zinc mining countries in the world in 2022, respectively.

Nickel

- **Reserves:** Major nickel reserves are found in Indonesia, the Philippines, Russia, and Australia.
- **Production:** In 2022, an estimated total of 3.3 million metric tons of nickel was produced in mines worldwide with Indonesia, the Philippines, and Russia leading the way.

Phosphate Rock

- **Reserves:** Morocco and Western Sahara have the world's largest phosphate rock reserves.
- **Production:** Global production of phosphate rock is approximately 220 million metric tons, with China dominating worldwide production of phosphate rock in 2022, with production amounting to 85 million metric tons.

Mountain Ranges & Passes in India

Important Mountain Ranges

The Himalayas

- The Himalayan Mountain Range, known as the 'abode of snow' in Sanskrit, stands as India's highest mountain range.
- It is the youngest range in India, formed by the collision of two tectonic plates.
- This magnificent range boasts nearly every highest peak globally, with over 100 summits surpassing an average height of 7200 meters.
- Among them, Mount Everest reigns supreme at 8848 meters and is situated within Nepal's Himalayan Range.
- Beyond its towering peaks, the Himalayas serve as the wellspring of several major river systems, including the Ganges, Brahmaputra, and Indus.
- Furthermore, they play a crucial role in regulating northern India's climate by acting as a barrier that keeps cold air from entering the Indian mainland during the winter season.

Karakoram and Pir Panjal Range

- To the north and south of the Himalayan Range lie the Karakoram and Pir Panjal ranges, respectively.
- A substantial portion of the Karakoram Range is embroiled in a territorial dispute between India and Pakistan, with both nations laying claim to this region.
- The Karakoram Range, stretching over 500 kilometers, boasts some of the world's loftiest peaks, including K2, the second-highest mountain globally, towering at 8,611 meters.
- With the exception of the polar regions, the Karakoram Range houses the most glaciers, notably hosting the world's second and third-largest glaciers, the Siachen Glacier and the Biafo Glacier.
- Sometimes referred to as the 'Lower Himalayas,' this range is intersected by significant rivers such as the Ravi, Chenab, and Jhelum.
- Additionally, the Karakoram Range is home to the prominent hill station of Gulmarg.

Eastern Mountain Range or the Purvanchal Range

- The Purvanchal Range can be seen as an eastern extension of the Himalayas in India, as it shares a similar geological history with the Himalayas, although it is not as towering.

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- Also referred to as the Eastern Mountain Range, the Purvanchal Range comprises three distinct sections: the Patkai-Bum Hill, the Garo-Khasi-Jaintia Hills, and the Lushai Hill (also known as Mizo Hill).
- These hills play a pivotal role in making Mawsynram in Meghalaya, located in the Khasi Hill region, the wettest place on Earth.
- The Purvanchal Range spans across the eastern states of India, often collectively referred to as the 'Seven Sisters.'

The Aravalli Range

- The Aravalli Range, not only India's but also the world's oldest mountain range, holds this distinctive title.
- It spans approximately 800 kilometers, with a width varying from 10 kilometers to 100 kilometers, extending across the Indian states of Delhi, Haryana, Rajasthan, and Gujarat.
- The term 'Aravalli' translates to 'line of peaks' in the local language, and the highest point within this range is Guru Shikhar, towering at 1,722 meters above sea level.
- Renowned for its scenic beauty, the Aravalli Range boasts several tourist attractions, including Mount Abu, which stands as Rajasthan's sole hill station.
- Additionally, this range is intersected by rivers like the Banas, Luni, and Sabarmati.

The Western Ghats

- The Western Ghats, also known as the 'Sahyadri Mountains,' form an extensive mountain range stretching for about 1,600 kilometers in southern India, spanning from Gujarat to Kanyakumari.
- This range encompasses various sub-ranges such as the Nilgiris, Anaimalai, and Cardamom mountains.
- Originating in Gujarat, the Tapti River flows parallel to the Arabian Sea, coursing through the states of Maharashtra, Goa, Karnataka, and Tamil Nadu.
- The Western Ghats reach their pinnacle at the Anaimalai Hills in Kerala, boasting a lofty elevation of 2,695 meters.
- Recognized as a UNESCO World Heritage Site, the Western Ghats exhibit remarkable biodiversity.
- Popular tourist destinations within this region include Jog Falls, Ooty, and Bandipur National Park, while significant rivers such as the Godavari, Krishna, and Kaveri traverse these picturesque landscapes.

The Satpura and Vindhyan Range

- In the centre of India, there are two parallel mountain ranges called Satpura and Vindhya.
- These two ranges are the source of rivers like the Narmada and Tapti, with the Satpura range being the longest of the two.
- Many popular tourist destinations, including Panchmarhi Hill Station, Kanha National Park, Amarkantak, and Omkareshwar Temple, are located within these ranges.
- With some extensions into Gujarat, Chattisgarh, and Uttar Pradesh, Madhya Pradesh and Maharashtra make up the

majority of Satpura's and Vindhya's territories.

- The highest points in the Vindhya and Satpura range are Kalumar Peak (752m) and Duphgarh Peak (1350m).

Important Mountain Passes

Leh and Ladakh

- **Umling La:** This pass stands as the highest motorable pass in the country and connects Leh to Pangong Lake.
- **Khardung La:** Ranked as the second-highest motorable pass in India, it links the glaciers of Leh and Siachen. It is closed during the winter months.
- **Aghil Pass:** Situated in the Karakoram Mountains north of Mount Godwin-Austen, this pass connects Ladakh to China's Xinjiang province. It remains closed from November to May due to winter conditions.
- **Chang-La:** Nestled in the Himalayan range, Chang-La is a high mountain pass that serves as a link between Ladakh and Tibet.
- **Lanak La:** Found in the Ladakh region within Aksai Chin, Lanak La connects Ladakh and Lhasa. The Chinese government has constructed a road connecting Xinjiang and Tibet through this pass.
- **Imis La:** Known for its challenging geographical terrain with steep slopes, Imis La pass remains closed during the winter. It serves as a link between Ladakh and Tibet.
- **Bara-La/Bara-Lacha La:** Located on the National Highway in Jammu and Kashmir, this pass connects Manali and Leh.

Uttarakhand

- **Lipu Lekh:** Located in Uttarakhand, Lipu Lekh connects Uttarakhand to Tibet and serves as a crucial border crossing point for trade with China. Pilgrims en route to Manasarovar pass through this route.
- **Trail's Pass:** This pass connects the Pindari and Milam valleys and is situated at the end of the Pindari glacier. It is known for its steep and rocky terrain.
- **Mana Pass Uttarakhand-Tibet:** Nestled in the Greater Himalayas, this pass links Tibet and Uttarakhand. It remains snow-covered for six months during the winter.
- **Muling La:** Located in the Great Himalayas, Muling La stands at an altitude of 5669 meters above sea level. It is situated north of Gangotri and becomes snow-covered during the winter months. This seasonal pass connects Uttarakhand and Tibet.
- **Mangsha Dhura Pass:** This pass connects Uttarakhand and Tibet and is known for its susceptibility to landslides. Pilgrims traveling to Manasarovar use this route, which is situated in the Kuthi Valley.
- **Niti Pass:** Connecting Uttarakhand and Tibet, Niti Pass is also covered in snow during the winter months.
- **Debsa Pass:** Serving as a high mountain pass in Himachal Pradesh, Debsa Pass connects the Spiti and Parvati valleys. It links the districts of Kullu and Spiti and is used as a bypass route for the Pin-Parvati Pass.

- **Rohtang Pass:** Situated in Himachal Pradesh, Rohtang Pass offers excellent road transportation and connects Lahul, Spiti, and Kullu.

Jammu & Kashmir

- **Banihal Pass (Jawahar Tunnel):** Situated in Jammu and Kashmir, Banihal Pass is a renowned pass located in the Pir-Panjal Range. It connects Qazigund with Banihal.
- **Burzail Pass (Srinagar-Kishan Ganga Valley):** This pass connects the Deosai Plains in Ladakh with the Astore Valley in Kashmir.
- **Pir-Panjal Pass:** The Pir Panjal Pass (also called Peer Ki Gali) connects the Kashmir valley with Rajouri and Poonch via the Mughal Road. It is the highest point of the Mughal Road.
- **Pensi La:** Located in the Greater Himalayas, Pensi La connects Kargil with the Kashmir valley.
- **Qara Tagh Pass:** Situated in the Karakoram Mountains, this pass was a branch of the ancient Silk Road.

Northeastern States

- **Dihang Pass:** Located in the Arunachal Pradesh region of the Northeast, Dihang Pass connects Myanmar with Arunachal Pradesh (Mandalay). It allows travel at an elevation of over 4,000 meters.
- **Pangsau Pass:** Situated in the state of Arunachal Pradesh, Pangsau Pass serves as a link between Myanmar and Arunachal Pradesh.
- **Diphu Pass:** Diphu Pass encircles the area of the India-China-Myanmar tripoint border dispute. It also provides an important route into eastern Arunachal Pradesh, adja-

cent to the McMahon Line.

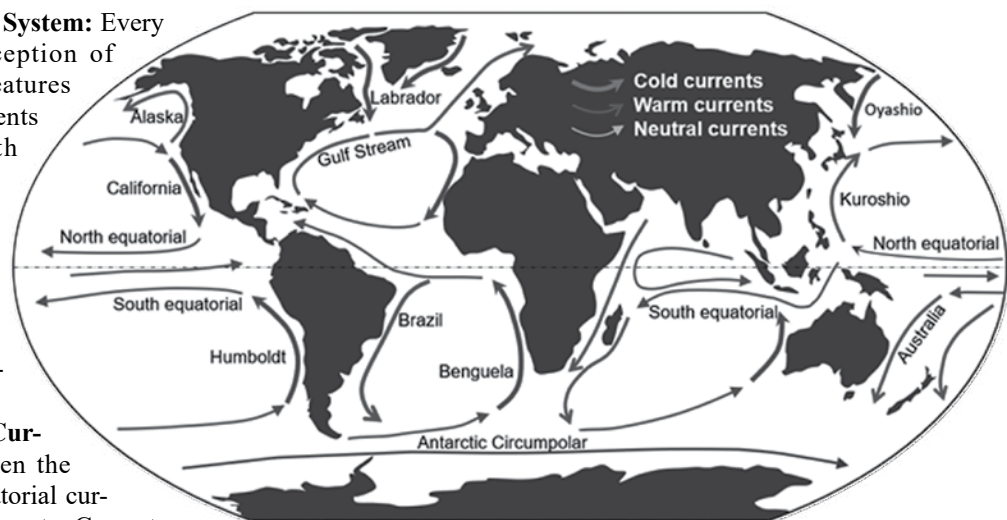
- **Bomdi-La:** Connecting Arunachal Pradesh with Lhasa, the capital city of Tibet, Bomdi-La pass is situated in the eastern region of Bhutan.
- **Nathu La Pass:** Located in the state of Sikkim, Nathu La Pass is a well-known pass on the boundary between India and China. It was reopened in 2006 and is part of a branch of the ancient Silk Route. It serves as one of the trading border crossings between China and India.
- **Jelep La Pass:** This pass traverses the Chumbi valley and links Sikkim with Lhasa, the capital of Tibet.

Southern India

- **Bhor Ghat:** Bhor Ghat, also known as Bor Ghat or Bhore Ghaut, is a mountain pass situated at an elevation of 441 meters above sea level in the Western Ghats of Maharashtra, India. It runs between Palasdari and Khandala by rail and between Khopoli and Khandala by road.
- **Thal Ghat:** Thal Ghat, also referred to as Thul Ghat or Kasara Ghat, is a section of the Western Ghats near the town of Kasara in Maharashtra.
- **Pal Ghat:** Located in the Western Ghats, the Palakkad Gap is a mountain pass that connects the states of Tamil Nadu and Kerala. It sits at an elevation of approximately 140 meters and links Coimbatore in Tamil Nadu with Palakkad in Kerala. This pass is situated between the Nilgiri Hills in the north and the Anaimalai Hills in the south.
- **Shencottah Gap:** Situated in the Western Ghats, the Shencottah Gap connects the Kottayam district in Kerala with the city of Madurai in Tamil Nadu.

Major Ocean Currents

- **Equatorial Currents System:** Every ocean, with the exception of the Arctic Ocean, features distinct oceanic currents known as the North Equatorial Current, South Equatorial Current, and Equatorial Counter Current. Both the North and South equatorial currents exhibit an east-to-west flow pattern.
- **Equatorial Counter Current:** Situated between the North and South equatorial currents, the Equatorial Counter Current flows in the opposite direction, specifically from west to east.
- **Antarctic Circumpolar Current (ACC):** The ACC, alternatively referred to as the West Wind Drift, is a clockwise-flowing ocean current encircling Antarctica, moving from west to east.



- **Humboldt or Peruvian Current:** This low-salinity current encompasses a significant marine ecosystem and plays a vital role as one of the world's primary nutrient conveyors. It flows from the southernmost region of Chile to northern Peru, tracing the western coast of South America.

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- **Kurile or Oyashio Current:** This sub-arctic ocean current follows a counterclockwise trajectory, originating in the Arctic Ocean and progressing southward via the Bering Sea into the western North Pacific Ocean. It carries an abundance of nutrients and converges with the Kuroshio current off the eastern coast of Japan, giving rise to the North Pacific Drift.
- **California Current:** This current is an extension of the Aleutian Current, flowing southward along the west coast of North America. It forms a part of the North Pacific Gyre and is known for strong upwelling.
- **Labrador Current:** Originating from the Arctic Ocean, the Labrador Current flows southward and meets the warm northward-flowing Gulf Stream. This meeting of cold and warm currents creates one of the world's most productive fishing areas.
- **Canary Current:** Extending from the Fram Strait to Cape Farewell, the Canary Current connects the Arctic directly to the North Atlantic. It serves as a significant freshwater drainage point for the Arctic and contributes to the export of sea ice from the region.
- **Benguela Current:** This current is a branch of the West Wind Drift in the Southern Hemisphere and influences the eastern portion of the South Atlantic Ocean Gyre. It is characterized by low salinity and upwelling, making it an excellent fishing zone.
- **Falkland Current:** Also known as the Malvinas Current, the Falkland Current is a branch of the Antarctic Circumpolar Current. It mixes with the warm Brazil Current to form the Brazil-Malvinas Confluence Zone, influencing the region's temperate climate.
- **Northeast Monsoon Current:** Originating from the Indian North Equatorial Current, this current flows southwest and west, crossing the Equator.
- **Somali Current:** Analogous to the Gulf Stream in the Atlantic Ocean, the Somali Current is heavily influenced by monsoons and features significant upwelling zones.
- **Western Australian Current:** Also known as the West Wind Drift, this current is part of the Antarctic Circumpolar Current and exhibits seasonal variability, being strong in summer and weak in winter.
- **Kuroshio Current:** This west boundary current, also known as the Japan Current or Black Current, is the Pacific counterpart of the Gulf Stream. Its relatively warm average surface temperature helps regulate Japan's climate.
- **North Pacific Current:** Formed by the convergence of the Kuroshio and Oyashio currents, the North Pacific Current circulates counterclockwise along the Western North Pacific Ocean.
- **Alaskan Current:** It results from the northward diversion of a segment of the North Pacific Ocean's currents.
- **East Australian Current:** This current transports tropical marine fauna to sub-tropical habitats along the southeast Australian coast.
- **Florida Current:** Flowing around the Florida Peninsula, the Florida Current merges with the Gulf Stream at Cape Hatteras.
- **Gulf Stream:** This western-intensified current is primarily driven by wind stress. It bifurcates into the North Atlantic Drift (impacting Northern Europe) and the Canary Current (recirculating off West Africa).
- **Norwegian Current:** Shaped like a wedge, this current is one of the two primary inflows of Arctic water. It is considered a branch of the North Atlantic Drift and is sometimes seen as an extension of the Gulf Stream.
- **Brazilian Current:** Flowing along the south coast of Brazil to Rio de la Plata, the Brazilian Current joins the cold Falkland Current in the Argentine Sea, creating a temperate marine region.
- **Mozambique Current:** This current flows between Mozambique and the island of Madagascar along the east coast of Africa within the Mozambique Channel.
- **Agulhas Current:** As the largest western boundary ocean current, the Agulhas Current flows southward along the east coast of Africa.
- **Southwest Monsoon Current:** Dominating the Indian Ocean during the southwest monsoon season (June–October), this broad eastward-flowing ocean current extends into the Arabian Sea and Bay of Bengal.

Distribution of Tribes in India

Geographical Distribution

- **Himalayan Region:** The tribes inhabiting this region are the Akas, Daflas, Apatanis, Mishmis, Khamptis, Singphos, Kukis, Khasis, Garos, Lepchas, Bhotias, Tharus, etc.
- **Middle India:** It comprising the states of Bihar, West Bengal, Chhattisgarh, Jharkhand, Odisha and Madhya Pradesh. About 55% of the total tribal population of the country lives in this region. The tribes inhabiting this region are the Juangs, Kharia, Khonds, Bhumijis, Baiga, Muria, Marias, Mundas, Gonds, Santhals, Oraons, etc.
- **Western India:** It comprising the states of Rajasthan, Gujarat, Maharashtra, Goa and the Union Territory of Daman Diu and Dadra and Nagar Haveli. The tribes inhabiting this region are the Barodias, Bharwads, Bhils, Damors, Dhanwars, Dhodias, Girasias, Gonds, Katkaris, Koknas, Kolis, Minas, Siddi, Warlis, etc.
- **Southern India:** It comprising the states of Andhra Pradesh, Tamil Nadu, Karnataka and Kerala. The tribes inhabiting this region are the Chenchus, Irulas, Paniyans, Kurumbas, Kadars, Todas, Badagas, Kotas, etc.
- **The Island Region:** It comprising the islands of Andaman and Nicobar in the Bay of Bengal and Lakshadweep in the Arabian Sea. The tribes inhabiting this region are the Jarwas, Onges, the Great Andamanese, North Sentinelese, etc.

Linguistic Distribution

- **Dravidian**
 - ✓ All the tribes of southern India as well as the Gonds and Oraons of central India speak languages belonging to the Dravidian language family.
 - ✓ The Gondi language spoken by the Gonds who spread from Uttar Pradesh to Andhra Pradesh and from Maharashtra to Odisha belong to this language family.
 - ✓ Other languages belonging to this family is the Kui language which is spoken by the Kandh of Odisha, Kurukh spoken by the Oraons of central India, Tulu language spoken by the Malerus of Karnataka.
 - ✓ The languages spoken by the Todas, Palliyans and Iru-las of Tamil Nadu, the Chenchus of Andhra Pradesh, and Kadars of Kerala also belong to the Dravidian language family.
- **Austro-Asiatic**
 - ✓ The Khasis and the Jaintias of Meghalaya speak in language belonging to the Austric language family.
 - ✓ Apart from them, the Mundas (Bihar), Santhals (West Bengal, Bihar, Odisha and Tripura), Hos (Bihar, Odisha, West Bengal and Madhya Pradesh), Saoras (Andhra Pradesh, West Bengal, Madhya Pradesh, Bihar, Maharashtra and Odisha), Bondos (Odisha) and Korkus (Madhya Pradesh and Maharashtra) speak languages belonging to the Austric or Mundarian language family as it is sometimes called.
- **Tibeto-Chinese**
 - ✓ **Siamese-Burmese:** The Tai group of people including Khamptis and the Phakials speak languages belonging to this family
 - ✓ **Tibeto Burman:**
 1. **Tibeto-Himalayan Branch:** Bhotia, Khampa, Memba, Ladakhi spoken by the Mons; Kagati, Sherpa
 2. **Western sub-group of Prenominalised Himalayan group:** Chamba, Lahauli spoken by Lahaula; Swangli; Kinnauri spoken by the Kinnaura
 3. **Non- Prenominalised Himalayan group:** Rongke spoken by the Lepchas; Toto spoken by the Totos
 4. **Arunachal Branch:** Hrusso spoken by the Akas; Miri spoken by the Miris, Mishmi spoken by the Mishmis, Nocte; Sulung, Tagin
 5. **Assam-Burmese Branch**
 - a) **Bodo group:** Kachari, Dimasa, Garo, Mikir spoken by the Karbis, Koch, Dowyan spoken by the Tiwas, Rabha
 - b) **Naga Group:** Angami, Ao, Chakhesang, Sema, Rengma, Lotha, Konyak, Maram, Phom,
 - c) **Kuki-Chin Group:** Hmar, Koirang, Lamgang, Monsang, Moyon, Paite; Vaiphei; Zou
 - d) **Kachin Group:** Singpho
- **Indo-Aryan**
 - ✓ The tribes of Gujarat, Rajasthan and the Indo-Gangetic Plain speak languages belonging to the Indo-Aryan language family.

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- ✓ Some of the languages belonging to this family include Chattisgarhi, Gujarati; Marathi; Assamese; Odia; Baigana spoken by the Baigas; Banjari spoken by the Banjaras; Bhili spoken by the Bhils; Dardic spoken by the Broqpas; Gujjari spoken by the Gujjars; Lamani spoken by the Lambadis; Baghelkhandi spoken by the Paos.
- ✓ The entire group of Austric language speaking people and 80 percent of the Tibeto-Burman speaking people are identified as tribal communities.

Racial Distribution

- **Proto-Australoid:** The tribes of middle India like the Mundas, the Oraons, the Hos, the Gonds, the Khonds, etc. belong to the Proto-Australoid stock. This group is characterized by dark skin colour, short to medium stature, low forehead, sunken nose, dark complexion and curly hair.
- **Mongoloid:** The tribes of north-eastern India and the Himalayan region belong to this group. They have the typical features of straight hair, flat nose, prominent cheek bones and almond shaped eyes with the epicanthic fold present and yellowish skin colour. They have medium stature, high head and medium nose.
- **Dravidian:** The tribes of South India like the Kadars, the Irulas and the Paniyans.
- **Negrito:** The Great Andamanese, Onges, Sentinelese having frizzy hair have Negrito strains. The Siddis who migrated from the African shores of course belong to the Negrito group.

Distribution based on Economy or Subsistence Pattern

- **Food gatherers and hunters:** Hunting and gathering is the oldest of human subsistence patterns. Examples includes Chenchus, Challa Yanadi, Malaya Pandaram/Hill Pandaram, Cholanaiakan and the Great Andamanese
- **Pastoralists:** Pastoralism usually involves a complex interaction between groups specializing in herding and those specializing in farming on a regional basis. Bakarwals, Bharwads, Broqpas, Gujjars, Todas are pastoralist tribes.
- **Hill cultivation type:** The people inhabiting the hilly areas have adopted shifting cultivation methods. Tribal communities inhabiting the hills of Assam, Meghalaya, Manipur, Tripura, Bihar, Odisha, Madhya Pradesh and Andhra Pradesh including the Adis, Akas, Birjhis, Bondos, Chakmas, Chirus, Jamatias, Juangs, Dimasas, Karbis, Mijis, Mishmis, Aos, etc practice the Hill cultivation methods.
- **Agriculturists:** Agriculture is the most popular economic activity of the tribal population of India. Tribal communities practicing agriculture are the Apatanis, Cheros, Deoris, Miris, Hos, Jaintias, Khambas, Kharias, Khasis, Kolams, Tiwas, Rabhas, Kinnauras, Bhumijis, Santhals, Mundas, Oraons, Kharwas, Baigas, Gonds, Bhils, Minas, Warlis, Koyas; the list is endless.

- **Folk artist:** There are certain tribes in India who are traditional singers, dancers, bards, acrobats and snake-charmers. Some of the tribes belonging to this category are the Nats and Saperas of Uttar Pradesh; the Munduqtas and Kelas of Odisha who are acrobats; the Pardhans and the Ojhas who are bards; the Pamulas and the Kalbelias of Rajasthan who are snake charmers; the Dommaras who are acrobats; the Gorait who are drum beaters; the Mons and the Paradhis who are musicians.

Soils of India: Classification and Characteristics

Soils of India

Alluvial Soil

- **Location:** Found in the Indo-Gangetic plains, deltas, and coastal regions.
- Alluvial soils are fertile and well-drained. They are rich in minerals and organic matter due to the deposition of silt and clay by rivers.
- They are divided into two main categories: the younger Khadar soils, which are deposited by recent floods and are more fertile, and the older Bhangar soils, which are less fertile and located at a higher elevation within the floodplain.
- Alluvial soils are ideal for growing a wide range of crops, including rice, wheat, sugarcane, and jute.
- They are susceptible to waterlogging and require proper drainage systems for agriculture.

