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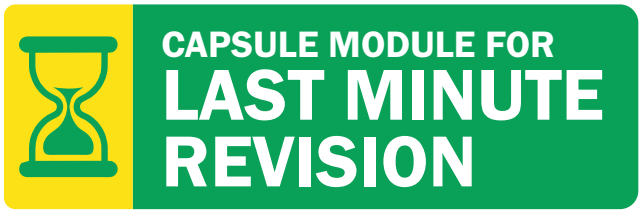
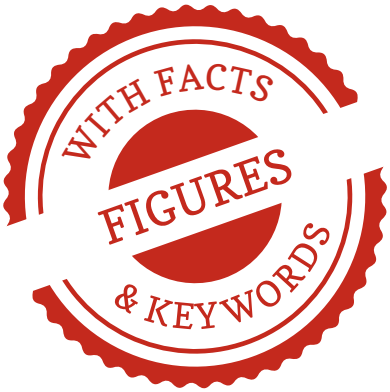
FOR UPSC CSE 2024





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CAPSULE MODULE FOR LAST MINUTE REVISION

NOTE TO THE STUDENTS

Dear Students,

As you prepare for the UPSC CSE Prelims 2024, we understand the significance of every moment in your journey towards success. At **APTI PLUS**, we believe in providing you with not just the essential tools for preparation but also the competitive edge necessary to excel in such a challenging examination.

Prelims Express 2024 has been crafted with your success in mind. It is not merely a compilation of information but a strategic resource meticulously curated to give you an advantage in the final leg of your preparation. We urge you to utilize it wisely, focusing on areas that are often overlooked yet crucial for scoring well in the examination.

While **APTI PLUS** presents Prelims Express 2024 as a comprehensive guide for last-minute revision for UPSC CSE Prelims 2024, it is essential to clarify its purpose.

PRELIMS EXPRESS 2024 IS NOT A COMPILATION OF CURRENT AFFAIRS NOR DOES IT CONTAIN A GIST OF THEORETICAL CONTENT. Instead, it focuses solely on those aspects with a high probability of appearing in the exam. These materials are typically scattered across various sources, and we have diligently compiled them into one accessible resource. It is designed to provide aspirants with an extra edge in their preparation. Theoretical content from standard books and sources should already be part of the aspirants' preparation, while current affairs compilations are widely available from various institutes. Our aim with Prelims Express 2024 is to fill the gap by providing additional resources in one place to help aspirants elevate their scores. It should in no way be considered a substitute for comprehensive study materials; it is only a supplement to aid your preparation efforts.

Remember, success in the UPSC Civil Services Examination requires not only dedication and hard work but also smart preparation. We are confident that Prelims Express 2024 will serve as a valuable asset in your arsenal as you march towards your goal of becoming a civil servant. Wishing you the very best for your upcoming examination.

Warm regards,
Management,
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Disclaimer: Prelims Express 2024 is not a compilation of Current Affairs or gist of theoretical content; it focuses strictly on selective high-probability exam topics to enhance aspirants' preparation.