Black Soil (Regur Soil)

- **Location:** Mainly found in the Deccan Plateau, especially in parts of Maharashtra, Madhya Pradesh, and Gujarat.
- Black soils are rich in iron, aluminum, and organic matter. They are known for their moisture-retaining capacity and can support a variety of crops.
- They are often referred to as “cotton soils” due to their suitability for cotton cultivation.
- Black soils are often referred to as “self-plowing soils” because they develop wide cracks during dry seasons, making them easier to plow.
- They have excellent moisture retention properties, which allow crops to withstand periods of drought.
- These soils are known for their dark black color, which results from the high organic matter content and iron-rich minerals.

Red Soil

- **Location:** Predominantly found in the southern part of India, including parts of Tamil Nadu, Andhra Pradesh, Karnataka, and Odisha.
- Red soils are red or reddish-brown in colour due to the presence of iron oxide. They are well-drained but tend to be less fertile than alluvial or black soils.

- Red soils are suitable for crops like millets, pulses, and groundnuts.
- Red soils are typically well-drained but can suffer from erosion, especially in hilly regions, due to their coarse texture.
- They are suitable for cultivating a variety of crops, including oilseeds, maize, and pulses.
- These soils may require proper nutrient management and organic matter addition to improve their fertility.
- Mountain and forest soils vary depending on altitude and vegetation cover. At higher altitudes, they are often rich in humus and support alpine vegetation.
- These soils play a crucial role in maintaining forest ecosystems and act as a water source for downstream areas.
- They can vary in fertility and texture based on the decomposition of vegetation and the influence of weathering processes.

Laterite Soil

- **Location:** Common in the western and eastern coastal regions, as well as some hilly areas.
- Laterite soils are rich in iron and aluminum oxides but lack fertility. They are often leached due to heavy rainfall and may become hard when dry.
- These soils are not suitable for agriculture but are used for building materials.
- Laterite soils are often used as a construction material for building houses and roads due to their durability and hardening properties when exposed to air.
- They have a distinctive reddish or orange color and are prone to leaching, which can result in nutrient deficiency.
- Agriculture is challenging on laterite soils, and they are mainly used for non-agricultural purposes.

Arid and Desert Soil

- **Location:** Found in arid and semi-arid regions like Rajasthan and parts of Gujarat.
- Arid and desert soils are low in organic matter and moisture-retaining capacity.
- They are generally not suitable for agriculture without proper irrigation and soil improvement measures.
- Arid and desert soils may have high salt content near the surface, making them unsuitable for most crops without desalination.
- Traditional desert agriculture includes drought-resistant crops like pearl millet and drought-tolerant trees like Acacia.
- These soils have low organic matter and limited water-holding capacity.

Mountain or Forest Soil

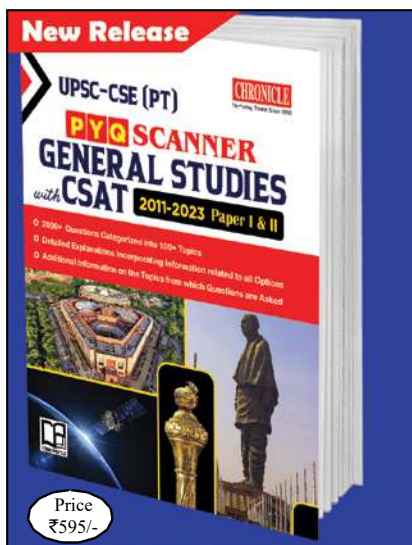
- **Location:** Found in hilly and forested regions of India, such as the Western Ghats and Himalayan foothills.
- These soils vary in composition and fertility. They are often rich in organic matter due to the decomposition of forest vegetation.
- They support diverse flora and fauna.

Peat Soil

- **Location:** Mainly found in the swampy areas of Kerala and the Sundarbans delta.
- Peat soils are characterized by a high content of partially decomposed organic matter (peat).
- They are acidic and have poor drainage. These soils are not suitable for most crops.
- Peat soils are formed in waterlogged conditions where organic matter accumulates over time.
- They are commonly found in swampy areas like the Kerala backwaters and are used for horticulture and wetland preservation.
- Due to their high carbon content, peat soils have gained attention for their role in carbon sequestration and climate change mitigation.

Saline and Alkaline Soil

- **Location:** Found in arid and semi-arid regions and in areas with high groundwater tables.
- Saline soils have a high concentration of salts, making them unsuitable for agriculture. Alkaline soils are characterized by high pH levels. Both types require proper management to make them suitable for cultivation.
- Saline soils can result from the accumulation of salts due to poor drainage and excessive irrigation.
- Alkaline soils have a high pH level, which can affect nutrient availability to plants.
- Reclamation techniques like leaching and gypsum application are used to make these soils suitable for cultivation.



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Indian Polity and Governance

Important Constitutional Bodies

Election Commission of India

- **Constitutional Authority:** The Constitution of India entrusts the Election Commission of India with the authority to direct, supervise, and oversee elections for parliament, state legislatures, the President of India, and the Vice-President of India.
- **Permanent Independent Body:** Established under Article 324 of the Constitution, the Election Commission is a permanent, independent body. This body comprises one Chief Election Commissioner (CEC) and additional members as determined by the President. Appointments to these positions are made by the President.
- **Qualifications and Tenure:** The Constitution does not stipulate specific qualifications for the Commissioners, nor does it restrict retired Commissioners from seeking further government appointments.
- Commissioners hold office for a term of six years or until they reach the age of 65, whichever comes earlier.
- The Chief Election Commissioner can only be removed through a procedure similar to that of a Supreme Court judge. Removal of other Commissioners requires the advice of the Chief Election Commissioner.
- **Powers and Functions:** The Election Commission performs several crucial functions, including delineating the territorial areas of electoral constituencies nationwide in accordance with the Delimitation Commission Act. It is responsible for compiling and periodically updating electoral rolls, registering eligible voters, and acting as a court to resolve disputes regarding the recognition of political parties and the allocation of election symbols to them.

State Election Commission

- **Role of State Election Commission:** The State Election Commission is entrusted with the vital responsibility of overseeing the organization of impartial, free, and equitable elections for local bodies within the state.
- **Article 243K(1):** This clause specifies that the State Election Commission, consisting of a State Election Commissioner appointed by the Governor, shall have the authority for supervising, guiding, and managing the formulation of electoral rolls and the execution of all elections for Panchayats. It also encompasses Municipalities as outlined in Article 243ZA.
- **Article 243K(2):** According to this provision, the duration of service and the process of appointment will be determined by the legislation enacted by the state legislature. However, it is imperative to note that the

State Election Commissioner can only be relieved from their post under the same circumstances and on the same grounds as a High Court Judge.

Finance Commission of India

- **Article 280:** Article 280 of the Constitution mandates the establishment of a Finance Commission every five years by the President of India.
- **Mandate of the Finance Commission:** The Finance Commission is tasked with making recommendations to the President of India on various issues, including:
 - ✓ The equitable distribution of the net proceeds of taxes between the Central government and the states.
 - ✓ Principles governing grants-in-aid provided by the Centre to the states.
 - ✓ Any other matters referred to it by the President.
- **Composition:** The Finance Commission comprises a Chairman and four other members, all appointed by the President. The Constitution grants the Parliament the authority to establish the qualifications for these appointments.
- **Qualifications of Chairman and Members:** As stipulated in the Finance Commission (Miscellaneous Provisions) Act, 1951:
 - ✓ The Chairman should possess significant experience in public affairs.
 - ✓ One of the members should be a judge of a High Court or eligible for such an appointment.
 - ✓ Another member should have specialized knowledge in government finance and accounts.
 - ✓ A third member should have extensive experience in financial matters and administration.
 - ✓ The fourth member should possess special expertise in economics.

State Finance Commission

- **State Finance Commission (SFC):** The State Finance Commission is an establishment instated as a result of the 73rd and 74th Constitutional Amendments. Its primary purpose is to streamline and structure fiscal interactions at the State and sub-State levels within India.
- **Constitutional Mandate:** Article 243I of the Constitution explicitly directs the State Governor to constitute a Finance Commission at regular intervals of five years.
- **Review of Municipalities:** Additionally, as stipulated in Article 243Y of the Constitution, the Finance Commission, established under Article 243I, is tasked with evaluating the financial standing of Municipalities and furnishing recommendations to the Governor in this regard.

National Commission for Scheduled Tribes (NCST)

- **National Commission for Scheduled Castes:** The National Commission for Scheduled Castes is a constitutional body, directly established under Article 338 of the Indian Constitution. This commission underwent a significant transformation with the 89th Constitutional Amendment Act in 2003, which led to the separation of the combined National Commission for Scheduled Castes and Scheduled Tribes into two distinct bodies.
- **Composition:** The Commission comprises a Chairman, a Vice-Chairman, and three other members who collectively oversee its functions and responsibilities.
- **Key Functions**
 - ✓ **Investigation and Monitoring:** The commission is entrusted with the vital task of investigating and monitoring all issues pertaining to the constitutional and legal safeguards provided for the scheduled castes.
 - ✓ **Socio-Economic Development:** It actively participates in and offers advice on the planning processes related to the socio-economic development of the scheduled castes.
 - ✓ **Annual Reporting:** The commission annually compiles and presents a report to the President of India, focusing on the effectiveness and implementation of the safeguards delineated for the scheduled castes within the constitution.
 - ✓ **Anglo-Indian Community:** Additionally, the commission extends its functions to address matters concerning the Anglo-Indian community.

Comptroller and Auditor-General of India (CAG)

- **Constitutional Mandate:** Article 148 of the Indian Constitution states that there shall be a Comptroller and Auditor-General (CAG) of India.
- **Appointment and Tenure:** The CAG is appointed by the President for a term of six years or until reaching the age of 65, whichever comes first. Removal from office can only occur on grounds of proven misbehaviour, following a process similar to that of a Supreme Court judge.
- **Security of Salary and Terms:** The Constitution safeguards the CAG's salary and terms of service, preventing alterations to his disadvantage after appointment. Furthermore, the CAG cannot hold further office under the Government of India or a State Government after his term.
- **Financial Matters:** Expenses, salaries, and allowances for the CAG and members of the office are charged to the Consolidated Fund of India.
- **Duties and Powers:** Article 149 outlines the duties and powers of the Comptroller and Auditor-General of India. Additionally, Article 150 specifies that the accounts of the Union and the States must adhere to the form prescribed by the President, based on the advice of the CAG.
- **Reporting Mechanism:** Article 151 stipulates that the CAG's reports concerning the Union's accounts are submitted to the President, who subsequently presents them

before each House of Parliament (or to the Governor in states).

- **Net Proceeds Calculation:** Article 279 underscores that the Comptroller and Auditor-General of India is responsible for ascertaining and certifying the "net proceeds," with his certificate being final.
- **Functions and Powers of CAG:** The CAG derives its audit mandate from various sources, including the Constitution (Articles 148 to 151), the CAG (Duties, Powers and Conditions of Service) Act, 1971, government instructions, regulations on audit and accounts, and important judgments.

National Commission for Scheduled Tribes (NCST)

- **National Commission for Scheduled Tribes:** The National Commission for Scheduled Tribes is a constitutional body, established directly through the provisions of Article 338-A of the Indian Constitution.
- **Principal Functions**
 - ✓ **Investigation and Oversight:** A fundamental responsibility of this commission involves the investigation and continuous monitoring of all aspects related to the constitutional and legal safeguards designed for the benefit of the scheduled tribes.
 - ✓ **Socio-Economic Development:** In the pursuit of fostering the socio-economic development of the scheduled tribes, the commission actively engages in advising and participating in the planning processes associated with this vital aspect.
 - ✓ **Annual Reporting:** On an annual basis, the commission compiles and presents a comprehensive report to the President of India. This report serves as a mechanism for evaluating and reporting on the efficacy and implementation of the safeguards enshrined within the constitution for the benefit of scheduled tribes.
 - ✓ **Consultative Role:** Both the central and state governments are mandated to engage in consultations with the National Commission for Scheduled Tribes on matters that directly concern or affect the well-being and interests of scheduled tribes.

Union Public Service Commission (UPSC)

- **Mandated Recruitment Agency:** UPSC is a Constitutional Body under Article 315-323 (Part XIV, Chapter II) of the Constitution of India to discharge the duties, functions and obligations assigned under Article 320.
- UPSC is designated as the principal recruiting agency for the Government of India.
- **Composition:** The UPSC comprises a Chairman and other members appointed by the President of India. The Constitution does not specify the exact number of members but requires that at least half of the members should have held office under the Government of India or a State for a minimum of ten years in the past.
- **Tenure and Removal:** The Chairman and members hold office either until the age of 65 or for a period of six years

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from the date of appointment, depending on which comes earlier. Removal by the President can occur for reasons such as insolvency, paid employment outside the office, or being judged of unsound mind. In cases of misbehaviour, a formal inquiry by the Supreme Court is required.

- **Security of Salary and Terms:** The salary and terms of office for the Chairman and members cannot be altered to their disadvantage.
- **Eligibility for Future Appointments:** The Chairman of UPSC is ineligible for any future appointment under the Union or a State, although members can potentially be appointed as Chairman.
- **Functions:**
 - ✓ **Conducting Examinations:** UPSC conducts examinations for All-India Services, Central Services, and Public Services for various Indian states and Union Territories.
 - ✓ **Serving State Interests:** UPSC serves the interests of the State upon the request of the Governor, with the consent of the President of India.
 - ✓ **Consultation:** UPSC is consulted in various matters, including those related to compensation for legal expenses incurred by a civil servant in defending proceedings against them, interim appointments exceeding one year, and personnel management matters, among others.

President of India : Constitutional Provisions & Powers

Constitutional Provisions	
Article	Description
Article 52	There shall be a President of India.
Article 53	The executive power of the Union shall be vested in the President.
Article 54	The President shall be elected by the members of an electoral college consisting of the elected members of both Houses of Parliament; and the elected members of the Legislative Assemblies of the States.
Article 55	Manner of election of President.
Article 56	The President shall hold office for a term of five years.
Article 57	A person who holds, or who has held, office as President shall, subject to the other provisions of this Constitution, be eligible for re-election to that office.
Article 58	Qualifications for election to the office of the President - <ul style="list-style-type: none"> ♦ Be a citizen of India. ♦ Be at least 35 years old. ♦ Meet the qualifications to be a member of the Lok Sabha. ♦ Not hold any office of profit under the Union or state government or any local or other public authority. Exceptions are made for the sitting President or Vice-President, the Governor of any state, and the ministers of the Union or any state.

Article 59	Conditions of the office of the President.
Article 60	Oath to the office of President. Before assuming office, the President must take an oath in which he/she swears to - faithfully execute the office; preserve, protect and defend the Constitution and the law; devote himself/herself to the service and well-being of the people of India.
Article 61	Procedure for impeachment of the President.
Article 62	An election to fill a vacancy caused by the expiration of the term of office of President shall be completed before the expiration of the term. An election to fill a vacancy in the office of President occurring by reason of his death, resignation or removal, or otherwise shall be held as soon as possible after, and in no case later than six months from, the date of occurrence of the vacancy.

Powers of President of India

Veto Powers

- When both Houses of Parliament pass a bill, it is presented to the President for assent. The President, under Article 111, has three choices:
 - ✓ **Assent:** The President can grant assent to the bill, immediately making it an act.
 - ✓ **Withhold Assent:** The President can refuse to grant assent, exercising his veto power.
 - ✓ **Return for Reconsideration:** In the case of bills (except money bills), the President can return the bill for the reconsideration of the House.
- This power of withholding assent is termed the President's veto power, which includes Absolute, Suspensive, and Pocket veto.

Ordinance Making Power

- Under Article 123, the President possesses the authority to issue ordinances, upon the recommendation of the union cabinet, when Parliament is not in session.

Emergency Powers

- The President holds extraordinary powers for addressing emergency situations, including:
 - ✓ National Emergency (Article 352).
 - ✓ President's Rule (Article 356).
 - ✓ Financial Emergency (Article 360).

Financial Powers

- The President oversees the Contingency Fund of India, using it for unforeseen expenses like floods, droughts, and war.
- His recommendations are essential for introducing money and financial bills, as well as for making demands for grants.
- He also appoints the Finance Commission every five years and presents the report of the Comptroller and Auditor General regarding the government's accounts to Parliament.

Diplomatic Powers

- International treaties and agreements approved by Parliament are negotiated and concluded in the President's name.
- He represents India in international forums and manages diplomatic relations, including sending and receiving ambassadors and diplomats.

Military Powers

- As the Supreme Commander of the Armed Forces, the President holds the authority to declare war and peace, subject to legal regulations.
- He appoints the Chiefs of the Army, Navy, and Air Force.

Discretionary Powers

- Although the Constitution mandates the President to act on the advice of the Council of Ministers, certain circumstances may require the President to exercise discretion, especially in coalition or minority government situations.
- Examples include appointing the Prime Minister under specific conditions, dissolving Lok Sabha in certain situations, and sending advice from the Council of Ministers back for reconsideration.

Judicial Powers

- The President appoints Judges of the Supreme Court and High Courts.
- In terms of judicial powers, the President has the authority to grant pardons to individuals convicted of various offenses, particularly those sentenced to death, with these powers exercised upon the advice of the Council of Ministers.
- Specific guidelines for the exercise of pardoning powers are not provided in the Constitution.

Rights of Accused Persons in India

Rights to Know the Grounds of Arrest

- **Article 22 of the Constitution:** Protects against arrest and detention, ensuring that every person arrested is informed of the grounds for their arrest and has the right to consult and be defended by a legal practitioner of their choice.
- **Section 50 of CrPC:** Requires police officers to inform the arrested person of the grounds for arrest and their right to bail.
- **Section 50-A of CrPC:** Obliges the arresting police officer to inform a nominated person chosen by the arrested person about the arrest and their location.
- **Section 55 of CrPC:** Deals with situations where a police officer deposes a subordinate to arrest an individual without a warrant, emphasizing the need to notify the arrested person of the arrest order.
- **Section 75 of CrPC:** Mandates that the police officer executing an arrest warrant must notify the substance of the warrant to the arrested person.

- **Joginder Kumar vs. State:** A landmark judgment requiring that arrests must be justified, not made routinely, and should be based on a genuine and bona fide complaint, as well as a reasonable belief in the accused's complicity in the crime.

Right to be Produced before the Magistrate without Delay

- **Article 22(2) of the Constitution:** Requires that every arrested person be brought before the nearest magistrate within 24 hours, excluding travel time, and prohibits detention beyond this period without magistrate's authority.
- **Section 55 of CrPC:** Stipulates that a police officer who makes an arrest without a warrant must promptly produce the arrested individual before the competent magistrate or the police officer in charge of the police station.
- **Section 76 of CrPC:** Requires the arrested person to be promptly brought before the appropriate court without undue delay, ensuring that the time spent traveling from the place of arrest to the magistrate's court is excluded from the 24-hour limit.

Rights to be Released on Bail

- **Section 50(2) of CrPC:** Informs the arrested person of their right to be released on bail if they are not accused of a non-bailable offense, and they may arrange for sureties on their behalf.

Right to a Fair and Just Trial

- **Article 14 of the Constitution:** Ensures equality before the law and equal protection of the laws, guaranteeing fair treatment to every person involved in a dispute.
- **Article 21 of the Constitution:** Guarantees a speedy trial, ensuring that individuals are not subjected to prolonged detention without trial.
- **Ashim vs. National Investigation Agency:** Emphasizes that depriving personal liberty without ensuring a speedy trial is inconsistent with Article 21 of the Constitution.

Right to Consult a Lawyer

- **Article 22 of the Constitution:** Protects the right to consult a legal practitioner of one's choice.
- **Section 41D of CrPC:** Grants the arrested person the right to meet an advocate during interrogation, though not throughout the interrogation.
- **Section 303 of CrPC:** Allows the accused person to be defended by a pleader of their choice.
- **Article 39 A of the Constitution:** Mandates the state to provide free legal aid to ensure justice is accessible to all, regardless of economic or other disabilities.
- **Khatri v. State of Bihar:** Requires Sessions Judges to inform the accused of their rights to free legal aid and advise them if they cannot afford legal counsel.
- **Sheela Barse v. Union of India:** Recognizes the fundamental right to a speedy trial under Article 21 of the Indian Constitution.

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Right to Keep Silence

- **Article 20(2) of the Constitution:** Protects individuals from self-incrimination, stating that no person can be compelled to be a witness against themselves, allowing them to keep silent during interrogation.
- **Nandini Sathpathy vs. P.L. Dani & Others:** Highlights that individuals cannot be forced to make statements against their will during interrogation.

Right to be Examined by a Doctor

- **Section 54 of CrPC:** Allows an arrested person to request a medical examination if they believe it will provide evidence in their favor or establish a crime against them. The magistrate may direct such an examination.

Additional Rights Available to an Arrested Person

- **Section 55A of CrPC:** Imposes a duty on custodians to take reasonable care of the health and safety of arrested persons.
- **Section 358 of CrPC:** Provides for compensation to persons arrested groundlessly, with penalties for those causing unjustified arrests.
- **Section 41A of CrPC:** Requires police officers to issue a notice of appearance to the accused, informing them about the allegations, and allowing them to cooperate before an arrest.
- **Section 46 of CrPC:** Specifies the modes of arrest, emphasizing that no excessive force should be used unless necessary.
- **Section 49 of CrPC:** Prohibits more restraint than necessary to prevent escape during arrest.
- **Section 41B of CrPC:** Requires the police officer making an arrest to inform the accused of their right to have a relative or friend informed of their arrest.
- **Arnesh Kumar vs. State of Bihar:** Directs police officers to follow specific procedures before arresting individuals accused of offenses like dowry harassment, to prevent unnecessary arrests and humiliation.

Speaker & Deputy Speaker of Lok Sabha

Speaker of Lok Sabha

- **Election and Tenure of Speaker:** Article 93 of the Indian Constitution delineates the process of electing both the Speaker and Deputy Speaker of the Lok Sabha.
- **Election Process**
 - ✓ The Speaker of the Lok Sabha is elected by its members.
 - ✓ In case the office becomes vacant, the Lok Sabha conducts a new election to fill the vacancy.
 - ✓ The President determines the date of the Speaker's election.
- **Qualifications**

- ✓ The Constitution does not prescribe any formal qualifications for the Speaker.
- ✓ The sole requirement is that the Speaker must be a member of the Lok Sabha.
- ✓ However, having a comprehensive understanding of the Constitution, legislative norms, and parliamentary traditions is considered advantageous.
- **Tenure**
 - ✓ The Speaker's term commences from the date of their election.
 - ✓ The Speaker remains in office until the first sitting of the Lok Sabha following the dissolution of the Lok Sabha to which they were elected.
 - ✓ Notably, the Speaker ceases to be a member of the Lok Sabha when the Lok Sabha undergoes dissolution.
- **Role of Speaker**
- The Speaker plays a crucial role in the Lok Sabha, and their responsibilities are derived from various sources, including the Constitution, Rules of Procedure and Conduct of Business of Lok Sabha, and Parliamentary Conventions.
- Some major roles and duties include -
 - ✓ **Maintaining Order and Decorum:** Ensuring the orderly conduct of business and regulating proceedings within the House. Exercising final authority in this regard.
 - ✓ **Interpretation of Rules and Constitution:** Serving as the ultimate interpreter of the Constitution, Rules of Procedure and Conduct of Business of Lok Sabha, and parliamentary precedents within the House.
 - ✓ **Adjournment and Quorum:** The power to adjourn the House or suspend meetings in the absence of a quorum (which constitutes one-tenth of the total Lok Sabha strength).
 - ✓ **Casting Vote:** The Speaker has the authority to cast a vote in the event of a tie, otherwise refraining from voting initially.
 - ✓ **Money Bill Determination:** Deciding whether a bill qualifies as a money bill, with the Speaker's decision being final. Endorsing money bills with a certificate when transmitted to the Rajya Sabha and presented to the President for assent.
 - ✓ **Handling Disqualification:** Deciding on disqualification questions under the Tenth Schedule, which pertains to defection of members.
 - ✓ **Presiding over Joint Sitzings:** Presiding over joint sittings of both Houses of Parliament. Authorizing secret sittings upon the Leader of the House's request.
 - ✓ **Parliamentary Committees:** Appointing chairs of various parliamentary committees and overseeing their functioning.

Resignation and Removal of Speaker

- Under normal circumstances, the Speaker remains in office throughout the Lok Sabha's term. However, the Speaker may vacate the office earlier due to:

- Cessation of Lok Sabha membership.
- Resignation submitted to the Deputy Speaker in writing.
- Removal via a Lok Sabha resolution, which requires a special majority and a 14-day advance notice.

Independence and Impartiality of Speaker

- The Speaker's independence and impartiality are upheld through several mechanisms:
 - ✓ Security of tenure, as removal necessitates a special majority of the Lok Sabha.
 - ✓ Fixed salaries and allowances, charged on the Consolidated Fund of India.
 - ✓ Immunity from criticism within the Lok Sabha except through a substantive motion.
 - ✓ Powers to regulate procedures, maintain order, and conduct House business without court jurisdiction.
 - ✓ Possession of a casting vote and a high rank in the order of precedence (seventh).
 - ✓ Appointment of a panel of chairpersons and Pro Tem Speaker during transitions, maintaining continuity in leadership.

Pro Tem Speaker

- The Speaker of the previous Lok Sabha vacates the office before the first session of the newly elected Lok Sabha.
- A Pro Tem Speaker is designated by the President, typically the senior-most member, to assume Speaker responsibilities temporarily.
- The Pro Tem Speaker conducts the inaugural session, administers oaths to new members, and oversees the election of the new Speaker.
- Once the new Speaker is elected, the Pro Tem Speaker's role concludes.

Deputy Speaker of Lok Sabha

- **Article 93** says that the House of the People (Lok Sabha) shall, as soon as may be, choose two members to be Speaker and Deputy Speaker so often as the offices become vacant. However, it does not provide a specific time frame.
- **Article 178** contains the corresponding position for Speaker and Deputy Speaker of the Legislative Assembly of a state.

Election

- The procedure for electing the Deputy Speaker in the Lok Sabha is regulated by Rule 8 within the framework of "The Rules of Procedure and Conduct of Business in Lok Sabha."
- The Lok Sabha members choose the Deputy Speaker from among themselves immediately following the election of the Speaker.
- The Speaker is responsible for determining the specific date on which the election of the Deputy Speaker will take place.

Term of Office and Removal

- Like the Speaker, the Deputy Speaker remains in office usually for the entire duration of the House (5 years).

- The Deputy Speaker may vacate his/her office earlier in any of the following three cases -
 - ✓ If he ceases to be a member of the Lok Sabha.
 - ✓ If he resigns by writing to the Speaker.
 - ✓ If he is removed by a resolution passed by a majority of all the then members of the Lok Sabha. Such a resolution can be moved only after giving 14 days' advance notice.

Position of the Deputy Speaker

- According to Article 95, the Deputy Speaker steps into the role of the Speaker when it becomes vacant and fulfills the Speaker's duties.
- In both scenarios, the Deputy Speaker wields all the powers associated with the Speaker.
- It's important to note that the Deputy Speaker is not in a subordinate position to the Speaker. Instead, they are directly accountable to the House itself.
- This means that if either the Speaker or the Deputy Speaker wishes to resign, they must submit their resignation to the House, which implies that the Speaker would submit their resignation to the Deputy Speaker.

Judicial Review in India

Constitutional Aspects

- While the Indian constitution does not explicitly grant the courts the authority to invalidate laws, it does impose clear limitations on each branch of government. These limitations, if breached, render a law void.
- The responsibility of determining whether these constitutional boundaries have been exceeded lies with the judiciary.
- Several constitutional provisions support the process of judicial review:
 - ✓ **Article 372(1)** establishes the judicial review of pre-constitution legislation.
 - ✓ **Article 13** declares any law conflicting with the Fundamental Rights section as void.
 - ✓ **Articles 32 and 226** assign the roles of safeguarding and ensuring Fundamental Rights to the Supreme Court and High Courts.
 - ✓ **Articles 251 and 254** specify that in cases of inconsistency between union and state laws, the state law will be invalidated.
 - ✓ **Article 246(3)** guarantees exclusive powers to state legislatures over matters in the State List.
 - ✓ **Article 245** asserts that both Parliament and State legislatures' powers are subject to the Constitution's provisions.
 - ✓ **Articles 131-136** empower the courts to settle disputes involving individuals, individuals and the state, and inter-state disputes. In these cases, the Supreme Court may be called upon to interpret the Constitution, and its interpretations become binding law for all courts in the country.

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- ✓ **Article 137** grants the Supreme Court a unique authority to review its own judgments or orders. In criminal cases, an order can only be reviewed and overturned if there are evident errors in the record.

Important Judicial Pronouncements

- **Golaknath vs State of Punjab:** The Supreme Court ruled that the Parliament does not have the power to amend Fundamental Rights.
- **Kesavananda Bharati vs State of Kerala:** The Supreme Court ordained that the Parliament may amend a clause of the Constitution as long as it doesn't violate its basic structure.
- **Minerva Mills vs Union of India:** The Supreme Court asserted that the Parliament cannot have absolute and unlimited power to amend the doctrines of the Constitution.
- **Waman Rao vs Union of India:** The Supreme Court questioned the constitutional validity of Articles 31A, 31B and 31C (related to acquisition of property). This led to amendment of these laws to avoid future disparities.

Scheduled Areas and Tribal Areas: Criteria & Administration

Fifth Schedule Areas of India

- The Fifth Schedule of the Constitution deals with the administration and control of Scheduled Areas as well as of Scheduled Tribes residing in any State other than the States of Assam, Meghalaya, Tripura and Mizoram.
- The Scheduled Areas are declared by the President of India.
- The criteria for declaring an area as Scheduled Area are preponderance of tribal population, compactness and reasonable size of the area, under-developed nature of the area, and marked disparity in economic standard of the people.
- The Governor of each State having Scheduled Areas (SA) shall annually, or whenever so required by the President, make a report to the President regarding the administration of Scheduled Areas in that State.
- The Union Government shall have executive powers to give directions to the States as to the administration of the Scheduled Areas.
- Para 4 of the Fifth Schedule provides for establishment of a Tribes Advisory Council (TAC) in any State having Scheduled Areas.
- The TAC shall advise on such matters pertaining to the welfare and the advancement of the STs in the State as may be referred to them by the Governor.
- The Governor may, by public notification, direct that any particular Act of Parliament or of the Legislature of the State shall or shall not apply to a SA or any part thereof in the State, subject to such exceptions and modifications, as specified.
- The Governor may make regulations for the peace and good government of any area in the State which is for the time being a SA.

- Such regulations may prohibit or restrict the transfer of land by or among members of the Scheduled tribes in such area; regulate the allotment of land to members of the STs in such area; regulate the carrying on of business as money-lender by persons who lend money to members of the STs in such area.
- In making such regulations, the Governor may repeal or amend any Act of Parliament or of Legislature of the State or any existing law after obtaining assent of the President.
- No regulations shall be made unless the Governor, in case a TAC exists, consults such TAC.
- At present, 10 States namely Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana have Fifth Schedule Areas.
- The Fifth Schedule of the Constitution deals with the administration and control of Scheduled Areas as well as of Scheduled Tribes residing in any State other than the States of Assam, Meghalaya, Tripura and Mizoram.
- Tribal habitations in the states of Kerala, Tamil Nadu, Karnataka, West Bengal, Uttar Pradesh and Jammu & Kashmir have not been brought under the Fifth or Sixth Schedule.

Sixth Schedule Areas of India

- The Sixth Schedule of the Indian Constitution introduced the concept of Autonomous District Councils (ADC) in four northeastern states: Assam, Meghalaya, Tripura, and Mizoram. These ADCs were established with the aim of preserving and safeguarding tribal culture.
- The underlying idea behind the creation of ADCs is that tribal or indigenous identity is closely tied to their connection with the land. By granting them control over land and natural resources, which significantly influence their way of life and culture, it is believed that the culture and identity of indigenous communities can be protected.
- However, this arrangement has given rise to conflicts between different groups, such as tribal communities and non-tribal populations. Furthermore, it can undermine social harmony, stability, and economic development in both the state and the region.
- The Sixth Schedule Areas hold a special status:
 - ✓ Originally, the Sixth Schedule was designed for predominantly tribal regions (with a tribal population of over 90%) in undivided Assam. These areas were categorized as "excluded areas" under the Government of India Act, 1935, and were under the direct control of the Governor.
 - ✓ The Sixth Schedule of the Constitution outlines the administration of tribal areas in Assam, Meghalaya, Tripura, and Mizoram to safeguard the rights of tribal populations in these states.
 - ✓ This unique provision is detailed in Article 244(2) and Article 275(1) of the Constitution.
 - ✓ The Sixth Schedule grants autonomy in the governance of these areas through the establishment of Autonomous District Councils (ADCs).

Economy

Heritage Tourism: Theme based Circuits in India

Heritage Tourism: Theme based Circuits

- Recently, the Ministry of Tourism has identified Adventure Tourism, Eco Tourism and Sustainable Tourism as some of the Niche Tourism products to promote India including Assam and other North Eastern States as a year round destination and to attract tourists with specific interest for ensuring repeat visits for the unique products vis-à-vis competing destinations.
- In addition, adequate focus is also being accorded for development of religious and pilgrim tourism.
- Ministry of Tourism under its flagship schemes of Swadesh Darshan and National Mission on Pilgrimage Rejuvenation and Spiritual, Heritage Augmentation Drive (PRASHAD) is giving due emphasis for development of tourism infrastructure and facilities.
- Under the PRASHAD Scheme, 41 religious cities/sites in 25 States have been identified for development.
- Under the Swadesh Darshan Scheme, 15 themes have been identified for developing theme based circuits.
- These themes include Buddhist Circuit, Coastal Circuit, Desert Circuit, Eco Circuit, Heritage Circuit, Himalayan Circuit, Krishna Circuit, North-East Circuit, Ramayana Circuit, Rural Circuit, Spiritual Circuit, Sufi Circuit, Tirthankar Circuit, Tribal Circuit and Wildlife Circuit.
- For example, under **Buddhist Circuit** important location under various states include -
 - ✓ Madhya Pradesh (Sanchi, Mandasaur, Dhar, Satna, Rewa, Satdhara, Sonari, Murelhurda, Gyaraspur)
 - ✓ Gujarat (Uparkot at Junagadh, Baba Pyare Caves, Khapara Kodiya, Ashoka Rock, Junagadh Wayside Amenities, Sana Caves at Gir Somnath, Prabhas Patan Buddhist Caves, Vadnagar Buddhist Monastery, Taranga Buddhist Caves, etc.)
 - ✓ Andhra Pradesh (Amaravati, Anupu, Bojjanakonda, Shalihundam, Totlakonda and Bavikonda)
 - ✓ Bihar (Bodh gaya)
 - ✓ Uttar Pradesh (Sravasti, Kapilwastu and Kushinagar)

Heritage Tourism: Government Measures

PRASHAD Scheme

- The Ministry of Tourism introduced the “National Mission on Pilgrimage Rejuvenation and Spiritual Augmentation Drive (PRASAD)” in 2014–15.
- Its aim was the comprehensive development of recognized pilgrimage sites.
- In October 2017, the program underwent a name change, becoming the “National Mission on Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive (PRASHAD).”

- This scheme empowers State/Union Territory Governments to execute the proposed initiatives through designated agencies.
- The Ministry of Tourism provides Central Financial Assistance (CFA) to State Governments for enhancing tourism at specific locations, covering 100% of the public funding components.
- PRASHAD also encourages corporate social responsibility (CSR) and public-private partnerships (PPP) for increased project sustainability.

HRIDAY Scheme

- The Ministry of Housing and Urban Affairs launched the “National Heritage City Development and Augmentation Yojana” - HRIDAY on January 21, 2015.
- This program’s primary objective is to safeguard and promote India’s rich cultural heritage, emphasizing urban planning and economic development in historic cities.
- HRIDAY focuses on aspects like accessibility, security, safety, lifestyle, cleanliness, and prompt service delivery in heritage cities.

Palace on Wheels

- The Palace on Wheels is a luxurious tourist train launched by Indian Railways in partnership with Rajasthan Tourism Development Corporation to promote Rajasthan tourism.
- Initially known as the Palace on Wheels, it was later rebranded as the Heritage Palace on Wheels.
- After renovations in August 2009, the train offered new furnishings, itineraries, and menus.
- The concept for the Palace on Wheels is rooted in the historical significance of the coaches, which once served as private trains for Rajputana kings, Baroda, the Nizam of Hyderabad, and the Viceroy of British India.
- Each saloon reflects the cultural essence of the respective state through furnishings, handicrafts, paintings, and décor, designed by architect Rashmi Gupta of Jaipur.

India’s Connectivity Projects: Domestic & International

Domestic Connectivity Projects

Golden Quadrilateral Project

- The Golden Quadrilateral is an extensive network of highways that connects India’s four major metropolitan cities: Delhi, Mumbai, Chennai, and Kolkata.
- This network forms a quadrilateral shape. Launched in 2001, this project is the largest highway initiative in India and was initiated as part of the National Highways Development Project (NHDP).

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Industrial and Freight Corridor Projects

- The government has introduced the National Infrastructure Pipeline (NIP) for the fiscal years 2019-2025.
- Under this pipeline, various projects have been identified to construct, renovate, strengthen, and expand critical infrastructure, including road networks, housing, urban development, railways, traditional and renewable energy sources, and irrigation.
- These projects emphasize the development of highways and railways.

Sagarmala Program for Port Development

- The Sagarmala Program is aimed at enhancing port infrastructure and development along India's extensive coastline.
- This initiative focuses on improving connectivity, optimizing logistics, and promoting industrialization in port vicinity regions.

Development along Main Transportation Corridors

- The government is committed to establishing greenfield industrial cities that are strategically connected to major transportation routes.
- These corridors include the eastern and western dedicated freight corridors, expressways, national highways, ports, and airports.
- This approach seeks to boost economic activities and industrial growth.

PM Gati Shakti

- **Integrated Infrastructure Planning:** The Gati Shakti scheme aims to ensure integrated planning and execution of infrastructure projects over the next four years. The primary focus is on expediting on-ground project implementation, cost-saving measures, and employment generation.
- **Incorporating the National Infrastructure Pipeline:** This scheme will absorb the previously launched Rs 110 lakh crore National Infrastructure Pipeline initiated in 2019. It seeks to streamline and consolidate infrastructure development efforts.
- **Reducing Logistics Costs and Enhancing Trade:** Gati Shakti is geared towards reducing logistics costs, expanding cargo handling capacity, and minimizing turnaround times at ports. These measures are intended to stimulate trade activities.
- **Establishing Industrial and Defence Corridors:** The scheme envisions the creation of 11 industrial corridors and two new defence corridors, one in Tamil Nadu and the other in Uttar Pradesh. It also includes an ambitious plan to extend 4G connectivity to all villages and expand the gas pipeline network by 17,000 kilometers.
- **Achieving Ambitious 2024-25 Targets:** Gati Shakti plays a pivotal role in meeting the government's ambitious targets for 2024-25, which include expanding the national highway network to 2 lakh kilometers and the

development of over 200 new airports, heliports, and water aerodromes.

- **Integrated Approach:** To address longstanding challenges like disjointed planning, standardization issues, clearance bottlenecks, and timely infrastructure capacity creation and utilization, the scheme brings together 16 infrastructure-related Ministries.
- **Gati Shakti Digital Platform:** A central component of the initiative is the creation of a unified digital platform. This platform facilitates efficient planning and implementation of infrastructure projects by fostering real-time coordination among various ministries and departments.

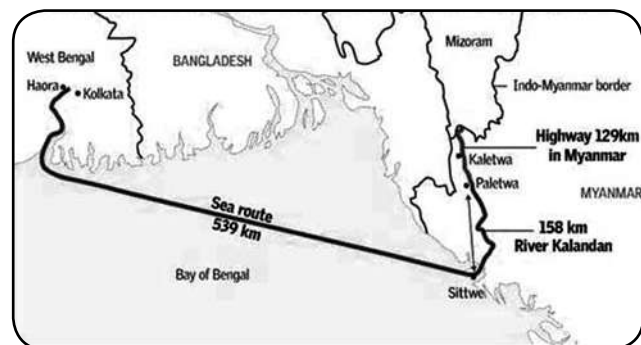
National Monetisation Pipeline

- The National Monetisation Pipeline (NMP) envisages an aggregate monetisation potential of Rs. 6-lakh crore.
- It would aggregate through the leasing of core assets of the Central government in sectors such as roads, railways, power, oil and gas pipelines, telecom, civil aviation, etc., over a four-year period (FY 2022-25)

International Connectivity Projects

India-East Asia

- **Kaladan Multimodal Transit Transport Project**
 - ✓ The KMMTTP (Kaladan Multimodal Transit Transport Project) is a collaborative effort between ASEAN and India to establish water-based connectivity. This project, initiated by the Indian government in 2008, is entirely funded by India.
 - ✓ The primary objective of the KMMTTP is to explore an alternative trade route through Myanmar for the transportation of goods to India's northeastern region.
 - ✓ This initiative links Kolkata in India to Sittwe and Paletwa in Myanmar, utilizing sea and river routes, respectively.



- ✓ In conjunction with the KMMTTP, India has actively contributed to the development of a sea link via Sittwe port in Myanmar.
- ✓ This sea link serves as a crucial component of an alternative transit route, particularly through Bangladesh, facilitating smoother trade and connectivity.
- **Mekong-India Economic Corridor**
 - ✓ This ambitious project involves the integration of four Mekong countries, namely Vietnam, Myanmar, Thailand, and Cambodia, in collaboration with India.

- ✓ It aims to establish a strategic connection between key cities, including Ho Chi Minh City, Dawei, Bangkok, and Phnom Penh, with Chennai.
- ✓ The Mekong-India Economic Corridor holds the promise of creating significant economic opportunities for the participating nations.
- ✓ It will facilitate the development of crucial infrastructure and strengthen their economic ties within the region.
- ✓ Importantly, it will substantially reduce the transit distance between India and the ASEAN countries, enhancing overall connectivity.
- **India-Myanmar-Thailand Trilateral Highway**
 - ✓ This initiative is a prominent project aimed at enhancing land connectivity between India and ASEAN (Association of Southeast Asian Nations).
 - ✓ The proposed route connects three countries: India (starting from Moreh), Thailand (ending at Mae Sot), and Myanmar (passing through Bagan).
 - ✓ The concept for this connectivity project was initially introduced in 2002.
 - ✓ India, Myanmar, and Thailand Motor Vehicles Agreement (IMT MVA): The IMT MVA, involving India, Myanmar, and Thailand, is currently in its final stages of development.



- ✓ Once implemented, it will mark a historic achievement as the first-ever cross-border facilitation agreement between South Asia and Southeast Asia.
- ✓ This agreement will significantly improve cross-border transportation and trade relations in the region.

India-Middle East and Central Asia

- **Chabahar Port**
 - ✓ Chabahar Port is situated in southeastern Iran on the Gulf of Oman, providing direct access to the Indian Ocean.

- ✓ It is a strategically significant port for India as it offers an alternative route for trade with Afghanistan and Central Asia, bypassing Pakistan.
- ✓ India has invested in the development of Chabahar Port and related infrastructure as part of its efforts to enhance connectivity and trade in the region.
- ✓ Chabahar Port is a key component of the International North-South Transport Corridor (INSTC), which aims to connect India to Russia through Iran.
- ✓ Chabahar is a multi-purpose port that handles various cargoes, including containerized, bulk, and general cargo.
- **International North-South Transport Corridor (INSTC)**
 - ✓ INSTC is a multimodal transport network that spans multiple countries, including India, Iran, Russia, and several Central Asian nations.
 - ✓ It is designed to facilitate the seamless movement of goods between India, Iran, Russia, and beyond, significantly reducing transport times.
 - ✓ The corridor includes road, rail, and sea routes, providing flexibility and efficiency in cargo transportation.
 - ✓ INSTC is expected to boost trade and economic cooperation among the member countries by improving connectivity and reducing trade costs.
 - ✓ The corridor serves as an alternative trade route and reduces dependence on traditional routes, enhancing geopolitical significance in the region.

Trans-Asia-Europe

- **India-Middle East-Europe Economic Corridor (IMEC)**
 - ✓ At the recently concluded G20, a Memorandum of Understanding (MoU) was collectively signed by the Governments of India, the United States, Saudi Arabia, the European Union, the United Arab Emirates, France, Germany, and Italy to create the Infrastructure for Middle East and Europe Connectivity (IMEC).
 - ✓ IMEC is a component of the broader Partnership for Global Infrastructure Investment (PGII), which was initially introduced at the G7 summit in the United Kingdom in June 2021.
 - ✓ The primary objective of PGII is to fund infrastructure projects in developing nations by combining resources from both the public and private sectors.
 - ✓ IMEC represents a significant infrastructure endeavour that will link India, the Middle East, and Europe.
 - ✓ This project's core aim is to establish a comprehensive network of transportation corridors, encompassing railways and sea routes.
 - ✓ IMEC is often viewed as a strategic response to China's Belt and Road Initiative (BRI), offering an alternative infrastructure network.

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Minimum Support Price: Coverage & Mechanism

MSP: Coverage and Mechanism

Definition and Objective

- Minimum Support Price (MSP) is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices.
- The minimum support prices are announced by the Government of India at the beginning of the sowing season for certain crops on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP).
- MSP is price fixed by Government of India to protect the producer - farmers - against excessive fall in price during bumper production years.
- The minimum support prices are a guarantee price for their produce from the Government.

Determination of MSP

- In formulating the recommendations in respect of the level of minimum support prices and other non-price measures, the Commission takes into account, apart from a comprehensive view of the entire structure of the economy of a particular commodity or group of commodities, the following factors -
 - ✓ Cost of production
 - ✓ Changes in input prices
 - ✓ Input-output price parity
 - ✓ Trends in market prices
 - ✓ Demand and supply
 - ✓ Inter-crop price parity
 - ✓ Effect on industrial cost structure
 - ✓ Effect on cost of living
 - ✓ Effect on general price level
 - ✓ International price situation
 - ✓ Parity between prices paid and prices received by the farmers.
 - ✓ Effect on issue prices and implications for subsidy
- The Commission makes use of both micro-level data and aggregates at the level of district, state and the country.

Three Kinds of Production Cost

- The CACP projects three kinds of production cost for every crop, both at state and all-India average levels.
- ‘A2’: Covers all paid-out costs directly incurred by the farmer in cash and kind on seeds, fertilisers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.
- ‘A2+FL’: Includes A2 plus an imputed value of unpaid family labour.
- ‘C2’: It is a more comprehensive cost that factors in rentals and interest forgone on owned land and fixed capital assets, on top of A2+FL.
- CACP considers both A2+FL and C2 costs while recommending MSP.
- CACP reckons only A2+FL cost for return.

- However, C2 costs are used by CACP primarily as benchmark reference costs (opportunity costs) to see if the MSPs recommended by them at least cover these costs in some of the major producing States.
- The Cabinet Committee on Economic Affairs (CCEA) of the Union government takes a final decision on the level of MSPs and other recommendations made by CACP.

Pricing Policy for Sugarcane

- The pricing of sugarcane is governed by the statutory provisions of the Sugarcane (Control) Order, 1966 issued under the Essential Commodities Act (ECA), 1955.
- Prior to 2009-10 sugar season, the Central Government was fixing the Statutory Minimum Price (SMP) of sugarcane and farmers were entitled to share profits of a sugar mill on 50:50 basis.
- As this sharing of profits remained virtually unimplemented, the Sugarcane (Control) Order, 1966 was amended in October, 2009 and the concept of SMP was replaced by the Fair and Remunerative Price (FRP) of sugarcane.
- A new clause ‘reasonable margins for growers of sugarcane on account of risk and profits’ was inserted as an additional factor for working out FRP and this was made effective from the 2009-10 sugar season.

Crops Covered under MSP

- Government announces minimum support prices (MSPs) for 22 mandated crops and fair and remunerative price (FRP) for sugarcane.
- The mandated crops are 14 crops of the kharif season, 6 rabi crops and two other commercial crops.
- In addition, the MSPs of toria and de-husked coconut are fixed on the basis of the MSPs of rapeseed/mustard and copra, respectively.
- The list of crops are as follows -
 - ✓ Cereals (7) - paddy, wheat, barley, jowar, bajra, maize and ragi
 - ✓ Pulses (5) - gram, arhar/tur, moong, urad and lentil
 - ✓ Oilseeds (8) - groundnut, rapeseed/mustard, toria, soyabean, sunflower seed, sesamum, safflower seed and nigerseed
 - ✓ Raw cotton
 - ✓ Raw jute
 - ✓ Copra
 - ✓ De-husked coconut
 - ✓ Sugarcane (Fair and remunerative price)
 - ✓ Virginia flu cured (VFC) tobacco
- **Latest Minimum Support Price - Kharif (2023-24); Rabi (2023-24)**
- Sowing season in India of crops varies from state to state and the harvesting of the crop also depends on variety. Thus a harvested crop sown in kharif may reach in the market even before October.
- MSP of Kharif Crops for 2023-24 is applicable from 1 September 2023. MSP for all mandated Rabi crops is for Rabi Marketing Season (RMS) 2023-24.