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1 HISTORY

ANCIENT INDIAN HISTORY TIMELINE

Time Period	Event	Importance
2 Million BC to 10,000 BC	Palaeolithic Period	Fire was discovered. Significant advancement in human development
2 Million BC to 50,000 BC	*Lower Palaeolithic*	*Early tool usage in human history*
50,000 BC to 40,000 BC	*Middle Palaeolithic*	
40,000 BC to 10,000 BC	*Upper Palaeolithic*	*Early Stone Age period*
10,000 BC to 7000 BC	Mesolithic Age	Introduction of microlith tools
7000 BC	Neolithic Age	Introduction of agriculture and polished tools
3000 BC	Pre-Harappan Phase	Early urbanization and civilization development in the Indian subcontinent
2500 BC	Chalcolithic Age	Use of copper, marking the transition to the Bronze Age
1500 BC-1000 BC	Harappan Phase	Bronze Age civilization, urban culture development
1000 BC-500 BC	Early Vedic period	Composition of Rig Veda, early Vedic civilization
600 BC – 325 BC	Mahajanapadas	Emergence of 16 kingdoms and republics in ancient India
544 BC – 412 BC	Haryanka Dynasty	Early ruling dynasty of Magadha, establishment of dynastic rule
412 BC – 342 BC	Shisunga Dynasty	Third imperial dynasty of Magadha, precursor to Mauryan Empire
344 BC – 323 BC	Nanda Dynasty	Northern Indian ruling dynasty preceding the Mauryan Empire
563 BC	*Birth of Gautama Buddha*	*Foundation of Buddhism, significant religious and philosophical figure*
540 BC	*Birth of Mahavira*	*24th Tirthankara of Jainism, significant religious figure*
518 BC	*Persian Invasion*	*Darius invades northwest India, establishing Persian rule*
483 BC	*1st Buddhist council*	*Held in Rajgir, significant event in early Buddhist history*
383 BC	*2nd Buddhist council*	*Held in Vaishali, significant event in early Buddhist history*
326 BC	*Macedonian Invasion*	*Alexander the Great invades northwest India, establishing Greek presence*
322 BC – 185 BC	Mauryan Period	Chandragupta Maurya to Later Mauryans, political unification of India
250 BC	*3rd Buddhist Council*	*It was held at Pataliputra. The council was presided over by Mogaliputta Tissa.*
3rd Century BC	*First Jain Council*	*Held at Patliputra and was presided by Sthulbhadra.*
185 BC – 73 BC	Sunga Dynasty	Successor to Mauryan Empire, establishment of Sunga rule in northern India
73 BC – 28 BC	Kanva dynasty	Brief dynasty succeeding Sunga, followed by further political fragmentation
60 BC – 225 AD	Sathavahana dynasty	Ruling dynasty in Deccan region, significant in South Indian history
1st BC – 4th AD	Indo-Greeks	Greek influence and rule in parts of ancient India
1st BC – 1st AD	Shakas	Influence and rule of Scythian tribes in northwest India
	Parthians	Influence and rule of Parthian Empire in northwest India
1st AD -4th AD	Kushans	Establishment of Kushan Empire in Central Asia and northern India
72 AD	*4th Buddhist Council*	*Convened in Kashmir, significant event in Buddhist history*
319 AD – 540 AD	The Gupta Age	Golden age of India, significant advancements in art and literature
512 AD	*Second Jain Council*	*Held at Vallabhi and was presided by DevardhiKshmasramana.*
550 AD – 647 AD	Vardhana Dynasty	Reign of Harsha, consolidation of power in northern India
543 – 755 AD	Chalukyas of Vatapi	Development of Vesara style architecture in southern India
575 - 897 AD	Pallavas of Kanchi	Development of structural temples in Dravida style
6th century BCE	Sangam Age	Important epoch in South Indian history
300 CE - 1300 CE	Chola Dynasty	Dominant dynasty in South India, significant cultural influence
9th to 12th Century	The Cheras	Ruled over Kerala and parts of Tamil Nadu, important regional power
6th Century	Pandyan kingdom	Established dynastic rule in southern Tamil Nadu, significant in Tamil history
606 CE – 647 CE	Harshavardhana	Ruler of North India, patron of culture and learning

MEDIEVAL INDIAN HISTORY TIMELINE

Year	Event	Importance
750 – 1150 AD	Rule of the Palas	Dominant dynasty in Eastern India, known for cultural and architectural advancements. Capital at Munger, Bihar.
752 – 973 AD	The Rashtrakutas	Ruled parts of South and Central India, notable for cultural achievements. Capital at Malkhed.
730 – 1036 AD	The Pratiharas	Dominated Western India, significant regional power during the medieval period.
712 AD	First Muslim Invasion	Mahmud Bin Qasim's invasion marked the beginning of Muslim rule in the