- The increase in MSP for Kharif Crops for Marketing Season 2023-24 is in line with the Union Budget 2018-19 announcement of fixing the MSP at a level of at least 1.5 times of the All-India weighted average Cost of Production, aiming at reasonably fair remuneration for the farmers.
- The expected margin to farmers over their cost of production are estimated to be highest in case of bajra (82%) followed by tur (58%), soybean (52%) and urad (51%).
- For rest of the crops, margin to farmers over their cost of production is estimated to be at least 50%.
- **Capital Account:** The capital account focuses on transactions involving the acquisition and disposal of assets, which can be financial or non-financial, such as land.
- The capital account comprises three elements:
 - ✓ **Loans and Borrowings:** This category encompasses all types of loans obtained from foreign sources, including both private and public sectors abroad.
 - ✓ **Investments:** It includes activities like Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI), among other forms of investments.
 - ✓ **Foreign Exchange Reserves:** Foreign exchange reserves are held by a nation's central bank, such as the Reserve Bank of India (RBI) in India, to manage exchange rates.

Balance of Payments (BoP)

Basics and Features

- The Balance of Payments, often abbreviated as BOP, is a comprehensive statement summarizing all financial transactions conducted by a country's residents with the rest of the world during a specific timeframe.
- It encompasses the financial activities of individuals, entities, and the government, encompassing both payments made and earnings received in international dealings.
- In an ideal scenario, where all financial transactions are accurately accounted for in the balance of payments, the total should always equal zero. This equilibrium signifies that the inflow and outflow of funds have been perfectly offset.
- However, it's important to note that achieving this ideal balance may not occur in day-to-day real-world situations.
- A BOP surplus indicates that a country has had a positive financial position in its international transactions, with more funds flowing in than out.
- Conversely, a BOP deficit signifies that a country's international transactions have resulted in a negative financial position, with more funds flowing out than in.

Components

- **Current Account:** The current account of the balance of payments provides insights into a country's export and import status.
- A surplus in the current account indicates that a country's exports exceed its imports, while a deficit signifies that a country imports more than it exports.
- The current account includes the following components:
 - ✓ **Balance of Trade:** This component covers monetary transactions related to goods, encompassing international trade in tangible products.
 - ✓ **Balance of Invisibles:** This part deals with monetary transactions involving services, including international trade in services.
 - ✓ **Transfer Payments:** Transfer payments consist of elements such as donations, grants, and remittances.
- **Financial Account:** The financial account tracks international fund flows related to investments in businesses, real estate, bonds, and stocks. It also covers government-owned assets like foreign reserves, gold holdings, and Special Drawing Rights (SDRs) held with the International Monetary Fund (IMF). Additionally, the financial account records assets owned overseas by both individuals and governments.
- **Errors and Omissions:** Net errors and omissions reflect imbalances resulting from shortcomings in data sources and the calculation of the balance of payments accounts. This category represents a residual item that accounts for discrepancies in accurately recording all international transactions.
- **Changes in Foreign Exchange Reserves:** Movements in foreign exchange reserves encompass changes in a country's foreign currency reserves held by its central bank, as well as variations in Special Drawing Rights (SDRs) held with the IMF.

Balance of Payment v/s Balance of Trade

- **Balance of Trade (BoT):** The Balance of Trade (BoT) is a financial statement that records a nation's imports and exports of goods and commodities with other countries. It focuses on determining the net profit or loss a country may experience from its import and export activities. BoT calculates the difference obtained from trading goods.
- **Balance of Payments (BoP):** The Balance of Payments (BoP) is a comprehensive financial statement that meticulously accounts for all economic transactions conducted by a nation with other countries. BoP deals with the accurate recording of various transactions, including money transfers, goods, and services. It also encompasses the transfer of capital.
- **Major Differences:**
 - ✓ BoT calculates the net gain or loss arising from the exchange of goods, while BoP precisely logs all transactions conducted by a nation.
 - ✓ BoT measures the difference between the value of exported and imported commodities, while BoP assesses the flow of foreign exchange in and out of the country.

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- ✓ BoT primarily includes transactions related to tangible goods, whereas BoP encompasses a broader range of transactions, including money transfers and services.
- ✓ Capital transfers are not part of BoT, but they are included in BoP.
- ✓ The net result of BoT can be positive, negative, or zero, indicating various trade outcomes. Conversely, the net effect of BoP is always zero, as it accounts for all financial flows in and out of the country.

Important International Financial Institutions

International Monetary Fund (IMF)

- The IMF's core mission is to ensure global financial stability, encourage monetary cooperation, and support sustainable economic growth and poverty reduction worldwide.
- With 190 member countries, it is accountable to its member nations.
- Established in July 1944 during the United Nations Bretton Woods Conference, the IMF's primary goal is to maintain stability in international exchange rates and payments, enabling seamless transactions between nations.
- **Key IMF Reports**
 - ✓ World Economic Outlook
 - ✓ Global Financial Stability Report
 - ✓ Regional Economic Reports
 - ✓ Fiscal Monitor

World Economic Forum (WEF)

- Founded in 1971 as an independent, non-profit foundation in Geneva, Switzerland, the WEF engages political, business, and cultural leaders globally to shape agendas without affiliations to specific interests.
- The WEF is committed to public interest entrepreneurship and robust governance standards.
- **Key WEF Reports**
 - ✓ Global Gender Gap Report
 - ✓ Outlook on Global Agenda
 - ✓ Global Competitive Index
 - ✓ Global Information Technology Report
 - ✓ Environmental Performance Index
 - ✓ Inclusive Growth & Development Report
 - ✓ Travel & Tourism Competitiveness Report
 - ✓ Energy Transition Index
 - ✓ The Global Risk Report

World Bank

- Established in 1944 along with the IMF, the World Bank is headquartered in Washington D.C. and operates as an international financial institution.
- Comprising 189 member countries, the World Bank's ultimate policymakers are represented by a Board of Governors.

World Trade Organization (WTO)

- The WTO is the sole global organization dealing with international trade rules and negotiations.
- It ensures smooth, predictable, and free trade by ratifying agreements negotiated among a majority of the world's trading nations.
- Established in 1995, WTO has 164 member nations, representing 98% of global trade.

Asian Development Bank (ADB)

- Founded in 1966 with 31 member governments, ADB's mission is to foster social and economic progress in Asia and the Pacific region. At present ADB have 68 members—of which 49 are from within Asia and the Pacific and 19 outside.
- It prioritizes regional, sub-regional, and national projects and provides financial assistance, technical support, and investment promotion.

Asia-Pacific Economic Cooperation (APEC)

- Established in 1989, APEC is a regional economic forum with 21 members, aiming to enhance economic integration, sustainable growth, and innovation in the Asia-Pacific region.
- It addresses trade and economic issues, fostering cooperation among members.
- **APEC's Focus Areas**
 - ✓ Promoting balanced, inclusive, and sustainable growth
 - ✓ Reducing poverty
 - ✓ Developing human capital
 - ✓ Advancing women's status
 - ✓ Protecting the environment

Asia-Pacific Trade Agreement (APTA)

- Formerly the Bangkok Agreement, APTA is a preferential tariff arrangement to boost intra-regional trade among member countries.
- Members include Bangladesh, China, India, Republic of Korea, Lao PDR, and Sri Lanka, with Mongolia joining as the seventh member.
- APTA acknowledges the special needs of Least Developed Countries (LDCs), offering preferential measures and flexible rules of origin conditions to support their development.

Financial Action Task Force (FATF)

- FATF was founded in 1989 during the G7 Summit in Paris, France, in response to growing concerns about the increasing global threat of money laundering.
- FATF is comprised of 38 member jurisdictions, including 37 member countries and one regional organization (the European Commission). Its members come from various regions around the world.
- FATF maintains two lists: the "grey list" (also known as the "Jurisdictions under Increased Monitoring") and the "blacklist" (also known as the "High-Risk and Non-Cooperative Jurisdictions").

Ecology and Environment

Alternative Fuels

Ethanol

- Ethanol (ethyl alcohol, grain alcohol, EtOH) is a clear, colourless liquid with a characteristic, agreeable odour.
- In dilute aqueous solution, it has a somewhat sweet flavour, but in more concentrated solutions it has a burning taste.
- Ethanol ($\text{CH}_3\text{CH}_2\text{OH}$) is a group of chemical compounds whose molecule contains a hydroxyl group, -OH, bonded to a carbon atom.
- Ethanol made from cellulosic biomass materials instead of traditional feedstocks (starch crops) is called bioethanol.

Methanol

- Methanol (CH_3OH) is an alcohol fuel. Methanol is methane with one hydrogen molecule replaced by a hydroxyl radical (OH).
- The alternative fuel currently being used is M-*.%
- In the future, neat methanol or M-100 may also be used. Methanol is also made into ether, Methyl Tert-Butyl Ether (MTBE), which is blended with gasoline to enhance octane and to create oxygenated gasoline.
- Methanol contains no sulphur or complex organic species.

Alcohol-Diesel Blends (Diesohol)

- Apart from ethanol/methanol-gasoline blends, ethanol/methanol-diesel blend is also another alternative option.
- Ethanol-diesel blend projects are under trial in Brazil and Sweden.
- Unlike ethanol-gasoline blend, ethanol-diesel blend has some concerns regarding lubricity, reduced flash point and startability problems.

Electric Fuel

- Electricity is unique among the alternative fuels in that mechanical power is derived directly from it, whereas the other alternative fuels release stored chemical energy through combustion to provide mechanical power.
- Motive power is produced from electricity by an electric motor.
- Electricity used to power vehicles is commonly provided by batteries, but recently fuel cells are also being explored.

Compressed Bio-Gas (CBG)

- Bio-gas is produced naturally (through a process of anaerobic decomposition) from waste / bio-mass sources like agriculture residue, cattle dung, sugarcane press mud, municipal solid waste, sewage treatment plant waste, etc.

- After purification, it is compressed and called CBG, which has high methane content.
- Further, Compressed Bio-Gas is exactly similar to the commercially available natural gas in its composition and energy potential.
- With similar calorific value and other properties similar to CNG, Compressed Bio-Gas can be used as an alternative, renewable automotive fuel.
- Given the abundance of biomass in the country, Compressed Bio-Gas has the potential to replace CNG in automotive, industrial and commercial uses in the coming years.

Hybrid Electric Vehicles

- Hybrid Electric Vehicles (HEVs) combine two or more energy conversion technologies (e.g., heat engines, fuel cells, generators, or motors) with one or more energy storage technologies (e.g., fuel, batteries, ultracapacitors, or flywheels).
- The combination of conventional and electric propulsion systems offers the possibility of greatly reducing emissions and fuel consumptions, while giving consumers both the extended range and convenient refuelling they expect from a conventional vehicle.
- HEVs can either have a parallel or series design.
- In a parallel design, the energy conversion unit and electric propulsion system are connected directly to the vehicle's wheels.
- The primary engine is used for highway driving; the electric motor provides added power during hill climbs, acceleration, and other periods of high demand.
- In a series design, the primary engine is connected to a generator that produces electricity.
- The electricity charges the batteries and drives an electric motor that powers the wheels.

Hydrogen

- Hydrogen is the most abundant element in the universe, but is rarely found in its uncombined form on the earth. Hydrogen gas (H_2) is being explored for use in combustion engines and fuel cell electric vehicles.
- When combusted (oxidized) it creates only water vapor as a by-product.
- When burned in an internal combustion engine, however, combustion also produces small amounts of nitrogen dioxides and small amount of unburned hydrocarbons and carbon monoxide because of engine lubricants but the exhaust is free from carbon dioxide.
- It is a gas at normal temperature and pressure, which presents greater transportation and storage hurdles.

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- Storage systems being developed include compressed hydrogen, liquid hydrogen and chemical bonding between hydrogen and a storage material (for example, metal hydrides).

Natural Gas

- Natural gas is a mixture of hydrocarbons-mainly methane (CH₄) and is produced either from gas wells or in conjunction with crude oil production.
- Due to its low energy density for use as a vehicular fuel, it is compressed to a pressure of 200-250 bars to facilitate storage in cylinders mounted in vehicle and so it is called compressed natural gas (CNG).
- India's recoverable resources of more than 690 billion cubic meters make it a long-term substituted fuel for use in petrol and diesel engines.
- Low exhaust emissions, low noise, less maintenance, not prone to adulteration, driver's comfort, etc. are some of the attractive features of CNG as an automotive fuel.

Dimethyle Ether (DME)

- Dimethyl Ether (DME) is an ether compound having a molecular structure in which one oxygen atom and two methyl groups are bonded.
- It is chemically synthesized from natural gas, coal-associated, etc.
- DME is a gas looking colourless and smelling etheric at room temperature and under normal pressure.
- Like LPG, DME is liquefied by applying a pressure of approximately 0.5 Mpa.

Biodiesel

- Biodiesel (mono alkyl esters) is a cleaner-burning diesel fuel made from natural, renewable sources such as vegetable oils.
- Biodiesel operates in compression ignition engines like petroleum diesel thereby requiring no essential engine modifications.
- Moreover it can maintain the payload capacity and range of conventional diesel.
- Biodiesel fuel can be made from new or used vegetable oils and animal fats.
- For more information on biodiesel please refer to our PARIVESH newsletter on Biodiesel.

Series Fuel

- P-Series is a new fuel that is now classified as an alternative fuel by the US Department of Energy.
- This fuel was developed by Dr. Stephen Paul of Princeton University.
- This class of P-Series fuel includes certain blends of methyltetrahydrofuran, ethanol and hydrocarbons.
- Pure Energy Corporation of USA holds the exclusive worldwide license to manufacture and distribute the P-Series fuels.

- Pure Energy Corporation's P-Series fuels are blends of ethanol, methyltetrahydrofuran (MTHF) and pentanes plus with butane added for blends that would be used in severe coldweather conditions to meet the cold start requirements.
- Both ethanol and MTHF to be derived from renewable sources.

Water-Diesel Emulsified Fuel (PuriNox)

- The benefits of adding water to diesel fuel have been known for some time.
- Water promotes a finer, cloud-like atomization of the fuel mixture during injection and modifies combustion, resulting in substantial reductions in nitrogen oxides and particulates.
- However, the challenge has been keeping the fuel/water mixture stable in storage and keeping the water away from engine parts.
- Several companies are now claiming to have tackled this problem of storage stability by various chemical methods.

Biodiversity & Wildlife Conservation: International Laws and Conventions

Convention on Biological Diversity (CBD)

- The CBD, established in 1992 at the Earth Summit in Rio de Janeiro, aims to conserve biodiversity, promote sustainable use of biological resources, and ensure the equitable sharing of benefits from genetic resources.
- The CBD includes three main objectives: conservation of biodiversity, sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources.
- Parties to the CBD have adopted various protocols, including the Cartagena Protocol on Biosafety, which deals with the safe transfer, handling, and use of living modified organisms (LMOs).
- The Nagoya Protocol on Access and Benefit-sharing, a supplementary agreement to the CBD, addresses access to genetic resources and the fair and equitable sharing of benefits derived from their utilization.
- The CBD is the primary international treaty addressing the protection of biodiversity and has been ratified by over 196 countries and the European Union.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

- CITES, established in 1973, is an international treaty designed to regulate and monitor the international trade in endangered species of plants and animals.
- The convention categorizes species into three appendices based on their level of vulnerability, with Appendix I listing species threatened with extinction and subject to strict trade controls.

- CITES employs a system of permits and certificates to ensure that international trade in listed species is legal and does not pose a threat to their survival.
- Parties to CITES meet regularly to review and amend the list of protected species and discuss issues related to the conservation of wildlife.
- CITES has played a significant role in curbing the illegal wildlife trade and has over 180 member countries.

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

- CMS, also known as the Bonn Convention, was established in 1979 to protect migratory species and their habitats worldwide.
- It focuses on species that migrate across international boundaries and aims to promote their conservation through international cooperation.
- CMS maintains appendices listing migratory species that require conservation measures and encourages range states to implement conservation actions.
- The Convention's Conference of the Parties (COP) meets every three years to assess progress and adopt resolutions to further protect migratory species.
- Key agreements under CMS include the African-Eurasian Migratory Waterbird Agreement (AEWA) and the Memorandum of Understanding on the Conservation of Migratory Sharks.

The Wildlife Trade Monitoring Network (TRAFFIC)

- TRAFFIC is a leading non-governmental organization (NGO) that specializes in monitoring and regulating international trade in wildlife and plants, particularly endangered species.
- Founded in 1976, TRAFFIC works to ensure that trade in wildlife and their products is legal, sustainable, and does not threaten species with extinction.
- It operates as a partnership between the World Wide Fund for Nature (WWF) and the International Union for Conservation of Nature (IUCN).
- TRAFFIC conducts research, provides guidance to governments, collaborates with law enforcement agencies, and raises awareness about the consequences of illegal wildlife trade.
- The organization plays a crucial role in combating wildlife trafficking, which poses a significant threat to biodiversity and global conservation efforts.

United Nations Forum on Forests (UNFF)

- UNFF is a subsidiary body of the United Nations Economic and Social Council (ECOSOC) established in 2000 to promote sustainable forest management and conservation.
- Its primary goal is to address forest-related issues at the global level, with a focus on poverty alleviation, environmental sustainability, and the achievement of the Sustainable Development Goals (SDGs).

- UNFF organizes regular sessions, including the biennial UN Forest Forum, to facilitate dialogue and cooperation among member states, international organizations, and stakeholders involved in forestry.
- The Forum adopted the Non-Legally Binding Instrument on All Types of Forests in 2007, providing a framework for sustainable forest management.
- UNFF supports initiatives to strengthen forest governance, combat deforestation and forest degradation, and enhance the role of forests in mitigating climate change and conserving biodiversity.

International Whaling Commission (IWC)

- The IWC is an intergovernmental organization established in 1946 to regulate the hunting of whales and conserve whale populations.
- Initially focused on the conservation of large whale species, the IWC's mandate has expanded to address broader issues related to marine mammals and their habitats.
- The organization has implemented a moratorium on commercial whaling since 1986, although it permits whaling for scientific research purposes and aboriginal subsistence.
- The IWC conducts annual meetings where member states discuss and make decisions on whaling quotas, conservation measures, and other matters related to whale conservation and management.
- While the IWC has played a significant role in conserving many whale species, debates over whaling practices continue to be a contentious and polarizing issue within the organization, with some countries advocating for the resumption of commercial whaling.

Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal

- The Basel Convention, adopted in 1989, seeks to regulate the transboundary movement of hazardous wastes and their environmentally sound management.
- It aims to minimize the generation of hazardous waste and ensure that it is disposed of in an environmentally sound manner.
- Parties to the convention are required to notify and seek consent before exporting hazardous waste to other countries, and they must manage their own hazardous waste properly.
- The convention established a list of hazardous wastes and provides guidelines for their handling, transport, and disposal.
- The Basel Convention has played a pivotal role in reducing the illegal dumping of hazardous waste in developing countries and promoting responsible waste management practices globally.

Stockholm Convention on Persistent Organic Pollutants

- The Stockholm Convention, established in 2001, targets the elimination or reduction of persistent organic pol-

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- lutants (POPs), which are highly toxic and long-lasting chemicals that can harm human health and the environment.
- The convention currently lists 30 chemicals, including pesticides like DDT and industrial chemicals like PCBs, as POPs that must be phased out or restricted.
- It promotes the adoption of alternatives to POPs and encourages the environmentally sound management of existing POPs stockpiles.
- The Stockholm Convention includes provisions for the review and listing of new POPs based on scientific assessments.
- It has been instrumental in reducing the production and use of highly hazardous chemicals worldwide, benefiting both human health and the environment.

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

- The Rotterdam Convention, established in 1998, facilitates the exchange of information and informed decision-making regarding the import and export of certain hazardous chemicals and pesticides.
- It aims to protect human health and the environment by promoting transparency and ensuring that importing countries are aware of the risks associated with the chemicals they receive.
- The convention features a list of chemicals subject to the Prior Informed Consent (PIC) procedure, where countries must obtain consent from the importing country before shipping these chemicals.
- Parties to the convention are required to take measures to inform and educate their stakeholders about the potential risks associated with these chemicals.
- The Rotterdam Convention has enhanced global cooperation in managing hazardous chemicals and has contributed to safer international trade in such substances.

Global Tiger Forum (GTF)

- The GTF stands as the sole intergovernmental international organization, comprising member nations that have voluntarily joined forces to champion a worldwide initiative for the safeguarding of the tiger.
- It came into existence in 1993 following the recommendations of an international symposium on Tiger Conservation held in New Delhi, India.
- The headquarters of the GTF are situated in New Delhi, India.

International Union for Conservation of Nature (IUCN)

- IUCN is a membership union that includes governmental and civil society organizations.
- Established in 1948, it serves as the global authority on assessing the condition of the natural world and devising protective measures.
- The organization's headquarters are located in Switzerland.

- The IUCN Red List of Threatened Species is the world's most comprehensive record of the global conservation status of plant and animal species.
- It employs quantitative criteria to evaluate the risk of extinction faced by species, applicable to most species worldwide.
- The IUCN Red List assigns species to one of nine categories, ranging from "Not Evaluated (NE)" to "Extinct (EX)," with "Critically Endangered (CR)," "Endangered (EN)," and "Vulnerable (VU)" categories indicating species under threat of extinction.
- Recognized as the foremost reference on the status of biological diversity, the IUCN Red List also holds significance as a key indicator for Sustainable Development Goals (SDGs) and Aichi Biodiversity Targets.

Coral Reefs in India and the World

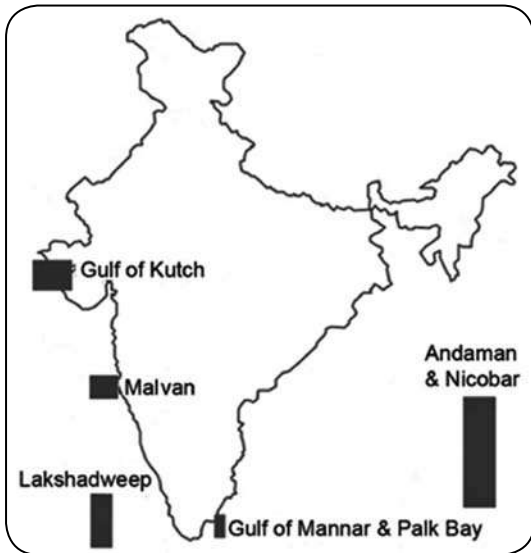
Coral Reefs in the World

- Coral reefs occur in more than 100 countries and territories and whilst they cover only 0.2% of the seafloor, they support at least 25% of marine species and underpin the safety, coastal protection, wellbeing, food and economic security of hundreds of millions of people.
- Over half of the world's coral reefs are found within six countries: Australia, Indonesia, Philippines, Papua New Guinea, Fiji, and the Maldives.
- Great Barrier Reef, Australia:** The Great Barrier Reef is the world's largest coral reef system, stretching over 2,300 kilometers (1,430 miles) along the northeastern coast of Australia. It is home to a remarkable diversity of marine life and is a UNESCO World Heritage Site.
- Indo-Pacific Reefs:** This region encompasses numerous coral reefs spread across the Indian Ocean and the western and central Pacific Ocean. It includes the Coral Triangle, which is considered the epicenter of marine biodiversity, and features reefs in countries like Indonesia, the Philippines, Malaysia, and Papua New Guinea.
- Caribbean Reefs:** The Caribbean Sea is home to a network of coral reefs, with notable ones in countries such as Belize, the Florida Keys, and the Bahamas. These reefs are known for their vibrant coral formations and are popular diving and snorkelling destinations.
- Red Sea Coral Reefs:** The Red Sea, located between Africa and the Arabian Peninsula, contains some of the world's most stunning coral reefs. Countries like Egypt and Jordan have reefs that attract divers and tourists from around the world.
- Fiji:** The islands of Fiji in the South Pacific are renowned for their pristine coral reefs. These reefs are known for their clear waters, diverse marine life, and vibrant coral formations.

- **Palau:** Located in the western Pacific Ocean, Palau is famous for its unique Rock Islands, which are surrounded by some of the world's most pristine coral reefs. It's a designated UNESCO World Heritage Site.
- **Maldives:** This Indian Ocean nation is famous for its stunning coral atolls, which provide excellent opportunities for snorkelling and diving. The Maldives is known for its luxury resorts and clear, turquoise waters.
- **Seychelles:** Another Indian Ocean paradise, the Seychelles, is home to coral reefs with a rich diversity of marine life and is known for its beautiful beaches and underwater scenery.
- **New Caledonia:** Located in the South Pacific, New Caledonia boasts one of the world's largest lagoons surrounded by extensive coral reefs. These reefs support a wide array of marine species.
- **Hawaii:** The Hawaiian Islands are surrounded by coral reefs, and the Northwestern Hawaiian Islands, in particular, are home to some pristine and relatively untouched reef ecosystems.

Coral Reefs in India

- India boasts a coastline spanning approximately 7,517 kilometers, of which 6,100 kilometers are attributed to the mainland.
- The country's coastal regions feature three prominent types of coral reefs: fringing reefs, barrier reefs, and atolls.



- India's coral reefs are distributed across various regions, including the Gulf of Kutch, Gulf of Mannar, Palk Bay, Andaman & Nicobar Islands, and Lakshadweep Islands. Notably, the Gulf of Kutch in the northwest hosts some of the world's northernmost coral reefs.
- Furthermore, patches of coral reefs can be found in locations such as Ratnagiri, Malvan, Redi, southern Bombay, and the Gaveshani Bank situated west of Mangalore.
- Corals aligned in parallel with the shoreline are observed from Quilon along the Kerala coast to Enayem in Tamil

Nadu. Along the eastern coast, an abundance of coral formations can be found between Parangipettai (south of Cuddalore) and Pondicherry.

- In the context of island-based coral ecosystems, the Andaman and Nicobar Islands, along with the Lakshadweep Islands, stand out as regions rich in thriving coral reefs.

Types of Coral Systems in India

- **Fringing Reefs:** Fringing reefs take shape and develop near the continent, maintaining their proximity to the coastline. These reefs are separated from the shoreline by small, shallow lagoons. They are the most commonly encountered type of reefs globally.
- **Barrier Reefs:** Barrier reefs are situated offshore, typically on the continental shelf, running parallel to the coastline but at a considerable distance. Between the coastline and the barrier reef lies a deep and extensive lagoon.
- **Atolls:** Atolls are formed along mid-oceanic ridges and exhibit a circular or elliptical shape. They are entirely surrounded by seas on all sides and feature shallow waters in the center, known as a lagoon.

Ideal Condition for Growth of Corals

- **Shallow Water Requirement:** Coral reefs thrive in shallow waters where the reef's surface is no deeper than 80 meters from the water's surface. This shallow depth ensures that the Zooxanthellae, which play a crucial role in the coral's nutrition through photosynthesis, receive sufficient sunlight.
- **Need for a Semi-Hard or Hard Surface:** A semi-hard or hard substrate is essential for coral reefs as it provides the foundation for the compaction, cementation, and solidification of the skeletons formed by coral polyps.
- **Necessity of Clear Waters:** Coral polyps are vulnerable to adverse conditions in areas with sediment-filled or opaque waters. The presence of sediments and murky water hampers the passage of sunlight required by the algae that sustain coral life.
- **Warm Water Dependence:** Coral reefs are closely associated with warm oceanic waters, typically requiring a temperature of approximately 20 degrees Celsius. This preference often leads to the prevalence of coral reefs on the eastern coasts of continents, although India presents an exception due to the high sediment content in its eastern waters.
- **Requisite Salinity:** Slightly saline ocean waters are vital for the development of coral polyps. These polyps extract calcium from the water to fortify their skeletons. Therefore, a moderate level of salinity is indispensable for the flourishing of coral reefs.
- **Nutrient-Rich Environment:** Coral reefs thrive in ocean waters with a rich supply of nutrients. The constant flow of nutrients brought by ocean waves supports the rapid multiplication and growth of coral polyps.

CSE Prelims GS Roundup-2

Major Air and Water Pollutants

Major Air Pollutants

Particulate Matter (PM)

- Particulate matter, especially PM_{2.5} and PM₁₀, is a significant air pollutant in India.
- It is a complex mixture of tiny solid particles and liquid droplets suspended in the air, often originating from vehicular emissions, industrial processes, and construction activities.

Ground-Level Ozone (O₃)

- Ground-level ozone is formed through chemical reactions involving precursor pollutants like nitrogen oxides (NO_x) and volatile organic compounds (VOCs).
- It is a major component of smog and contributes to respiratory problems.

Nitrogen Oxides (NO_x)

- Nitrogen oxides, including nitric oxide (NO) and nitrogen dioxide (NO₂), are emitted from vehicles, industrial combustion, and agriculture.
- They contribute to the formation of ground-level ozone and acid rain.

Sulfur Dioxide (SO₂)

- Sulfur dioxide is released from the burning of fossil fuels, especially coal, and industrial processes.
- It leads to the formation of acid rain and can harm respiratory health.

Ammonia (NH₃)

- Ammonia is released from agricultural activities, including the use of fertilizers and livestock waste.
- It can lead to the formation of fine particulate matter and contribute to air quality issues.

Vehicular Emissions

- Emissions from vehicles, especially diesel engines, are a significant source of air pollution in India.
- They release pollutants like nitrogen oxides, particulate matter, and carbon monoxide into the atmosphere.

Lead (Pb)

- Lead emissions, primarily from leaded gasoline and industrial processes, can contaminate air and soil.
- Even low levels of lead exposure can have harmful effects on children's development and overall health.

Carbon Monoxide (CO)

- Carbon monoxide is produced by incomplete combustion of carbon-containing fuels such as wood, gasoline, and natural gas.
- High levels of CO can be harmful, leading to reduced oxygen delivery to the body's organs.

Volatile Organic Compounds (VOCs)

- VOCs are emitted from various sources, including vehicle exhaust, industrial processes, and solvents.

- They contribute to the formation of ground-level ozone and can have adverse health effects.

Major Water Pollutants

Biological Contaminants

- Biological pollutants in water include bacteria, viruses, and parasites.
- These contaminants can cause waterborne diseases like cholera, typhoid, and hepatitis.

Chemical Contaminants

- Chemical pollutants in water encompass a wide range of substances, including heavy metals (e.g., lead, mercury), pesticides, and industrial chemicals.
- These pollutants can leach into water sources from agricultural runoff, industrial discharges, and improper disposal.

Nutrient Pollution

- Nutrient pollution involves the excessive presence of nutrients, mainly nitrogen and phosphorus, in water bodies.
- It often results from agricultural runoff and sewage discharge and can lead to harmful algal blooms and oxygen depletion in aquatic ecosystems.

Sediment Pollution

- Sediment pollution occurs when soil and sediment are eroded from construction sites, agricultural fields, and deforested areas and are carried into water bodies.
- Excessive sedimentation can harm aquatic habitats and water quality.

Industrial Discharges

- Effluents from industries can contain a variety of pollutants, including heavy metals, organic compounds, and toxic chemicals.
- These discharges can severely degrade water quality in nearby water bodies.

Plastic Pollution

- Plastic waste, especially single-use plastics, is a growing concern in India's water bodies.
- Microplastics, tiny plastic particles, can accumulate in aquatic environments and pose threats to aquatic life.

Heavy Metals

- Heavy metals such as lead, mercury, and cadmium are toxic contaminants found in water bodies due to industrial discharges and improper disposal.
- They can accumulate in aquatic organisms and pose health risks to humans when consumed through contaminated seafood.

Eutrophication

- Eutrophication occurs when water bodies receive excess nutrients, primarily nitrogen and phosphorus, from sources like agriculture and sewage.
- It leads to the overgrowth of algae and the depletion of oxygen in water, causing fish kills and ecological imbalances.

Pesticide Residues

- Pesticides used in agriculture can leach into groundwater and surface water, contaminating drinking water sources.
- Prolonged exposure to pesticide residues in drinking water can have adverse health effects.

Industrial Runoff

- Industrial runoff contains a wide range of pollutants, including heavy metals, chemicals, and organic compounds.
- It often enters rivers and streams, affecting downstream water quality and aquatic ecosystems.

Groundwater Contamination

- Groundwater in India is susceptible to contamination from various sources, including agricultural chemicals, sewage, and industrial effluents.
- Contaminated groundwater poses risks to public health when used for drinking and irrigation.

Microbial Pathogens

- Waterborne diseases in India are often caused by microbial pathogens such as bacteria (e.g., *E. coli*), viruses (e.g., hepatitis A), and protozoa (e.g., *Giardia*).
- Contaminated drinking water sources can lead to outbreaks of waterborne illnesses.

Sewage and Wastewater

- Untreated sewage and wastewater discharged into rivers and lakes contain harmful microorganisms, organic matter, and nutrients.
- Inadequate wastewater treatment infrastructure is a major challenge in maintaining water quality.

Chlorinated Compounds

- Chlorinated compounds, including chlorinated solvents and pesticides, can contaminate groundwater and surface water.
- Long-term exposure to these compounds can have adverse health effects.

Pharmaceuticals and Personal Care Products (PPCPs)

- PPCPs, such as medicines and cosmetics, can enter water bodies through sewage effluents.
- The presence of PPCPs in water sources raises concerns about their potential impact on aquatic organisms and human health.

Dyes and Chemicals from Textile Industries

- The textile industry generates wastewater containing dyes and various chemicals, which can pollute rivers and affect water quality.
- Sustainable practices and effluent treatment are crucial in mitigating this pollution.

Radioactive Substances

- In some regions, radioactive contaminants from sources like uranium mining can affect groundwater quality.
- Monitoring and regulating these substances are essential to prevent health risks.

Heavy Metals

- Heavy metals like mercury, cadmium, and arsenic can contaminate water sources through industrial discharges and mining activities.
- These metals can accumulate in aquatic organisms, posing risks to both the environment and human health.

Eutrophication

- Eutrophication occurs when water bodies receive excess nutrients, mainly nitrogen and phosphorus, from sources like agricultural runoff and sewage.
- It can lead to algal blooms, oxygen depletion, and the degradation of aquatic ecosystems.

Oil Spills

- Oil spills, often resulting from accidents in maritime transportation or industrial activities, can have severe ecological consequences.
- They harm marine life, disrupt ecosystems, and affect coastal areas.

Microbial Contamination

- Waterborne diseases are a significant concern in India due to microbial contamination from sources like sewage and inadequate sanitation.
- Safe drinking water practices and sanitation infrastructure are crucial to prevent such contamination.

Environment & Biodiversity: Important Terminologies

Anthropocene

- The Anthropocene is a proposed geological epoch characterized by the significant and lasting impact of human activities on Earth's geology and ecosystems.
- **Example:** Increased carbon emissions from human activities are a defining feature of the Anthropocene epoch.

Anthropogenic Biomes

- Anthropogenic biomes, also known as "human biomes" or "anthromes," are ecosystems significantly altered by human activities, such as urban areas, croplands, and industrial regions.
- **Example:** Urban areas like New York City are anthropogenic biomes characterized by high human influence on ecosystems.

Assisted Migration

- Assisted migration is a controversial conservation strategy involving the intentional relocation of species to new areas to help them cope with the effects of climate change and habitat loss.
- **Example:** Assisted migration projects aim to relocate endangered species like the American pika to cooler altitudes as temperatures rise due to climate change.

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Bioaccumulation and Biomagnification

- Bioaccumulation is the gradual accumulation of substances, such as toxins or pollutants, in the tissues of organisms over time.
- Biomagnification is the process by which concentrations of these substances increase as they move up the food chain.
- **Example:** In aquatic ecosystems, mercury bioaccumulates in fish. Predatory fish at higher trophic levels have higher mercury concentrations, illustrating biomagnification.

Biogeochemical Cycles

- Biogeochemical cycles, such as the carbon, nitrogen, and phosphorus cycles, describe the movement and transformation of essential elements and compounds between living organisms, the atmosphere, and the Earth's surface.
- **Example:** The carbon cycle involves the exchange of carbon dioxide (CO₂) between the atmosphere (from fossil fuels) and plants during photosynthesis.

Biogeography

- Biogeography is the scientific study of the distribution of species and ecosystems across geographic regions and how historical and environmental factors influence these patterns.
- **Example:** The distribution of marsupials like kangaroos in Australia is influenced by historical and geographical factors.

Bioindicators

- Bioindicators are species or organisms used to assess the health and quality of an ecosystem.
- They can indicate environmental changes, pollution levels, or ecosystem disturbances.
- **Example:** Amphibians like frogs are bioindicators; their population declines may signal pollution or habitat degradation in an ecosystem.

Biological Oxygen Demand (BOD)

- BOD is a measure of the amount of dissolved oxygen consumed by microorganisms in water bodies while breaking down organic matter.
- It is an important indicator of water quality and pollution.
- **Example:** High BOD levels in polluted rivers indicate organic pollution, as microorganisms consume oxygen while breaking down pollutants.

Carrying Capacity

- Carrying capacity is the maximum population size that an environment can sustainably support over the long term.
- It depends on available resources and environmental conditions.
- **Example:** A grassland ecosystem has a carrying capacity for a specific herbivore population, dictated by the availability of grass as a food resource.

Ecological Footprint

- An ecological footprint measures the environmental impact of an individual, community, or organization in terms of the natural resources and ecosystem services required to support their activities and consumption patterns.
- **Example:** A country's ecological footprint calculates how many Earths would be needed if everyone lived at that nation's consumption level, e.g., the United States' footprint.

Ecological Niche

- An ecological niche is the role and position of a species within its ecosystem, including its interactions with other species and its utilization of resources.
- **Example:** The niche of a beaver in a freshwater ecosystem includes building dams, which alters water flow and provides habitats for other species.

Ecological Resilience

- Ecological resilience is the ability of an ecosystem to withstand disturbances, adapt to changes, and maintain its basic functions and structures.
- It is a key concept in conservation and restoration.
- **Example:** Coral reefs with higher biodiversity tend to recover faster from coral bleaching events, showcasing ecological resilience.

Ecological Succession

- Ecological succession refers to the gradual and predictable changes in the composition and structure of an ecological community over time.
- It includes primary and secondary succession, which occur after disturbances like wildfires or glacier retreats.
- **Example:** After a volcanic eruption, the gradual recolonization of plant and animal species in the affected area showcases primary ecological succession.

Eco-Social Systems

- Eco-social systems refer to the interdependence of ecological and social systems.
- It explores how human activities affect the environment and, in turn, how environmental changes impact society.
- **Example:** The impact of deforestation on indigenous communities in the Amazon illustrates the interconnectedness of ecological and social systems.

Ecosystem Services

- Ecosystem services are the benefits that humans obtain from ecosystems, including clean air and water, pollination of crops, climate regulation, and cultural and recreational values.
- **Example:** Wetlands provide ecosystem services by filtering water, reducing flood risk, and supporting biodiversity.

Ecotone

- An ecotone is a transitional zone where two distinct ecosystems meet, leading to unique species compositions and ecological interactions.

- It's often more diverse than the adjacent ecosystems.
- **Example:** Mangrove forests in coastal regions represent an ecotone, supporting diverse species adapted to both land and water environments.

Edge Effect

- The edge effect occurs at the boundaries or edges of ecosystems, where different environmental conditions often lead to unique ecological dynamics and species compositions.
- **Example:** Forest edge habitats often have a different mix of plant species due to increased sunlight, impacting animals like birds and butterflies.

Fragmentation

- Fragmentation refers to the process of breaking up large, continuous habitats into smaller, isolated patches.
- It can have detrimental effects on biodiversity by reducing habitat connectivity.
- **Example:** Urban development often leads to habitat fragmentation, isolating populations of wildlife like squirrels.

Genetic Diversity

- Genetic diversity refers to the variety of genes within a species or population. It is crucial for adaptation, resilience, and the long-term survival of species.
- **Example:** The genetic diversity in dog breeds results from selective breeding for various traits, leading to breeds like the Chihuahua and Great Dane.

Genetic Drift

- Genetic drift is a mechanism of evolution in which the frequency of certain gene variants (alleles) in a population changes by chance over generations, particularly in small populations.
- **Example:** In a small isolated population of birds, genetic drift may lead to the fixation of certain traits, such as plumage color.

Genetic Rescue

- Genetic rescue involves introducing genetic diversity from one population into another to enhance its fitness and adaptability, often used in conservation efforts for small, endangered populations.
- **Example:** Genetic rescue efforts may involve introducing genes from a healthier population of cheetahs to bolster genetic diversity in a declining population.

Indicator Species

- Indicator species are organisms that provide information about the environmental conditions of an ecosystem.
- They are often used to assess the health or quality of an ecosystem.
- **Example:** Frogs and amphibians are indicator species. Their sensitivity to environmental changes makes them early indicators of declining ecosystem health.

Invasive Species

- Invasive species are non-native organisms that, when introduced to a new ecosystem, can outcompete native species, disrupt ecological balance, and cause harm to the environment.
- **Example:** The invasive Asian carp in U.S. waterways outcompetes native fish species and disrupts aquatic ecosystems.

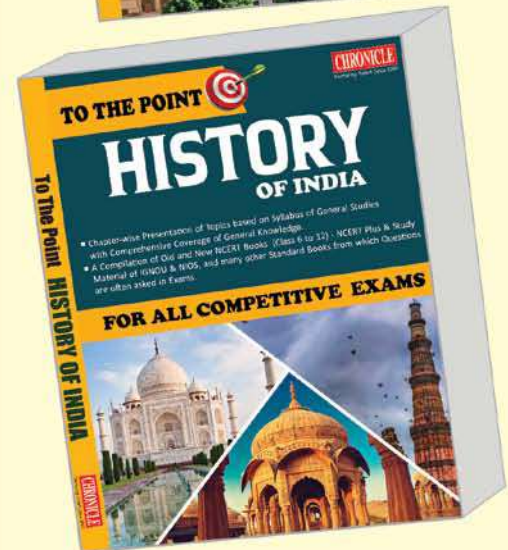
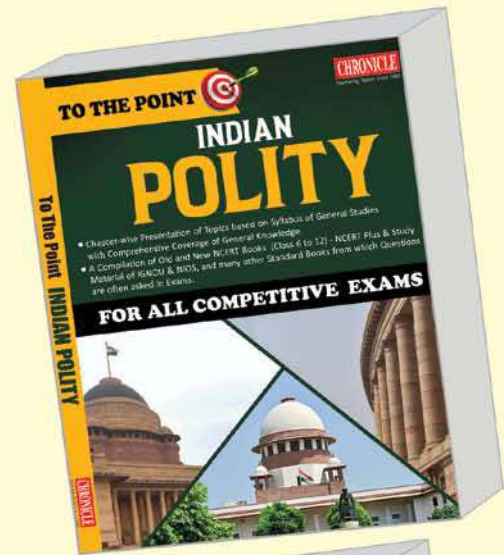
Island Biogeography

- Island biogeography theory studies the factors influencing species diversity on isolated landmasses (islands) and helps explain patterns of species richness and extinction.

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- **Example:** The Galápagos Islands' unique species distributions influenced Charles Darwin's theory of evolution.

Keystone Species

- Keystone species are species that have a disproportionately large impact on their ecosystem relative to their abundance.
- Their presence or absence can significantly influence the biodiversity and functioning of an ecosystem.
- **Example:** The sea otter is a keystone species in kelp forest ecosystems. Their presence controls sea urchin populations, preventing overgrazing of kelp.

Microbiome

- The microbiome refers to the community of microorganisms (bacteria, fungi, etc.) that live in or on the bodies of humans, animals, and plants.
- It plays a crucial role in various biological processes.
- **Example:** The human gut microbiome consists of trillions of microorganisms that aid in digestion and influence overall health.

Mutualism

- Mutualism is a type of ecological interaction in which two species benefit from their association with each other.
- For example, pollinators like bees and flowers have a mutualistic relationship.

Permafrost Thaw

- Permafrost thaw is the melting of perennially frozen ground in polar and subpolar regions due to rising temperatures.
- It releases greenhouse gases like methane, contributing to climate change.
- **Example:** Thawing permafrost in the Arctic releases methane, a potent greenhouse gas, into the atmosphere, exacerbating global warming.

Phenology

- Phenology is the study of the timing of natural events in relation to seasonal changes.
- It includes the timing of plant flowering, animal migrations, and other biological phenomena influenced by climate.
- **Example:** Early migration of birds occurs due to climate change – which is a phenological shift influenced by changing seasons.

Phenotypic Plasticity

- Phenotypic plasticity refers to the ability of an organism to exhibit different physical traits or characteristics in response to changing environmental conditions.
- It allows organisms to adapt to varying habitats.
- **Example:** Desert plants may have different leaf shapes depending on water availability, demonstrating phenotypic plasticity.

Phylogenetics

- Phylogenetics is the study of evolutionary relationships among species through the analysis of genetic data, such

as DNA sequences.

- It helps reconstruct evolutionary trees and understand biodiversity patterns.
- **Example:** Phylogenetic analysis of DNA sequences has revealed the evolutionary relationships among various hominid species, including humans and Neanderthals.

Rewilding

- Rewilding is a conservation approach that aims to restore and protect natural ecosystems by reintroducing native species, reducing human interference, and allowing nature to reclaim areas.
- **Example:** In Yellowstone National Park, the reintroduction of gray wolves led to ecosystem changes, including improved plant growth and streambank stabilization.

Riparian Zone

- A riparian zone is the transitional area between land and a river or stream.
- It plays a critical role in maintaining water quality, supporting wildlife, and preventing erosion.
- **Example:** The riparian zone along the banks of the Ganges River supports diverse plant and animal life and helps filter pollutants from the water.

R/K Selection Theory

- The r/K selection theory is a concept in ecology that describes two contrasting reproductive strategies adopted by species.
- “r-selected” species reproduce rapidly and produce many offspring with minimal parental care, while “K-selected” species invest more in fewer offspring with greater parental care.
- **Example:** “r-selected” species like dandelions produce numerous small seeds with minimal parental investment, aiming to saturate an environment quickly.
- **Example:** “K-selected” species like elephants invest substantial care in raising a few offspring, ensuring their survival in stable environments.

Trojan Gene Hypothesis

- The Trojan gene hypothesis suggests that certain genes or traits introduced into a population can spread through it like a Trojan horse, potentially altering the population's dynamics or fitness.
- **Example:** In conservation, the Trojan gene hypothesis might involve introducing a gene into a population of endangered animals to enhance their adaptability to changing conditions.

Trophic Levels

- Trophic levels represent the hierarchical levels in an ecological food chain, from producers (plants) to primary consumers (herbivores) to secondary consumers (carnivores), and so on.
- **Example:** Lions (carnivores) are secondary consumers in the African savanna food chain, feeding on herbivores like zebras (primary consumers).

Science and Technology

Applications of Emerging Technologies in Agriculture

Application of Technology in Different Sectors

Mechanization of Agriculture

- The introduction of modern machinery, such as combine harvesters, has revolutionized farming.
- For instance, in the state of Punjab, known as the “Granary of India,” the adoption of combine harvesters has led to substantial increases in wheat and rice production.
- Farmers can now harvest crops efficiently, reducing labor costs and post-harvest losses.

Climate and Weather Prediction with AI

- Weather forecasting using AI-driven technologies has aided farmers in making informed decisions.
- Organizations like the India Meteorological Department (IMD) utilize AI for weather predictions.
- Farmers in regions like Maharashtra have access to real-time weather data via mobile apps.
- This information helps them plan their agricultural activities, including planting and harvesting, effectively.

Biotechnology for Resilient Crops

- Genetically modified (GM) cotton, known as Bt cotton, is a notable example of biotechnology adoption in India.
- Bt cotton incorporates genes from a soil bacterium, making it resistant to certain pests.
- This innovation has significantly increased cotton yields across the country, benefiting cotton farmers.

Agricultural Sensors

- Soil moisture sensors, like those developed by startups such as CropIn and FlyBird Farm Innovations, are being deployed by farmers in states like Karnataka and Maharashtra.
- These sensors provide real-time soil data, allowing farmers to optimize irrigation and minimize water wastage.

Big Data for Yield Improvement and Supply Chain Management

- Agri-tech startups like Ninjacart and BigHaat leverage big data analytics to connect farmers with markets and streamline the supply chain.
- By analyzing market demand and crop data, these platforms help farmers sell their produce at fair prices and reduce post-harvest losses.

Livestock Monitoring

- The use of RFID (Radio-Frequency Identification) tags for livestock tracking is gaining popularity.

- In states like Telangana, farmers are employing RFID technology to monitor the health and location of their cattle.
- This technology aids in disease prevention and better management of livestock.

Smartphone-Controlled Crop Irrigation Systems

- In Rajasthan, where water is scarce, smartphone-controlled drip irrigation systems are making a difference.
- Farmers can remotely manage their irrigation systems, conserving water and ensuring crops receive the right amount of moisture.

Government Measures for Promoting Emerging Technologies in Agriculture

India Digital Ecosystem of Agriculture (IDEA)

- Government has finalized the core concept of India Digital Ecosystem of Agriculture (IDEA) framework which would lay down the architecture for the federated farmers’ database.
- Further, the databases related to the schemes governed by the Department have been integrated.
- The IDEA would serve as a foundation to build innovative agri-focused solutions leveraging emerging technologies to contribute effectively in creating a better Ecosystem for Agriculture in India.
- This Ecosystem shall help the Government in effective planning towards increasing the income of farmers in particular and improving the efficiency of the Agriculture sector as a whole.

National e-Governance Plan in Agriculture (NeGP-A)

- Under plan scheme viz. National e-Governance Plan in Agriculture (NeGP-A) wherein, funds are released to the State(s)/UT(s) for project involving use of modern technologies viz. Artificial Intelligence (AI), Machine Learning (ML), Robotics, Drones, Data Analytics, Block Chain etc.

Sub Mission on Agricultural Mechanization (SMAM)

- Sub Mission on Agricultural Mechanization (SMAM) is being implemented w.e.f. April, 2014.
- The scheme aims at ‘reaching the unreached’ by bringing to the small and marginal farmers in the core and giving the benefits of farm mechanization, by Promoting ‘Custom Hiring Centers’, creating hubs for hi-tech & high value farm equipments, distribution of various agricultural equipments, creating awareness among stakeholders through demonstration and capacity building activities, and ensuring performance- testing and certification at designated testing centers located all over the country.

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National Agriculture Market (e-NAM)

- National Agriculture Market (e-NAM) is a pan-India electronic trading portal which networks the existing Agricultural Produce Market Committee (APMC) mandis to create a unified national market for agricultural commodities.
- Digital services are provided to traders, farmers, Farmers Producer Organizations (FPO), Mandis through various modules of e-NAM platform such as FPO trading module, warehouse based trading module.

PM KISAN Mobile App

- Under PM KISAN Scheme, fund is directly transferred into the bank accounts of the eligible farmers under Direct Benefit Transfer mode.
- Farmers can do their self-registration through the Farmers Corner in the portal.
- PM-KISAN Mobile App was launched to broaden the reach of the scheme where farmers can view the status of their application, update or carry out corrections of name based on their Aadhaar card and also check history of credits to their bank accounts.

Integrated Scheme for Agricultural Marketing schemes (AGMARKNET)

- Integrated Scheme for Agricultural Marketing schemes (AGMARKNET) to promote creation of agricultural marketing infrastructure by providing backend subsidy support to State, cooperative and private sector investments. Services are provided through (AGMARKNET) portal which is a G2C e-governance portal that caters to the needs of various stakeholders such as farmers, industry, policy makers and academic institutions by providing agricultural marketing related information from a single window.
- It facilitates web-based information flow, of the daily arrivals and prices of commodities in the agricultural produce markets spread across the country.

Agriculture Infrastructure Fund (AIF)

- To mobilize a medium - long term debt finances facility for investment in viable projects for post-harvest management Infrastructure and community farming assets through incentives and financial support in order to improve agriculture infrastructure in the country.
- Financial assistance is provided digitally in the form of Interest Subvention and Credit Guarantee for setting up post-harvest management Infrastructure to beneficiaries such as Farmers, Primary Agricultural Credit Societies (PACS), Farmer Producers Organisations (FPOs), Self Help Groups (SHG), State Agencies/APMCs.

National Mission on Horticulture

- It promotes holistic development of Horticulture sector (including bamboo & coconut). HORTNET project is a web enabled work flow-based system for providing financial assistance under MIDH (Mission for Integrated Development of Horticulture).

- It is a unique intervention to accomplish e-Governance in NHM where-in total transparency has been envisaged in all the processes of workflow i.e., online application filing, authentication, processing and online payment to the beneficiary's bank account through DBT.

National Project on Soil Health and Fertility

- To issue soil health cards to farmers of the country, so as to provide a basis to address nutrient deficiencies in fertilization practices.
- Soil Health Card Portal is available where farmers can track soil samples.

Kisan Suvidha Mobile Application

- Development of Kisan Suvidha mobile application to facilitate dissemination of information to farmers on the critical parameters viz., Weather; Market Prices; Plant Protection; input Dealers (Seed, Pesticide, Fertilizer) Farm Machinery; Soil Health Card; Cold Storages & Godowns, Veterinary Centres and Diagnostic Labs.
- With market information, farmers are better informed about markets to sell produce, prevailing market prices and quantity demanded in the market. Thus, they can make informed decisions to sell produce at the right price and right time.

Indigenous Missile Technologies of India

Solid Fuel Ducted Ramjet (SFDR) Technology

- It is a missile propulsion system that combines a decreased smoke, nozzle-less missile booster with a thrust-modulated, ducted rocket.
- A joint R&D effort between India and Russia resulted in the development of the SFDR, which was tested in 2018. It had reached Mach 3 speed.
- The device uses a Ramjet engine that breathes air while burning solid fuel.
- The Ramjet, in contrast to solid-propellant rockets, absorbs oxygen from the atmosphere while in flight. As a result, it is lightweight and has a greater gasoline capacity.
- **Range:** Air targets in the ranges from 70 - 340 km.

Agni-5 missile

- The Integrated Guided Missile Development Program produced the cleverly constructed Agni-5 advanced surface-to-surface ballistic missile (IGMDP).
- It is a fire-and-forget missile, which cannot be stopped without an interceptor missile.
- The missile has the capability of hitting targets beyond the range of 5000 km and is crucial for India's self-defense systems.
- The Agni missile class, along with Prithvi short-range ballistic missiles, submarine-launched ballistic missiles, and fighter aircraft, is the backbone of India's nuclear launch capability.

- Agni I to V missiles are designed and developed by Defence Research & Development (DRDO).
- **Other Ranges of Agni Missiles:**
- **Agni I:** Range of 700-800 km.
- **Agni II:** Range more than 2000 km.
- **Agni III:** Range of more than 2,500 Km
- **Agni IV:** Range is more than 3,500 km and can fire from a road mobile launcher.
- **Agni-V:** The longest of the Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km.

S-400

- S-400 is a missile system developed by Russia in 1990s.
- The anti-aircraft version of the S-400 missile system, designed to destroy aircraft, cruise, and ballistic missiles, can also be used against ground targets.
- The S-400 is able to intercept cruise missiles at a range of only about 40 km due to their low-altitude flight paths

Anti-Tank Guided Missiles (ATGM)

- ATGMs are primarily designed to hit and destroy heavily armoured military vehicles.
- The missiles can be transported by a single soldier, to larger tripod-mounted weapons, which require a squad or team to transport and fire, to vehicle and aircraft mounted missile systems.
- These types of guided missiles rely on an electro-optical imager (IIR) seeker, a laser or a W-band radar seeker in the nose of the missile.
- These are 'fire-and-forget' missiles where the operator can retreat right after firing as there is no more guidance required.

Man-Portable Anti-Tank Guided Missile (MPATGM)

- Man-Portable Anti-Tank Guided Missile (MPATGM) is an indigenously developed low weight, fire and forgets missile.
- The missile is incorporated with state-of-the-art Miniaturized Infrared Imaging Seeker (IIS) along with advanced avionics.
- It is a passive weapon guidance system that uses the infrared light emission from a target to track and follow it.
- Missiles that use infrared seeking are often referred to as "heat-seekers" since infrared is radiated strongly by hot bodies.
- The successful trial of the missile is a major boost for the government's 'Atma Nirbhar Bharat' (self-reliant India) campaign.
- The missile is being developed to strengthen the combat capabilities of the Indian Army.

Vertical Launch Short Range Surface-to-Air Missile (VLSRSAM)

- It is a quick reaction surface-to-air missile that the DRDO independently designed and created for the Indian Navy

with the intention of neutralising a variety of aerial threats at close ranges, including targets that skim the surface of the ocean.

- Sea skimming is a method many anti-ship missiles and some fighter or strike aircraft use to escape radar and infrared detection.
- The missile has been designed to strike high-speed airborne targets at the range of 40 to 50 km and at an altitude of around 15 km.
- Its design is based on the Astra missile, an air-to-air missile with a beyond visual range.

Quick Reaction Surface-to-Air Missile (QRSAM)

- Quick Reaction Surface to Air Missile (QRSAM) is a rapid reaction Surface to Air Missile capable of Search on Move, Track on Move and Fire on Short halts.
- Because QRSAM is a canister-based system, it is kept in and used from spaces that have been specifically created for that purpose.
- Because the environment inside the canister is controlled, the shelf life of weapons is significantly extended in addition to being made easier to transport and store.
- The system is able to engage targets with brief halts and identify and track moving targets.
- The completely automated command and control system is the core component of the QRSAM weapon ensemble, which operates while moving.
- It also consists of two radars - Active Array Battery Surveillance Radar and Active Array Battery Multifunction Radar - with one launcher.

HELINA

- HELINA (Helicopter based NAG) is a third generation fire and forget class anti-tank guided missile (ATGM) system mounted on the Advanced Light Helicopter (ALH).
- The system has all weather day and night capability and can defeat battle tanks with conventional armour as well as explosive reactive armour.
- The HELINA missile can engage targets both in direct hit mode as well as top attack mode.
- HELINA Weapon Systems is being inducted into the Indian Army (IA).
- A variant of HELINA Weapon System called DHRUV-ASTRA is being inducted into the Indian Air Force (IAF).

Astra Mk-I beyond Visual Range (BVR)

Air-to-Air Missiles

- Astra is India's first beyond-visual-range (BVR) air-to-air missile indigenously designed and developed by Defence Research and Development Organisation (DRDO).
- It is intended to engage and destroy aerial targets with high manoeuvrability and supersonic speeds.
- The missile's advanced air combat capabilities allow it to engage multiple high-performance targets.
- The Astra missile will serve the Indian Air Force (IAF) and the Indian Navy.

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- It has been integrated with the IAF's Su-30MKI fighter jet jointly developed by the Sukhoi Design Bureau and Hindustan Aeronautics Limited (HAL).
- The missile will also be integrated with the Mirage 2000 multi-role combat fighters, Tejas light combat aircraft (LCA), and MiG-29 and MiG-21 Bison fighter jet platforms, as well as the Indian Navy's Sea Harrier jet fighter.
- The Indian Government already ordered more than 288 Astra Mk-I missiles for the Air Force and the Navy.

Pralay Missile

- Pralay is India's first conventional quasi-ballistic missile and is an answer to any conventional missile attack from northern or western borders.
- A quasi-ballistic missile has a low trajectory, and while it is largely ballistic, it can manoeuvre in flight.
- The missile has been developed in a way that it is able to defeat the interceptor missiles and also has the ability to change its path after covering a certain range mid-air.
- It is powered with a solid propellant rocket motor and many new technologies.
- The missile guidance system includes state-of-the-art navigation system and integrated avionics.

Pinaka Multi-Barrel Rocket Launcher (MBRL) System

- Locally designed and successfully tested at different ranges is the Pinaka Multi-Barrel Rocket Launcher System Extended Range (ER), Area Denial Munitions (ADM).
- The Multi-Barrel Rocket Launcher (MBRL) system has a 44-second salvo firing time for 12 missiles.
- Compared to its earlier version, this improved version of Pinaka had been adopted to attain longer range performance.
- A variety of tracking systems, including telemetry, radar, and electro-optical tracking systems (EOTS), are used to monitor flight objects.
- Its deployment along China's and Pakistan's boundaries is planned. By 2024, this injection is expected to be finished.
- It consists of Command Stations, Vehicles, and Launchers with Automated Gun Aiming and Positioning Systems (AGAPS).

Critical Minerals in India

Critical Minerals in India

- Recently, Ministry of Mines released a list of 30 critical minerals for India.
- These minerals includes - Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

- A joint venture company namely Khanij Bidesh India Ltd. (KABIL) has been incorporated with the equity contribution from three Central Public Sector Enterprises namely, National Aluminium Company Ltd, Hindustan Copper Ltd and Mineral Exploration Company Ltd with the objective to identify and acquire overseas mineral assets of critical & strategic nature such as Lithium, Cobalt & others so as to ensure supply side assurance.
- KABIL has engagements with countries like Argentina, Australia etc. to acquire critical & strategic minerals assets.

Critical Minerals in India - Location and Use

- **Antimony:** India has limited antimony reserves primarily found in the form of stibnite ore in states like Madhya Pradesh and Karnataka. Antimony is used in flame retardants, lead-acid batteries, and semiconductors.
- **Beryllium:** India has beryllium reserves in the form of beryl minerals in the Rajasthan state. Beryllium is vital for the aerospace and nuclear industries due to its unique properties.
- **Bismuth:** Bismuth is not typically considered a critical mineral in India as it has limited industrial applications in the country. It is used in pharmaceuticals, cosmetics, and low-melting alloys.
- **Cobalt:** India relies on imports for cobalt, which is crucial for lithium-ion batteries used in electric vehicles and electronics. The demand for cobalt is rising in India with the growth of the EV industry.
- **Copper:** India has significant copper reserves and is one of the major producers of copper in the world. Copper is essential for electrical wiring, motors, and electronics.
- **Gallium:** India has limited gallium production and relies on imports for this critical element. Gallium is used in semiconductors and LEDs.
- **Germanium:** India has limited germanium reserves and depends on imports for its needs. Germanium is used in fiber optics, infrared optics, and solar panels.
- **Graphite:** India has graphite deposits in states like Jharkhand, Tamil Nadu, and Odisha. Graphite is essential for lithium-ion batteries and has various industrial applications.
- **Hafnium:** India does not have significant hafnium reserves and relies on imports. Hafnium is used in the aerospace and nuclear industries.
- **Indium:** India has limited indium production, and most of it is imported. Indium is used in touchscreens, LCD displays, and semiconductors.
- **Lithium:** India has limited lithium reserves and primarily depends on imports for lithium, a critical component in lithium-ion batteries. The growing electric vehicle (EV) industry in India is driving increased demand for lithium.
- **Molybdenum:** India has molybdenum deposits primarily in states like Rajasthan and Jharkhand. Molybdenum is used in steel production, particularly in making stainless steel.

- **Niobium:** India has niobium reserves in states like Tamil Nadu and Kerala. Niobium is used in the aerospace and steel industries to make high-strength alloys.
- **Nickel:** India has limited nickel reserves and depends on imports for its industrial needs. Nickel is essential in stainless steel production and batteries.
- **Platinum Group Elements (PGE):** India has minimal PGE production, and it relies on imports for these precious metals. PGEs, including platinum, palladium, and rhodium, are used in catalytic converters and electronics.
- **Phosphorus:** India has substantial phosphorus reserves, primarily in the form of phosphate rock. Phosphorus is a crucial component in fertilizers for agricultural purposes.
- **Potash:** India relies on imports for potash, an essential nutrient for crops. Potash is used extensively in the agricultural sector.
- **Rare Earth Elements (REE):** India has limited rare earth element production but is exploring its potential. REEs are critical for electronics, magnets, and renewable energy technologies.
- **Rhenium:** India has negligible rhenium production and depends on imports. Rhenium is used in super alloys for aircraft engines and in certain electrical components.
- **Silicon:** India has silicon reserves and produces silicon for various industrial applications. Silicon is a key component in the semiconductor and solar panel industries.
- **Strontium:** India has strontium reserves, primarily in Rajasthan. Strontium compounds find applications in fireworks, pyrotechnics, and medical imaging.
- **Tantalum:** India has limited tantalum production and depends on imports. Tantalum is used in electronics, capacitors, and aerospace applications.
- **Tellurium:** India has limited tellurium production and relies on imports. Tellurium is used in solar panels and thermoelectric devices.
- **Tin:** India has tin reserves primarily in states like Jharkhand and Chhattisgarh. Tin is used in packaging, soldering, and electronics.
- **Titanium:** India has titanium reserves and produces titanium dioxide for various applications. Titanium is used in aerospace, medical implants, and paints.
- **Tungsten:** India has tungsten reserves, primarily in Rajasthan and Himachal Pradesh. Tungsten is used in the aerospace, automotive, and electrical industries.
- **Vanadium:** India has vanadium reserves primarily in Andhra Pradesh. Vanadium finds applications in steel production and energy storage.
- **Zirconium:** India has zirconium reserves primarily in Kerala and Tamil Nadu. Zirconium is used in nuclear reactors, ceramics, and alloys.
- **Selenium:** India has limited selenium production and depends on imports. Selenium is used in electronics, photovoltaic cells, and glass manufacturing.
- **Cadmium:** India has cadmium reserves primarily in Rajasthan. Cadmium is used in batteries, pigments, and coatings.

Objects and Phenomena in Space

Stars

- Stars are massive, luminous celestial objects composed mostly of hydrogen and helium.
- They emit light and heat energy through nuclear fusion reactions in their cores. Our Sun is an example of a star.

Planets

- Planets are celestial bodies that orbit stars, including our own solar system's eight planets.
- They vary in size, composition, and atmospheric conditions. Examples include Earth, Mars, and Jupiter.

Moons (Natural Satellites)

- Moons are natural satellites that orbit planets. Earth's moon, for instance, is a natural satellite.
- Some planets have multiple moons. Example is earth's moon (Luna)

Asteroids

- Asteroids are rocky objects that orbit the Sun, primarily found in the asteroid belt between Mars and Jupiter.
- They can vary in size from a few meters to hundreds of kilometers across. For example, Ceres, the largest asteroid in the belt, was classified as both an asteroid and a dwarf planet.

Comets

- Comets are icy bodies that orbit the Sun in highly elliptical orbits.
- When they approach the Sun, they develop tails composed of gas and dust due to sublimation.
- For example, Halley's Comet is one of the most famous comets. It returns to the inner solar system roughly every 76 years, and its last appearance was in 1986.

Galaxies

- Galaxies are vast systems of stars, gas, dust, and dark matter bound together by gravity.
- For example, the Milky Way is a barred spiral galaxy containing hundreds of billions of stars. It's just one of billions of galaxies in the observable universe.

Nebulas

- Nebulas are clouds of gas and dust in space. They can be regions of star formation or remnants of supernova explosions.
- Some are visible as colorful patches in the night sky. For example, the Eagle Nebula is known for the "Pillars of Creation," towering columns of gas and dust where new stars are forming.
- It was captured in a famous Hubble Space Telescope image.

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Black Holes

- Black holes are extremely dense regions in space where gravity is so strong that nothing, not even light, can escape their gravitational pull.
- They form from the remnants of massive stars.
- For example, Sagittarius A* is a supermassive black hole located at the center of our galaxy. It has a mass roughly 4 million times that of the Sun.

Quasars

- Quasars are extremely bright and distant celestial objects that emit powerful radiation.
- They are believed to be powered by supermassive black holes at their centers.
- For example, 3C 273 is one of the brightest quasars known. It's powered by a supermassive black hole and emits intense radiation, despite being over 2 billion light-years away.

Pulsars

- Pulsars are highly magnetized, rotating neutron stars that emit beams of electromagnetic radiation.
- They appear as regular pulses of radiation and are often referred to as cosmic lighthouses.
- For example, PSR B1919+21 was the first pulsar discovered and is a rapidly spinning neutron star.

Exoplanets

- Exoplanets are planets that orbit stars outside our solar system.
- Thousands have been discovered, and some may potentially support life.
- For example, Kepler-186f is an Earth-sized exoplanet located in its star's habitable zone, making it a potential candidate for hosting liquid water and, possibly, life.

Supernovae

- Supernovae are powerful explosions that occur when massive stars reach the end of their life cycles.
- They release enormous amounts of energy and can briefly outshine entire galaxies.
- For example, Supernova 1987A, located in the Large Magellanic Cloud, was one of the closest supernovae observed in modern times, providing invaluable insights into stellar explosions.

Gamma-Ray Bursts

- Gamma-ray bursts are intense bursts of gamma-ray radiation that occur in distant galaxies.
- They are among the most energetic events in the universe and are still being studied.
- For example, GRB 080916C, detected in 2008, emitted gamma-ray radiation from a distance of about 12.8 billion light-years away, making it one of the most distant objects observed.

Cosmic Microwave Background (CMB)

- The CMB is the afterglow of the Big Bang, a faint radiation that fills the universe. It provides valuable insights into the early universe's conditions and evolution.
- For example, the CMB is a faint radiation that fills the universe, originating from the Big Bang. It was discovered in 1964 and provides strong evidence for the Big Bang theory.

Dark Matter and Dark Energy

- These are mysterious substances that make up a significant portion of the universe.
- Dark matter exerts gravitational forces but does not emit light, while dark energy is responsible for the universe's accelerated expansion.
- For example, Dark matter, although invisible, exerts gravitational forces, making up about 27% of the universe's content. Dark energy, about 68%, is responsible for the universe's accelerated expansion, a discovery made in the late 1990s.

Physics in Everyday Life

- **Electricity and Electronics:** Charging your smartphone or using any electrical device involves understanding the flow of electrons, voltage, and current (Ohm's Law). Light bulbs, refrigerators, and computers operate based on principles of electromagnetism and thermodynamics.
- **Transportation:** Driving a car relies on concepts of mechanics, including acceleration, friction, and Newton's laws of motion. GPS systems and navigation use principles of relativity for accurate positioning.
- **Communication:** Sending text messages or making phone calls involve electromagnetic waves and the transmission of signals through various media. The internet and wireless technologies are products of electrical and electronic engineering.
- **Medical Technology:** X-rays, MRI scans, and CT scans are diagnostic tools that utilize principles of radiation and electromagnetic waves. Medical instruments such as pacemakers and ultrasound devices are designed using physics principles.
- **Cooking:** Cooking appliances like microwave ovens operate based on the interaction of electromagnetic waves with food molecules, heating them. Understanding heat transfer helps in cooking by conduction, convection, and radiation.
- **Climate and Weather:** Understanding weather patterns involves meteorology, which uses principles of fluid dynamics, thermodynamics, and heat transfer. Climate science relies on physics to study the Earth's energy balance and the greenhouse effect.

- **Sports and Recreation:** Sports like soccer, tennis, and golf involve understanding the physics of motion, including projectile motion, and the transfer of energy. Video games and virtual reality technologies are developed using principles of optics, mechanics, and computer graphics.
- **Construction and Architecture:** Engineers use physics to design stable structures, calculate loads, and ensure safety in construction. Architects use principles of physics to create aesthetically pleasing and functional buildings.
- **Space Exploration:** Space missions, satellite communications, and understanding the cosmos are driven by principles of astrophysics and celestial mechanics. Space travel relies on rocket propulsion, which follows Newton's third law of motion.
- **Household Appliances:** Refrigerators, air conditioners, and heaters operate based on thermodynamics and heat transfer. Washing machines use principles of mechanics and fluid dynamics to clean clothes.
- **Music and Sound:** Musical instruments and sound systems are designed using acoustics principles to produce and amplify sound. Understanding waveforms and frequencies is essential in music production and recording.
- **Optics and Vision:** Eyeglasses and contact lenses correct vision by manipulating light using lenses and mirrors. Cameras and photography rely on optics to capture and process images.
- **Astronomy:** Telescopes and observatories use optics and electromagnetic principles to study celestial objects and phenomena, helping us understand the universe better. For instance, the Hubble Space Telescope has provided stunning images of distant galaxies.
- **Transportation Safety:** Seatbelts and airbags in vehicles are designed to reduce the impact forces during accidents, based on principles of momentum and collision physics, enhancing passenger safety.
- **Energy Production:** Solar panels convert sunlight into electricity through the photovoltaic effect, a process that relies on the behaviour of photons and electrons. Wind turbines generate power through the interaction of wind with the blades, utilizing fluid dynamics.
- **Environmental Monitoring:** Weather stations and instruments like anemometers and barometers help predict weather patterns and measure atmospheric conditions. These devices are rooted in principles of meteorology and fluid mechanics.
- **Materials Science:** Engineers and scientists use physics to develop new materials with specific properties. For instance, superconductors, which can conduct electricity with zero resistance, have numerous applications in medical imaging and transportation.
- **Consumer Electronics:** Smart TVs, smartphones, and electronic gadgets make use of semiconductor physics and quantum mechanics to create miniaturized and high-performance components.
- **Sports Equipment:** From golf clubs to tennis rackets, sports equipment is designed using physics principles to optimize performance, balance, and aerodynamics.
- **Nuclear Technology:** Nuclear power plants generate electricity by harnessing the energy from nuclear reactions, with safety protocols based on nuclear physics principles.
- **Telecommunications:** Fiber-optic communication relies on the behaviour of light in glass fibers, allowing for high-speed data transmission over long distances.
- **Fashion and Textiles:** The textile industry uses principles of physics in fabric design, dyeing, and printing processes to create a wide range of clothing materials.
- **Aviation:** Aircraft design and aerodynamics play a crucial role in aviation. Principles of lift, drag, and thrust govern the flight of airplanes, while jet engines operate based on thermodynamics and fluid dynamics.
- **Renewable Energy:** Wind energy is harnessed using wind turbines, which convert kinetic energy from the wind into electrical energy. Hydroelectric power plants use the physics of flowing water to generate electricity.
- **Home Design and Insulation:** Physics principles are used in designing homes for energy efficiency. Insulation materials and techniques are employed to regulate heat transfer and maintain comfortable indoor temperatures.
- **Traffic Management:** Traffic signals, road signs, and traffic flow optimization rely on mathematical models and physics principles to manage and control the movement of vehicles on roads.
- **Medical Imaging:** Besides X-rays, MRI, and CT scans, positron emission tomography (PET) and ultrasound imaging are other medical technologies based on physics. Ultrasound, for example, uses sound waves to create images of internal body structures.
- **Food Technology:** Food preservation techniques, such as refrigeration and freezing, are rooted in thermodynamics. Microwave ovens use electromagnetic waves to heat and cook food.
- **Fashion Design:** The fashion industry utilizes the physics of color, light, and textiles to create clothing designs and fabric patterns.
- **Security Systems:** Motion sensors, CCTV cameras, and alarm systems are designed based on the physics of motion detection, optics, and electronics to enhance security.
- **Gaming and Virtual Reality:** Video games and virtual reality applications are developed using physics principles to create realistic simulations of movement, gravity, and interaction.
- **Geophysics:** Understanding earthquakes, volcanoes, and the Earth's structure involves the principles of geophysics, which are essential for disaster management and geological studies. ■ ■

69th BPSC Preliminary Examination

Important Oneliner Facts

Recently, 69th Preliminary Examination was conducted by Bihar Public Service Commission. In this issue, we are presenting the important questions of this examination in oneliner form. These oneliner facts will prove useful for upcoming examinations.

- Which communication network has potential to enable technologies like Internet of Things, Edge computing and Network Slicing? - **5G**
- VERITAS (Venus Emissivity, Radio science, InSAR, Topography And Spectroscopy) is a proposed NASA mission to send an orbiter to the planet - **Venus**
- The proposed mission of NASA to land first woman and first man of colour on the surface of moon is - **Artemis**
- The fibers of linen can be obtained from - **Flax Plant**
- The Mohair fibers can be obtained from - **Angora goat**
- Taeniasis is an intestinal infection caused by - **Three species of tapeworm-Taenia solium, Taenia saginata, and Taenia asiatica**
- Cobra, Python, Squirrel, Java are examples of - **Computer Programming Language**
- What is the full form of GPT in ChatGPT, recently seen in the news? - **“Generative Pre-trained Transformer”**
- The test buds of our tongue can experience how many types of tastes? - **Five viz. sweet, salty, sour, bitter and umami**
- A health condition which causes partial or complete loss of smell - **Anosmia**
- In the universe, pulsars are - **Rotating Neutron Stars**
- For lab-manufactured diamonds, the material used as diamond seed is - **Graphite**
- The ‘fibre’ used to make bulletproof jackets - **Kevlar**
- HMX stands for-
- **High Melting Explosive also known as High-velocity Military Explosive, or High-Molecular-weight RDX**
- The name of Tesla’s humanoid robot launched in October 2022 is - **Optimus**
- The top-secret program to make the first atomic bombs during World War II - **Manhattan Project**
- A photoelectric cell is a device which - **Converts light energy into electric energy**
- The DNA double helix structure was discovered by - **James Watson and Francis Crick**
- How do vector vaccines work to provide immunity? - **By placing the virus in a modified version of a different virus**
- The process that continually adds new crust is - **Seafloor spreading**
- The theory that states “pieces of the Earth’s crust are inconstant, slow motion driven by movement in the mantle” is called - **Plate tectonics**
- ‘mRNA’ stands for - **Messenger Ribonucleic Acid**
- An AC current can be produced by - **Transformer**
- Current density a scalar or a vector quantity? - **Vector Quantity**
- What is the basis of most useful classification of medications in medical chemistry? - **Molecular targets**
- Sunchi Reef, Amee Shoals and Grande Island are located near the coast of - **Goa**
- Who is the Head of Russia’s Wagner Mercenary Group? - **Yevgeny Prigozhin**
- The Global Gender Gap Report is released by - **World Economic Forum (WEF)**
- The theme of DefExpo-2022, held in Gujarat was - **‘Path to Pride’**
- The three-day celebration of Thadingyut Festival is celebrated in which country? - **Myanmar**
- The name of the deep-sea submersible that imploded during an underwater voyage to the Titanic wreckage - **Titan**
- The Ministry of Home Affairs has completed the Mother Tongue Survey of India (MTSI) in November 2022 with field videography of the country’s how many languages? - **576**
- Which State Government launched the State-Level Committee for Vulture Conservation (SLCVC), proposed by the national action for the protection of vultures in India? - **Tamil Nadu**
- Recently captive-bred 10 Giant Asian Tortoise were released into protected area of - **Ntangki National Park (Nagaland)**
- Rudranksh Balasaheb Patil represents in which sports - **Shooting**
- India signed the Economic Cooperation and Trade Agreement (ECTA) with which country? - **Australia**
- The Plain Language Act which requires government officials to use simple and easily understandable English language in official documents and websites is passed by - **New Zealand**
- Tillyardembi Fossils of the world’s first plant pollinators, called Tillyardembiids, were discovered recently in which country? - **Russia**

69th BPSC Preliminary Exam

- The 'Lisbon Declaration', is associated with the conservation of **-Oceans**
- The concept of the Directive Principles of State Policy in the Indian Constitution was borrowed from the Constitution of **-Ireland**
- Sikkim became a full-fledged State of the Union of India on **-26 April, 1975**
- In Indian art, the construction of 'Stupa', 'Chaitya' and 'Vihara' is related to which religious sect **- Buddhism**
- 'Sujini' handicraft of Bihar is **- A type of embroidery**
- The Vikramshila University situated in Bhagalpur district of Bihar was founded by **-Dharmapala**
- Cannons in warfare in India was introduced by **-Babur**
- Which port of India was called Babul Makka (Gate of Macca) **- Surat**
- 'Ashta Pradhan' was a Council of Ministers in the **- Maratha Administration**
- The painting of 'Bodhisattva Padmapani' is located at **- Ajanta**
- Nowruz festival in India was introduced by **- Balban**
- Fa-Hien was a Chinese pilgrim who visited India during the reign of **- Chandragupta II**
- The English as a medium of instruction for higher studies was recommended by **- Wood's Dispatch of 1854**
- Nathpanthis, Siddhas and Yogis made devotional religion popular in **- Northern India**
- The Maithili language was started to develop during the reign of **- Karnat dynasty**
- Which city served as the capital of the ancient kingdom of Magadha during the early Vedic period? **-Rajgriha**
- Which act is also known as 'Gagging Act'? **-Vernacular Press Act**
- Futuh-i-Alamgiri was written by **- Ishwardas Nagar**
- Nitisara, an early book of politics, was written by **-Kamandaka**
- According to Chinese source, Meghavarnan, the ruler of Sri Lanka, sent a missionary to which of the following Gupta Kings for permission to build a Buddhist temple at Gaya? **-Samudragupta**
- When Bihar was first separated from the Bengal Presidency under the British-ruled India? **-1912**
- The only outflow from the Lake Victoria is **-Nile River**
- The birthplace of Christopher Columbus is **-Genoa, Italy**
- The seven Emirates of UAE are **- Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaimah and Fujairah**
- The river Subarnarekha originates near **-Nagri Village (Ranchi)**
- Valmiki National Park is located in **-Bihar**
- Gangetic Dolphin carried out navigation and hunting using **-Echolocation**
- Gandak river is also known as **- Narayani**
- In which district of Bihar Gold reserves have been found? **-Jamui**
- The Triveni Canal has been constructed on the river **- Gandak**
- Which is one the world's richest region from a marine biodiversity perspective, comprising twenty-one islands with estuaries, beaches, forests of the near shore environment, sea grasses, coral reefs, salt marshes and mangroves? **-Gulf of Munnar Biosphere Reserve**
- How many latitudes are there on the globe drawn at 1 degree interval? **-179**
- On which plateau, the Tropic of Cancer and the Indian Standard Time Line intersect each other?**-Baghelkhand**
- El Nino current flows in which ocean **-Pacific Ocean**
- The words -'Socialist', 'Secular' and 'Integrity' were added to the Preamble of Indian Constitution by **- 42nd Constitutional amendment**
- The Indian Constitution has taken reference for the idea of the Fundamental Rights **-United States of America**
- Untouchability is abolished by which Article of the Indian Constitution? **-Article 17**
- The authority to determine the number of Judges in a High Court rests with which of the following entities? **-The Parliament**
- The Fifth Schedule deals with the governance and protection of the interests of which specific group of people **-Scheduled Tribes**
- In which case did the Supreme Court of India give for the first time the doctrine of 'basic structure' of the Constitution? **- Kesavananda Bharati vs. State of Kerala, 1973**
- Under which Article(s), the Speaker can allow any member of the House to speak in his/her mother tongue? **-Article 120 (1)**
- The Foreign Exchange Reserves (FER) of RBI include- **- Foreign currency assets, gold, special drawing rights in the IMF**
- 'Rules of Origin' refers to **- The criteria needed to determine the national source of a product**
- The Industrial Policy Resolution adopted in the year **- 1956**
- The cook from Bihar who saved Mahatma Gandhi's life from a murder attempt by food poisoning in 1917 was **-Batak Miyan**
- The Bakasht Movement in Bihar during 1937-1938 was organized by **-Swami Sahajanand Saraswati**
- The treaty signed after the Battle of Buxar **-The Treaty of Allahabad**
- The leader of Bihar known as 'Bihar Kesari' was **- Shri Krishna Singh**
- Tattwabodhini Sabha was established by **-Devendra Nath Tagore**
- The Dutch East India Company established its factory at Patna in which year **-1632**
- In which movements did Mahatma Gandhi make the first use of the hunger strike as a weapon? **-Ahmedabad Strike ■■**

Exam Pointers

Kurukshetra (September 2023)

- Make in India
- Green Skills
- Renewable and Clean Energy
- Research and Innovation
- From Tradition to Innovation

- Food Processing

Yojana (September 2023)

- Nyay Bandhu
- Reforms in Civil Services from the Perspective of Capacity Building
- Parliamentary Committees
- Data Protection
- Law Commission
- Direct Tax Reforms
- Protecting the Interests of Consumers and Businesses
- Administrative Reforms
- Women Empowerment

Kurukshetra (September 2023)

Make in India

- What percent did manufacturing sector contribute to the GDP in recent years? - 16%
- Which policy was formulated in the year 2011 to promote growth in employment in the country?
- **National Manufacturing Policy**
- In which year “Make in India” initiative was launched by the Government of India? - **September 2014**
- What is the aim of ‘Make in India’ initiative?
- **To promote companies for manufacturing and assemblage of products in India**
- How many economic sectors are considered for employment generation and skill development under Make in India initiative? - 27
- What is the objective of Make in India, Make for World?
- **To promote self-reliance**
- What percentage of population in India is in the age group of 15-64? - 67%
- About what percent of the incremental global workforce over the next decade will come from India? - 24.3%
- What are the steps taken by Government of India to prepare young talent for Make in India?
- **To solve the problem of living, to bring a change in behavior in young age, to develop basic infrastructure for innovation and providing resources, Ease in trade and protection of intellectual property rights**
- What is the objective of establishing Atal Tinkering Labs by the Government of India under Atal Innovation Mission?
- **To bring a change in thought process of students in young age**
- What is the aim of establishing Atal Tinkering Lab?
- **To promote imagination, curiosity and creativity**
- What is the full form of STEM?
- **Science, Technology, Engineering and Mathematics**
- Which are three Indian states having highest score in National Manufacturing Innovation Survey 2021-22?
- **Telangana, Karnataka, and Tamil Nadu**
- Which are three Indian states having lowest score in National

Manufacturing Innovation Survey 2021-22?

- **Odisha, Bihar, and Jharkhand**

- Which initiative was launched with the aim of promoting innovation by creating a conducive ecosystem for the growth of entrepreneurship and startups? - **Startup India Initiative**
- National Manufacturing Innovation Survey is done by -
- **Department of Science and Technology and United Nations Industrial Development Organisation**
- Under Make in India initiative 27 economic sectors have been identified. Under this, how many sectors are allotted to service sector? - **12 (Other 15 in manufacturing sectors)**
- What are four major pillars of Make in India initiative?
- **New processes, new infrastructure, new sector, new mindset**
- What are the benefits of Make in India initiative to the country? - **Country will get high credit rating, would help India become a global manufacturing centre, will attract more investment to the country**
- What are the major socio-economic benefits of Make in India initiative?
- **Positive impact on inclusive socio-economic development of India, manufacturing development, creating employment opportunities in rural and urban area, increased purchasing power, creating skilled workforce**
- What is the goal of Make in India initiative?
- **Export oriented development**
- Which schemes are implemented by government at all India level to promote and develop Textile industry? - **National Technical Textiles Mission, scheme for Integrated Textile Park, National Handicraft Development Programme and National Handloom Development Programme**
- What are the objectives of PM Mega Integrated Textile Regions and Apparel (PM MITRA) Parks? - **Enhance the competitiveness of the textiles industry, helping India to achieve the United Nations Sustainable Development Goal 9**
- What is the aim of One District One Product (ODOP) scheme? - **To facilitate the promotion and production of indigenous products from every district, to provide a platform to farmers, artisans and producers of textiles, handloom and handicrafts, agricultural and processed products**

- What was the FDI inflow into India in FY 2022?
- **84-84 billion US dollars**
- What was the annual average growth rate of the agriculture sector during 2014-15 and 2021-2022? - **4-6%**
- What was the total services export of India in 2021-22 ?
- **254.5 billion US dollars**
- What percentage share does India have in the global real-time digital payment chart? - **46%**

Green Skills

- What is the nature of green jobs defined by the International Labor Organization ? - **Decent jobs**
- What do green jobs focus on ? - **To help improve energy and raw material affordability**
- What four groups does the Green General Skill Index Working Group of the United Nations Industrial Development Organization identify? - **Engineering and Technical Skills, Science Skills, Operations Management Skills, Monitoring Skills**
- Which is the nodal Ministry responsible for coordinating all skill development efforts across the country? - **Ministry of Skill Development and Entrepreneurship**
- When was National Council of Vocational Education and Training notified by MSDE ? - **5 December 2018**
- When was the Green Skill Development Program (GSDP) launched ? - **June 2017**
- Green Skills Development Program (GSDP) was launched by which Ministry ?
- **Ministry of Environment, Forest and Climate Change**
- How many missions are included under the Climate Change Action Plan? - **8**
- Where was the COP- 26 held? - **Glasgow**
- What is the name of the five-fold strategy proposed by India in COP-26? - **Panchamrit**
- By which year, India aims to achieve its non-fossil energy capacity of **500 GW**? - **2030**
- What percentage of its energy needs, India would meet from renewable energy by 2030? - **50%**
- By how many tonnes will India reduce its total projected carbon emissions by 2030 ? - **Up to one billion tons**
- By which year will India has committed to achieve the target of net zero carbon? - **2070**
- On what principles does the concept of circular economy work? - **Reduce-Reuse-Recycle**
- What is called off-farm technology, a sustainable technology and is promoted to generate energy at local level ?
- **Bio Briquetting**
- What technologies are used to generate biomass energy from pine needles? - **Biomass Briquetting**
- Where is G.P. Pant National Institute of Himalayan Environment located? - **Almora**

Renewable and Clean Energy

- Which Temple in India is first to start solar powered **3D light and sound show**?
- **Sun Temple located in Modhera in Gujarat**

- In how many steps is the manufacturing of crystal solar panel **done**? - **Four**
- What is high purity silicon called ? - **Polysilicone**
- What is the total capacity of solar cell production in India? - **3 GW per year**
- Which is the country's first «Suryagram» equipped with solar energy and battery storage? - **Modhera (Gujarat)**
- Under the scheme of solar parks and ultra mega solar energy projects **development, how** many GW of solar energy production has been targeted by March 2024? - **40**
- Which Company in India has installed the country's largest floating solar park?
- **National Thermal Power Corporation (NTPC)**
- At which place, country's largest floating solar park has been established? - **Ramagundam (Telangana)**
- What is the capacity of the country's largest floating solar park? - **100 MW**
- Which is India's first completely solar powered station?
- **Guwahati**
- Which company is operating hydrogen energy based buses and establishing a station for **the first time in Leh**?
- **NTPC Limited**
- When was the National Hydrogen Mission announced?
- **15 August 2021**
- Under the National Hydrogen Mission, at least how many million metric tons per year of green hydrogen production capacity will be developed by **2030**? - **5**
- How is green hydrogen produced? - **Electrolysis of water**
- Where has a high purity plant been established to convert organic waste into green hydrogen through biomass gasification? - **Indian Institute of Science, Bengaluru**
- India's indigenously built hydrogen fuel cell bus was lunched in-
- **Pune (Maharashtra)**
- What is the unit capacity of wind mills manufactured in India in megawatt? - **3-6 MW**

Research and Innovation

- Who gave the slogan of Jai Jawan, Jai Kisan, Jai Vigyan, Jai Anusandhan? - **Prime Minister Narendra Modi**
- According to NASSCOM, what is the annual growth rate in patent filing in India ? - **13.6%**
- How many total patent applications have been filed by India between the **years 2010-2022**? - **584000**
- Which country accounts for more than half of the total patent applications worldwide? - **China**
- Which are the two countries that apply the most patents in the world? - **China and USA**
- What is India's rank in the world in terms of patent applications? - **6**
- The National Research Foundation Bill 2023 was passed on -
- **9 August 2023**
- Who will be the ex-officio Chairman of National Research Foundation? - **Prime Minister**
- When was the Intellectual Property Rights Policy implemented in India? - **2016**

CURRENT AFFAIRS

- In which year was the Department of Science and Technology established? - **1971**
- The patent examination time has been reduced from 7 years to- **18 months**
- Examination of trademark applications has been reduced from **13 months to** - **1 month**

From Tradition to Innovation

- What is the objective of Make in India from the perspective of culture? - **To preserve our rich cultural heritage**
- Who is provided with essential financial assistance under the Prime Minister's Employment Generation Programme? - **Craftsmen**
- The Government of India decided to designate the 7th August every year, as the National Handloom Day in - **2015**
- What is included under 5F in Textile Industry? - **Farm to fiber, fiber to fabric, fabric to fashion and fashion to foreign**
- In which year was Swadesh Darshan Scheme started? - **2015**
- What is the objective of Swadesh Darshan Scheme launched by the Indian Tourism Ministry? - **Development of thematic tourist circuits**
- Which government organization promotes Indian culture abroad? - **Indian Council for Cultural Relations**

Food Processing

- According to the Economic Survey 2022-23, at what percent average annual growth rate is the food processing industry sector growing in the last five years? - **8.3%**
- What percentage of the total employees employed in the registered manufacturing sector belongs to food processing sector only? - **12.2%**
- What percentage of foreign investment has been allowed in the food processing sector? - **100%**
- How much worth of foreign investment has this sector attracted during 2021-22? - **709.72 Billion US dollars**
- What was the tenure of Pradhan Mantri Kisan Sampada Yojana? - **2016-2020**
- Total number of mega food parks approved by the Government of India is - **41**
- How much rupee export target has been set by the Government of India in the fisheries sector by 2024-25? - **One lakh crore**
- Under which scheme 12 brands have been selected for branding and marketing? - **One District One Product**
- A special food processing fund of 2,000 crore has been created by the Government of India under which institution? - **National Bank for Agriculture and Rural Development (NABARD)**
- Which scheme has been started to encourage micro food processing units? - **PM Formalization of Micro Food processing Enterprises Scheme**
- In which year Agriculture Infra Fund was launched? - **July 2020**

Yojana (September 2023)

Nyaya Bandhu

- What is Nyaya Bandhu? - **A Free Legal Service**
- What is the main objective of Nyaya Bandhu (Pro Bono Legal Services)? - **To establish a framework for delivery of pro bono legal services across the country**
- What is rationale behind Nyaya Bandhu? - **It is designed to connect registered lawyers with registered beneficiaries**
- Who are the beneficiaries of Nyaya Bandhu? - **Those people who are unable to get legal advice**
- What does Pro Bono Publico mean? - **For the public good**
- Which department provides assistance in coordinating and facilitating the successful implementation of this initiative? - **Department of Justice**
- Under which Act, Scheduled Castes/Tribes, victims of human trafficking or prostitution, women or children, disabled and other eligible persons have the right to get free legal aid and advice through the Nyaya Bandhu Programme? - **Section 12 of the Legal Services Authorities Act, 1987**

Reforms in Civil Services from the Perspective of Capacity Building

- Who coined the word "Bureaucrat"? - **Jacques Gournay**
- Jacques Gournay belonged to which country? - **France**
- Which part of the Constitution of India is related to Union and State Public Service Commission? - **Part 14**
- Hatch Act is related to which country? - **United States**
- Which mission was launched to enhance and sharpen the capabilities of civil servants running various government organizations? - **Mission Karmayogi**
- What is the objective of the National Civil Services Capacity Building Program (NPCSCB)? - **To create a professional, well-trained and forward-looking civil service that is driven by a shared understanding of India's developmental aspirations, national programs and priorities**
- What are the main thrust areas of NPCSCB? - **To promote ease of living and ease of doing business by enhancing citizen-government interaction**
- Why iGOT-Karmayogi has been developed as an integral part of the Digital India Infrastructure (STACK)? - **For capacity development of all government employees**
- How many members are there in Capacity Building Commission (CBC)? - **Three Accountability and Financial Administration**
- Which book is the world's oldest written book about politics and government system and administration? - **Kautilya's Arthashastra**
- Which institution plays a major role in the public financial management of the country? - **Comptroller and Auditor General (CAG)**

- Who gives suggestions regarding the method of audit of Central and State Government?
- **Comptroller and Auditor General**
- The year, in which the Institute of Comptroller and Auditor General came into existence in India is - **1860**
- In which year, was the Institute of Comptroller and Auditor General given Constitutional status in **India**? - **1950**
- Who was given the responsibility of monitoring and controlling the government expenditure approved by the Parliament? - **CAG**
- Which department carries the audit and accounting functions under the Comptroller and Auditor General of India?
- **Indian Audit and Accounts Department**

Parliamentary Committees

- A Parliamentary Committee is a panel of Member of Parliaments (MPs), appointed or elected by the House or nominated by - **Speaker**
- On the recommendation of which committee, parliamentary committees came into existence in 1921?
- **Montagu-Chelmsford reforms**
- Parliamentary committees are mentioned in which article of the Indian Constitution? - **Article 105 & Article 118**
- How many standing committees are there? - **Six**
- How many committees are included in financial committees? - **Three (Public Accounts Committee, Estimates Committee & Committee on Public Undertakings)**
- Which committee examines the pre-budget estimates?
- **Estimates Committee**
- Which committee reviews the expenditure statement of the government approved by the Parliament?
- **Public Accounts Committee**
- Which committee investigates questions related to violation of the rights, privileges and immunities enjoyed by members of Parliament? - **Privileges Committee**
- How many new committees was recommended by the National Commission (2002) formed to review the Constitution? - **Three**
- Which three new committees were recommended by the National Commission (2002) formed to review the Constitution? - **Constitution Committee, Committee on National Economy, Committee on Legislation**
- Which committee examines the report of the Comptroller and Auditor General presented to the Parliament by the President? - **Public Accounts Committee**

Data Protection

- The Digital Personal Data Protection (DPDP) Bill has been approved by the Union Cabinet on - **5 July 2023**
- The Digital Personal Data Protection Bill, 2023 is based on how many principles? - **7**
- Main provisions of the Digital Personal Data Protection Bill, 2023 is - **Data processing, data principles, financial penalties for violation of rights, duties and obligations**
- Which board has been constituted by the government to ensure compliance with the Bill? - **Data Protection Board**

Law Commission

- What type of body is the Law Commission of India?
- **A non-statutory body**
- Date of constitution of 22nd Law Commission
- **21 February 2020**
- The tenure of 22nd Law Commission has been extended up to which date?
- **31 August 2024**
- Who is the 22nd Chairperson of the Law Commission of India?
- **Justice Ritu Raj Awasthi**
- Who are eligible to be appointed as the Chairman of the Law Commission of India?
- **Retired judge of the Supreme Court or Chief Justice of a High Court**
- In which year the 21st Law Commission was constituted?
- **2015**
- When was tenure of the 21st Law Commission completed?
- **31 August, 2018**
- Who was chairperson of the 21st Law Commission?
- **Justice Balbir Singh Chauhan**
- In which year was the first Law Commission of independent India constituted?
- **1955**
- Who was the first Chairman of the first Law Commission of India?
- **M.C. Setalvad**
- What was the tenure of first Law Commission of independent India?
- **Three years**
- In which year was the first Law Commission established?
- **1834**
- Under which Act was the Law Commission formed in the year 1834 during the British period? - **Charter Act of 1833**
- Who was the chairman of the Law Commission formed in the year 1834 during the British period? - **Lord Macaulay**

Direct Tax Reforms

- At present what percentage of alternative minimum tax do cooperative societies have to pay?
- **15%**
- How much has the alternative minimum tax to be paid by cooperative societies been reduced in the Finance Act, 2022?
- **15%**
- Which historic tax reform has been implemented by the government to promote growth and investment?
- **Taxation Laws (Amendment) Ordinance, 2019**
- Which system has been introduced to remove the need for physical presence of taxpayers before the authorities?
- **Faceless Assessment System**
- Which committee has been constituted to provide quick relief to taxpayers in case of tax disputes?
- **Dispute Resolution Committee (DRC)**
- Dispute Resolution Committee (DRC) has been created under which section of the Income Tax Act? - **245 D**
- Which three important structural tax reforms have been announced by the Prime Minister under Transparent Taxation – Honouring the **Honest**? - **1. Faceless Assessment, 2. Faceless Appeal and 3. Taxpayer Charter**
- Which Act has been passed to settle direct tax disputes in various appellate forums?
- **Vivad se Vishwas Act**
- When has the Direct Tax Vivad Se Vishwas Act been implemented?
- **March 2020**

Protecting the Interests of Consumers and Businesses

- What is the purpose of Competition Law? - **To prevent anti-competitive activities by promoting competitive environment in the markets**
- What type of body is the Competition Commission of India? - **Quasi-judicial body**
- Under which Act was the Competition Commission of India formed? - **Competition Act, 2002**
- Which tribunal was established by the Competition (Amendment) Act, 2007? - **Competition Commission of India and Competition Appellate Tribunal**
- At present, how many chairpersons and members are there in the Competition Commission of India? - **One Chairperson and six members**
- Which Act was repealed and replaced by Competition Act, 2002? - **Monopoly and Restrictive Trade Practices Act, 1969**
- The Monopoly and Restrictive Trade Practices Act, 1969 was repealed on the recommendation of which committee? - **Raghavan Committee**
- In which year the Competition Appellate Tribunal (CCPA) has been replaced by the National Company Law Appellate Tribunal (NCLAD)? - **2017**
- Which Act has been replaced by the Consumer Protection Act, 2019? - **Consumer Protection Act, 1986**
- Who has been included by expanding the category of consumer under the Consumer Protection Act 2019? - **Persons who purchase goods or services through online or electronic means**
- What is included in the definition of advertisement in the Consumer Protection Act 2019? - **Any audio or visual publicity, representation, advertisement or announcement made through electronic media or internet or website**
- When did the government announce the establishment of the Central Consumer Protection Authority (CPC)? - **April 2020**
- Under which Act has the Central Consumer Protection Authority (CPC) been constituted? - **Section 10 (1) of the Consumer Protection Act, 2019**
- What is the objective of the Central Consumer Protection Authority? - **To protect the rights of consumers which are harmful to the interests of the public and Consumers**

Administrative Reforms

- Which concept has been emphasized under Minimum government-Maximum governance? - **Digitally empowered citizens and digitally transformed institutions**
- What is Centralized Public Grievance Redress and Monitoring System (CPGRAMS)? - **An online web-enabled system on NICNET**
- Centralized Public Grievance Redress and Monitoring System (CPGRAMS) has been prepared with collaboration of which department? - **Department of Administrative Reforms and Public Grievances**

- Good Governance Index is prepared by which department? - **Department of Administrative Reforms and Public Grievances**
- Which initiative has been started by the Department of Administrative Reforms and Public Grievances (DRPG) to improve digital government? - **National e-Governance Service Delivery Assessment**
- When was the first edition of National e-Governance Service Delivery Assessment released? - **2019**
- When was the second edition of National e-Governance Service Delivery Assessment been released? - **2021**
- How many parameters are used for evaluating national e-governance service delivery? - **Four**
- When is Civil Services Day celebrated in India? - **21 April**
- Which award is given by the Prime Minister on 21st April under Civil Services Day? - **Public Administration Excellence Award**

Women Empowerment

- When was the Protection of Women from Domestic Violence Act passed? - **2005**
- In which year was the Child Marriage Special Act passed? - **2006**
- When was the Muslim Women's Marriage Rights Protection Act passed? - **2019**
- What has been declared a crime by the Muslim Women's Marriage Rights Protection Act 2019? - **Triple Talaq**
- When was the Child Sexual Abuse Protection Amendment Act passed? - **2019**
- In which year was the Assisted Reproductive Technology Regulation Act implemented? - **2020**
- Under the Maternity Benefit (Amendment) Act, 2017, the maternity leave of pregnant women has been increased from 12 weeks to - **26 weeks**
- When was the Medical Termination of Pregnancy Amendment Act implemented? - **2021**
- When was Beti Bachao Beti Padhao started? - **22 January 2015**
- Beti Bachao Beti Padhao scheme was started from - **Panipat, Haryana**
- What is Women's E-Haat? - **An online marketing platform for women entrepreneurs**
- When was the social welfare scheme (Pradhanmantri Ujjwala Yojana) launched by Prime Minister Shri Narendra Modi? - **1 May 2016**
- What is the slogan of Pradhan Mantri Ujjwala Yojana? - **Clean fuel, Better life**
- Pradhan Mantri Ujjwala Yojana is a scheme based on which concept? - **Smoke-free rural India**
- By which ministry is the Pradhan Mantri Ujjwala Yojana being implemented? - **Ministry of Petroleum and Natural Gas**
- When was Pradhan Mantri Ujjwala Yojana 2.0 started? - **August 10, 2021**
- In which year was Stand-up India scheme started? - **5 April 2016**



Appointments	
Person	Brief Description
Dhananjay Joshi	<ul style="list-style-type: none"> Digital Infrastructure Providers Association (DIPA) has appointed Dhananjay Joshi, MD and CEO of Summit Digitel, as the Chairman.
Srinivasan K. Swamy	<ul style="list-style-type: none"> He has been elected as the Chairman of the Audit Bureau of Circulations (ABC) for the term 2023-2024.
Lokesh Suji	<ul style="list-style-type: none"> The General Body of the International Esports Federation (IESF) has elected Lokesh Suji, director, the Esports Federation of India (ESFI) and vice-president, the Asian Esports Federation, to its membership committee on a three-year term. The election marks the first time that an Indian has become a part of the membership committee of the International Esports Federation.
Sindhu Gangadharan	<ul style="list-style-type: none"> She has been named the Vice-Chairperson of the National Association of Software and Service Companies (Nasscom).
Dr. Mylswamy Annadurai	<ul style="list-style-type: none"> SS Innovations, India's renowned surgical robotic firm appointed Padmashri Dr. Mylswamy Annadurai, famously known as the Moon Man of India, as a Director on its Board of Directors. He is credited with overseeing two major missions of ISRO – Chandrayaan 1 & 2 and Mangalyaan. One of his most highly publicized roles was serving as the Program Director of the Mars Orbiter Mission.
Neeraj Mittal	<ul style="list-style-type: none"> He has been appointed as the secretary in the Department of Telecommunications.
Neelkanth Mishra	<ul style="list-style-type: none"> He has been appointed as the part-time Chairperson of the Unique Identification Authority of India (UIDAI).
N.V. Ramana	<ul style="list-style-type: none"> Former Chief Justice of India (CJI) N.V. Ramana has been appointed as member of the International Mediator Panel of Singapore International Mediation Centre (SIMC).
Umesh Revankar	<ul style="list-style-type: none"> The managing committee of the Finance Industry Development Council (FIDC) has appointed Mr. Umesh Revankar, who presently serves as the Executive Vice Chairman for Shriram Finance Limited, as the new Chairman of FIDC.
Manish Desai	<ul style="list-style-type: none"> The Ministry of Information and Broadcasting has made significant appointments, including the transfer of Manish Desai, the Central Bureau of Communications (CBC) chief, to lead the Press Information Bureau (PIB). From November 2019 to January 2020, Manish Desai served as the Director General of the Registrar of Newspapers of India (RNI).
Dr. Vasudha Gupta	<ul style="list-style-type: none"> She has taken charge as the Principal Director General of Akashvani and News Services Division. This appointment comes after her commendable tenure as Director General at Akashvani, where she played a pivotal role in revitalizing the iconic broadcasting institution.
Rajesh Nambiar	<ul style="list-style-type: none"> Indian IT and tech trade body Nasscom announced the appointment of Rajesh Nambiar, Chairman and Managing Director, Cognizant India, as its new Chairperson.
Rahul Navin	<ul style="list-style-type: none"> He has been appointed as the Acting Director of Enforcement Directorate.
Rajnish Kumar	<ul style="list-style-type: none"> Former SBI Chief Rajnish Kumar appointed Chairman of Mastercard India.
Mita Vashisth	<ul style="list-style-type: none"> Haryana Government has appointed Actress Mita Vashisth as Chair of Entertainment Policy Council. This appointment follows the untimely demise of the beloved actor, director, and producer Satish Kaushik, who previously held the position.

NEWS NOTES

Obituary	
Person	Brief Description
MS Swaminathan	<ul style="list-style-type: none"> Mankombu Sambasivan Swaminathan, popularly known as M.S. Swaminathan, the legendary agricultural scientist and a key architect of the country's 'Green Revolution,' passed away at his residence in Chennai on September 28, 2023. He founded the MS Swaminathan Research Foundation (MSSRF) in 1988, using the proceeds from the First World Food Prize he was awarded in 1987.
Adiya 'Dicky' Singh	<ul style="list-style-type: none"> He was a noted wildlife photographer and conservationist, known for developing a forest reserve on the outskirts of the Ranthambore National Park of Rajasthan.
Giorgio Napolitano	<ul style="list-style-type: none"> Giorgio Napolitano, Italy's longest-serving president and the first in the nation's history to be reelected to the office, has passed away at the age of 98.
N Valarmathi	<ul style="list-style-type: none"> She was an Indian Space Research Organisation (ISRO) scientist, who lent her voice to countdowns for rocket launches in Sriharikota, died after a cardiac arrest. She was last heard during the countdown announcement for the launch of Chandrayaan-3 that made a historic landing on the Moon.
Gita Mehta	<ul style="list-style-type: none"> Renowned writer-filmmaker Gita Mehta passed away. She was 80 years old. Mehta had written books including Karma Cola, Snakes and Ladders, A River Sutra, Raj and Eternal Ganesha.

Places in News	
Place	Why in News
Morocco(Capital: Rabat)	<ul style="list-style-type: none"> An earthquake of magnitude 6.8 struck in Morocco on 8th September, 2023. <p>Location</p> <ul style="list-style-type: none"> Maghreb region of North Africa Political & Physical Boundaries It overlooks the Mediterranean Sea to the north and the Atlantic Ocean to the west. It has land borders with Algeria to the east, and the territory of Western Sahara to the south. <p>Geography</p> <ul style="list-style-type: none"> A large part of Morocco is mountainous. Major Mountains: Atlas Mountains and Rif Mountains Convergence Plate: It is situated on the convergence plate of Africa and Eurasia, which are two of the major tectonic plates that make up the Earth's crust.
Sudan(Capital: Khartoum)	<ul style="list-style-type: none"> Recently, United Nations High Commissioner for Refugees (UNHCR) appealed for \$1 billion to support Sudan (facing civil war). <p>Political Boundaries</p> <ul style="list-style-type: none"> Situated in north-eastern Africa Bordered with Egypt, Libya, Chad, Central African Republic, South Sudan, Ethiopia and Eritrea South Sudan was bifurcated from it in 2011 Sudan shares its maritime border with Saudi Arabia in Red Sea <p>Geographical Features</p> <ul style="list-style-type: none"> Highest Peak: Deriba Caldera (Jabel marra Mountain) Major River: Nile River (White Nile and Blue Nile merge in Khartoum) Major Lakes: Kundi, Abyad and Turdat el-Rahad
Sahel Region	<ul style="list-style-type: none"> Recently, three Sahel nations-Mali, Burkina Faso and Niger- have signed a defence pact to cooperate against threats of armed rebellion or external aggression. <p>Geography of Sahel Region</p> <ul style="list-style-type: none"> It is a semi-arid region of western and north-central Africa that stretches from Atlantic Ocean to the Red Sea along Sahara desert's southern rim. Countries: Burkina Faso, Cameroon, Chad, Gambia, Guinea Mauritania, Mali, Niger, Nigeria and Senegal.

Libya (Capital: Tripoli)	<ul style="list-style-type: none"> Recently, Libya's eastern port city of Derna suffered massive damage after torrential rains caused flooding. <p>Location</p> <ul style="list-style-type: none"> North Africa Bordering Countries Egypt, Sudan, Niger, Chad, Tunisia and Algeria <p>Geographical Features</p> <ul style="list-style-type: none"> Major Physical Features: Nafusah Plateau and the Al-Jifarah (Gefara) Plain, Akhdar Mountains (Green Mountains), Saharan plateau. There are no permanent rivers in Libya. Numerous wadis that drain uplands are filled by flash floods during the rains. Highest Point: Bikku Bitti
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Military Exercises	
Name of Exercise	Brief Description
SIMBEX	<ul style="list-style-type: none"> The 30th edition of Singapore-India Maritime Bilateral Exercise (SIMBEX) has successfully concluded in Singapore. Indian Naval Ships Ranvijay, Kavaratti, submarine Sindhukesari, and a long-range Maritime Patrol Aircraft P8I participated in the exercise. The exercise was started on 21st of September, 2023. Combined aviation, firefighting, and damage control exercises were conducted during the period.
Counter Terrorism Field Training Exercise	<ul style="list-style-type: none"> It is a multinational joint military exercise being hosted by Russia as a co-chair of the EWG along with Myanmar. An Indian Army contingent had set off for Russia to join the ASEAN Defence Ministers Meeting Plus Expert Working Group on Counter Terrorism. This event, titled the Counter Terrorism Field Training Exercise (FTX) 2023, was scheduled from September 25th to September 30th. The Counter Terrorism FTX 2023 involves a range of counter-terrorism exercises, including operations against terrorist groups in fortified locations. The exercise's main objective is to boost and encourage regional collaboration in the realm of counter-terrorism.
Organisations in News	
Organisation	Why in News
International Institute for Environment and Development (IIED)	<ul style="list-style-type: none"> According to the report released by the organization, by May 2023, a staggering 110 million people globally were forcibly displaced. Among this large population, nearly half were internally displaced, and 20 per cent were refugees residing in camps. This situation highlights the need to reconsider the effectiveness of these camps.
Mercy Corps	<ul style="list-style-type: none"> A global humanitarian aid organization issued a warning regarding disruptions in the Black Sea grain route. These disruptions have the potential to worsen food insecurity in the Middle East and North Africa (MENA) regions. The report specifically examined countries in the MENA region, including Lebanon, Syria, Yemen, Jordan, Iraq, and the occupied Palestinian Territories (West Bank and Gaza). It also took into account North African states such as Tunisia and Egypt.
Food and Agriculture Organization (FAO)	<ul style="list-style-type: none"> A recent report titled "Methane emissions in livestock and rice systems: Sources, quantification, mitigation, and metrics" by the Food and Agriculture Organization (FAO) focussed on methane emissions from ruminant livestock and rice paddies. The report emphasizes the importance of managing these emissions and addressing their impact on climate change. The report covers sources and sinks of methane gas, measurement methodologies, various mitigation strategies, and metrics for evaluating emissions and mitigation efforts.

NEWS NOTES

Summit/Seminar/Conference	
Name	Brief Description
Fourth Gender Samvaad	<ul style="list-style-type: none"> • ‘Gender Samvaad’ is a collaborative initiative by Deendayal Antyodaya Yojana -National Rural Livelihoods Mission (DAY-NRLM) and Initiative for What Works to Advance Women and Girls in the Economy (IWWAGE). • It held a virtual event for thousands of participants. • The platform raises awareness about DAY-NRLM’s gender-focused initiatives in India. • Emphasis is on amplifying the voices of states and self-help group (SHG) members. • DAY-NRLM’s efforts to empower women in rural areas and establish model institutions were highlighted.
Global IndiaAI 2023	<ul style="list-style-type: none"> • The Ministry of Electronics and Information Technology will host the Global IndiaAI 2023 conference in October 2023. • The conference will gather AI researchers, startups, and investors from India and globally. • Topics those will be deliberated upon include Next Generation Learning, AI models, healthcare applications, governance, electric vehicles, research trends, computing systems, investment prospects, and nurturing AI talent.
International Conference on Dam Safety	<ul style="list-style-type: none"> • The Ministry of Jal Shakti’s Department of Water Resources organized the International Conference on Dam Safety (ICDS) in Jaipur. • It focused on enhancing dam safety and highlighted the Dam Rehabilitation and Improvement Project (DRIP) Phase II and III.
National Conference on KCC for Fisheries	<ul style="list-style-type: none"> • Union Minister presided over a one-day “National Conference on KCC for Fisheries” on September 4, 2023, in Mumbai. • It was jointly organized by the Department of Fisheries (DoF) and the Department of Animal Husbandry Dairying (DAHD). • The conference addressed issues in the fisheries sector, particularly accessibility to institutional finance through the Kisan Credit Card (KCC) scheme.

Awards	
Name of the Award	Awardee/Brief Description
Nobel Prize in Physics	<ul style="list-style-type: none"> • The 2023 Nobel Prize in Physics has been awarded to Pierre Agostini (USA), Ferenc Krausz (Germany), and Anne L’Huillier (Sweden). • These three laureates are being celebrated for their groundbreaking experiments that have equipped humanity with powerful tools to delve into the intricate world of electrons within atoms and molecules. • Through their work, they have unveiled a method to generate ultra-short bursts of light, enabling the measurement of swift processes in which electrons undergo movement or energy transitions.
Nobel Prize in Physiology or Medicine	<ul style="list-style-type: none"> • Katalin Karikó and Drew Weissman were honored for their pioneering work in the realm of mRNA vaccines. • Their groundbreaking contributions have played a pivotal role in the global fight against the COVID-19 pandemic, presenting a potential paradigm shift in the way we approach the prevention and treatment of infectious diseases.
SASTRA Ramanujan Prize in Mathematics	<ul style="list-style-type: none"> • Mathematician Ruixiang Zhang, an Assistant Professor at UC Berkeley, has won the 2023 SASTRA Ramanujan Prize. • He is honored for his outstanding contributions to mathematics. • The prize includes a \$10,000 cash award. • The award ceremony will take place at an international Number Theory conference in Kumbakonam, the hometown of Srinivasa Ramanujan, in December.
Dadasaheb Phalke Lifetime Achievement Award	<ul style="list-style-type: none"> • Veteran actor Waheeda Rehman is set to receive the Dadasaheb Phalke Lifetime Achievement Award, India’s highest honor in cinema, as announced by Union Minister Anurag Thakur. • Waheeda Rehman has had a remarkable career spanning over five decades, characterized by exceptional performances that have earned her critical acclaim.

Norman Borlaug Field Award	<ul style="list-style-type: none"> Swati Nayak, an Odia scientist, is being recognized with the prestigious Borlaug Field Award for 2023 for her innovative work in engaging farmers in demand-driven rice seed systems, emphasizing climate-resilient and nutritious rice varieties.
Chevalier de l'Ordre des Arts et des Lettres	<ul style="list-style-type: none"> Indian designer Rahul Mishra has been honored with the Chevalier de l'Ordre des Arts et des Lettres (Knight of the Order of Arts and Letters) by the French government. Rahul Mishra's designs showcase Indian heritage, blending traditional hand-woven textiles and intricate embroidery techniques. He joins a select group of Indian luminaries who have previously received this award, such as Ritu Kumar, Ritu Beri, Wendell Rodricks, and Manish Arora.

Sports

<p style="text-align: center;">Asian Games 2023- Tennis</p> <ul style="list-style-type: none"> Rohan Bopanna and Rutuja Bhosale secured the gold medal in mixed doubles tennis. They achieved this victory by defeating Yu-hsiou Hsu and Hao-ching Chan from Chinese Taipei with a score of 2-6, 6-3, 10-4. This marked India's second tennis medal at the continental event. Previously, Ramkumar Ramanathan and Saketh Myneni had won a silver medal in men's doubles. 	<p style="text-align: center;">ISSF World Cup 2023</p> <ul style="list-style-type: none"> Indian shooter Elavenil Valarivan achieved a significant win in the women's 10m air rifle event. Her remarkable victory took place at the ISSF World Cup 2023 in Rio de Janeiro, Brazil. Valarivan, a 24-year-old Olympian, demonstrated exceptional skills and composure under pressure. She emerged victorious, securing the coveted gold medal in the competition.
<p style="text-align: center;">Singapore Grand Prix 2023</p> <ul style="list-style-type: none"> Carlos Sainz, driving for Ferrari, claimed victory in the Singapore Grand Prix. This win halted Max Verstappen's historic streak of 10 consecutive wins in Formula 1. Red Bull's hopes of an unbeaten season were dashed by this outcome. Lando Norris of McLaren secured a close second place in the race. Lewis Hamilton, driving for Mercedes, took the third spot on the podium. Notably, Red Bull failed to secure a podium finish for the first time since the Brazilian Grand Prix in November of the previous year. 	<p style="text-align: center;">Diamond League Final</p> <ul style="list-style-type: none"> Neeraj Chopra, India's star javelin thrower and the reigning World champion, displayed his skill and resolve at the Diamond League finals in Eugene. His best throw of 83.80 meters secured him the second position in this prestigious competition, where he engaged in a remarkable battle against formidable opponents.

Important Days/Weeks

Date	Day	• Theme
8th September	World Physical Therapy Day	• Prevention and Management of Osteoarthritis
10th September	World Suicide Prevention Day	• Creating Hope Through Action
12th September	United Nations Day for South-South Cooperation	• Solidarity, Equity and Partnership: Unlocking South-South Cooperation to Achieve the SDG
15th September	International Day of Democracy	• Empowering the next generation
16th September	World Ozone Day	• Montreal Protocol: Fixing the Ozone Layer and Reducing Climate Change
21st September	International Day of Peace (IDP)	• Actions for Peace: Our Ambition for the #GlobalGoals
26th September	World Environmental Health Day	• Global Environmental Public Health: Standing up to protect everyone's Health each and every day
27th September	World Tourism Day	• Tourism and green investment
28th September	World Maritime Day	• MARPOL at 50 – Our commitment goes on

Info Bytes

- Which state government has launched “Mukhyamantri Sukh Ashraya Yojana” to provide support to orphans, specially-abled children, destitute women, and elderly individuals? **- Himachal Pradesh**
- Which initiative –a week long programme was launched recently in 500 aspirational blocks across 329 districts in the country to improve governance at the block level in order to enhance the quality of life of citizens? **- ‘Sankalp Saptah’**
- How many countries were invited as ‘guest countries’ to the G20 summit chaired by India? **- 09**
- What was the theme of the G20 summit in 2023? **- ‘One Earth One Family One Future’**
- With which technology platform has the Union Ministry of Education partnered to empower students, educators, and entrepreneurs? **- Meta**
- Which country’s citizens had their visa service suspended by the Indian government recently? **- Canada**
- With which organisation has India launched a ‘Joint Capacity-Building Initiative’? **- United Nations**
- To which country did India hand over the presidency of G20 during the New Delhi G20 Summit? **- Brazil**
- Where was the 20th ASEAN-India summit currently held? **- Jakarta**
- With whom did NABARD sign an agreement to promote data-driven innovation? **- UNDP India**
- Which union was included as a permanent member during the New Delhi G20 summit? **- African Union**
- With which bank has the Indian Renewable Energy Development Agency signed an agreement for financing projects? **- Bank of Maharashtra**
- For which bank did the Reserve Bank of India grant approval to the International Finance Corporation to acquire a stake? **- Federal Bank**
- With which company has India Post partnered to strengthen the e-commerce export ecosystem? **- Shiprocket**
- Which organization launched the ‘GST Sahay’ invoice financing loans platform? **- SIDBI**
- In which State/UT was ‘Yashobhoomi’ India International Convention and Expo Center inaugurated? **- Delhi**
- Which payment services company has launched India’s first UPI-ATM? **- Hitachi Payment Services**
- In which district of Bihar will the second tiger reserve be established? **- Kaimur**
- What is the name of the eighth continent of the world whose new map has been released? **- Zealandia**
- Which company is set to launch an earthquake warning service in India? **- Google**
- With which banks has the Indian Renewable Energy Development Agency Limited collaborated for the development of renewable energy? **- Union Bank of India and Bank of Baroda**
- Which city is considered the country’s first solar city? **- Sanchi**
- Which film has been selected as India’s official entry for the Oscar in 2024? **- ‘2018: Everyone is a Hero’**
- Which state is home to the sacred temple group of Hoysala that has been included in the UNESCO World Heritage Site list? **- Karnataka**
- What name has Prime Minister Narendra Modi proposed for the old Parliament House? **- Samvidhan Sadan**
- Where was the fourth edition of the Indo-Latin America Cultural Festival held? **- New Delhi**
- How many UNESCO World Heritage Sites are there in India now? **- 42**
- What is the name of the transport aircraft that was recently inducted into the Indian Air Force? **- C-295 MW Aircraft**
- With the Navy of which country, recently the Simbex exercise was conducted by India? **- Singapore**
- What is the name of India’s first AI-powered anti-drone system? **- Indrajala**
- Where was the meeting of heads of Asian coast guard agencies held? **- Istanbul**
- In which city was India Drone Shakti-2023 organized? **- Ghaziabad**
- Which ministry has launched the ‘Skills on Wheels’ initiative? **- Ministry of Skill Development and Entrepreneurship**
- In which state the “NaMo 11-point program” is being implemented? **- Maharashtra**
- Which Indian state recently approved a new policy for the service sector? **- Uttarakhand**
- What is the minimum age required to apply for PM Vishwakarma Yojana? **- 18 years ■■**