		Indian subcontinent.
850 – 1279 AD	The Cholas	Prominent dynasty in South India, renowned for contributions to Dravidian Architecture. Capital at Tanjore.
998 – 1030 AD	First Turk invasion	Mahmud of Ghazni's invasion initiated Turkic rule in parts of India.
1175 – 1206 AD	Second Turk invasion	Mahmud of Ghori's invasion further established Turkic dominance in Northern India.
1178 – 1192 AD	Prithviraj Chauhan	First battle of Tarain in 1191 between Prithviraj and Mahmud of Ghori.
1206 – 1526 AD	The Slave Dynasty	Established Delhi Sultanate, marking a new era in Indian history.
1206 – 1210 AD	Qutbuddin Aibak	Known as Lal Bakhsh, began the construction of QutbMinar.
1211 – 1236 AD	Shamsuddin Iltumish	Real founder of Delhi Sultanate.
1236 – 1240 AD	Razia Sultana	First and only Muslim lady who ever ruled India.
1240 – 1266 AD	Weak successors	Period marked by instability and weak rulers.
1266 – 1287 AD	GhiyasuddinBalban	Established Diwan-i-Arz.
1290 – 1316 AD	Khilji Dynasty	Introduced administrative reforms, notable for military conquests.
1320 – 1325 AD	GhiyasuddinTuglaq	Founder of Tughlaq dynasty.
1325 – 1351 AD	Mohammed-Bin-Tuglaq	Introduction of administrative reforms and ambitious projects.
1351 – 1388 AD	Firoz Shah Tuglaq	Known for urban development projects and architectural patronage.
1398 – 1399 AD	Taimur Invasion	Taimur invaded during the reign of Muhammad Shah Tuglaq.
1414 – 1451 AD	Sayyid Dynasty	Continued the rule of the Delhi Sultanate.
1451 – 1488 AD	Lodhi Dynasty	Established Lodhi dynasty in Delhi.
1451 – 1488 AD	Bahlol Lodhi	Founder of Lodhi dynasty.
1489 – 1517 AD	Sikander Lodhi	Founded the city of Agra.
1517 – 1526 AD	Ibrahim Lodhi	Defeated by Babur in the first Battle of Panipat.
1336 – 1485 AD	Vijaynagar Kingdom	Prominent kingdom in South India, known for patronage of art and culture.
1347 – 1358 AD	Bahmani Kingdom	Founded the Bahmani Kingdom at Gulbarga.
1526 – 1530 AD	Mughal Empire	Founded by Babur after the first Battle of Panipat.
1530 – 1540 AD	Humayun	Defeated by Sher Shah, later regained power.
1540 – 1555 AD	Sur Empire	Established by Sher Shah, known for administrative reforms.
1556	2nd Battle of Panipat	Akbar defeated Hemu.
1556 – 1605 AD	Akbar	Expanded the Mughal Empire, known for Din-i-illahi.
1605 – 1627 AD	Jehangir	Known for his patronage of art and culture.
1628 -1658 AD	Shahjahan	Known for his architectural achievements, including the Taj Mahal.
1658 – 1707 AD	Aurangzeb	Known for his religious policies and expansion of the empire.
1707 – 1857 AD	Later Mughals	Period marked by decline and disintegration of the Mughal Empire.
1674 – 1680 AD	Shivaji	Founder of the Maratha Empire.
1680 – 1689 AD	Sambhaji	Son of Shivaji, ruled after his death.
1689 – 1700 AD	Rajaram	Continued Maratha resistance against Mughal Empire.
1700 – 1707 AD	Tarabai	Regent of the Maratha Empire during Shahu's minority.
1707 – 1749 AD	Shahu	Rise of the Peshwas.
1713 – 1720 AD	Balaji Vishwanath	First Peshwa, consolidated Maratha power.
1720 – 1740 AD	Baji Rao I	Expanded Maratha influence.
1740 – 1761 AD	Balaji Baji Rao	Instituted administrative reforms.
1761	Third battle of Panipat	Decisive defeat of Marathas by Ahmad Shah Abdali.
1761 – 1818 AD	Later successors	Decline of Maratha power.
1775 – 1782 AD	1st Anglo Maratha War	British defeat in the first Anglo-Maratha War.
1803 – 1806 AD	2nd Anglo Maratha War	Maratha defeat and signing of Subsidiary Alliance.
1817 – 1818 AD	3rd Anglo Maratha War	Decisive defeat of Marathas by the British, leading to British dominance.

MODERN INDIAN HISTORY TIMELINE

Year	Events	Importance
1498	Portuguese East India Company	Establishment of headquarters at Cochin and Goa.
1600	English East India Company	Establishment of presence in Madras, Calcutta, and Bombay.
1602	Dutch East India Company	Establishment of settlements at Pulicat and Nagapattinam.
1616	Danish East India Company	Establishment of Serampore.
1664	French East India Company	Establishment of presence in Pondicherry.

1717–1727 AD	Murshid Quli Khan	Transfer of Bengal's capital to Murshidabad.
1727–1739 AD	Shujauddin	
1739–1740 AD	Sarfaraj Khan	
1740– 1756 AD	Alivardi Khan	
1746-48	1st Anglo-French War	Treaty of Aix-la-Chapelle.
1749-54	2nd Anglo-French War	Treaty of Pondicherry.
1756 – 1757 AD	Sirajuddaulah	Defeated in the Battle of Plassey.
1757 – 1760 AD	Mir Jafar	
1760 – 1764 AD	Mir Qasim	Defeated in the Battle of Buxar.
1761 – 1782 AD	Haider Ali	Establishment of the Modern Mysore state.
1766 – 1769 AD	1st Anglo – Mysore War	Haider Ali defeated the British.
1780 – 1784 AD	2nd Anglo – Mysore War	Haider Ali was defeated by Sir Eyrecoot.
1782 – 1799 AD	Tipu Sultan	Continued the 2nd war.
1790 – 1792 AD	3rd Anglo – Mysore War	Tipu ceded half of his territory.
1799	4th Anglo – Mysore War	Death of Tipu Sultan.
1792 – 1839 AD	Maharaja Ranjit Singh	Founder of Sikh rule in Punjab.
1845 – 1846 AD	1st Anglo – Sikh War	Sikhs were defeated by the British.
1848 – 1849 AD	2nd Anglo – Sikh War	Annexation of Punjab by the British.
1857	First War of Indian Independence	Revolt against British rule.
1885	Formation of Congress	Founded by AO Hume.
1905	Bengal Partition	Curzon announced the partition.
1905 – 1908	Swadeshi Movement	Boycott of foreign products.
1906	Muslim League Formation	Established to represent Muslim interests.
1906	Calcutta Session of INC	Swaraj adopted as the goal.
1907	Surat Split	Dispute over extending the movement to the rest of India.
1909	Morley – Minto Reforms	Introduced separate electorate for Muslims.
1915 – 1916	Home Rule Movement	Led by BG Tilak and Annie Besant.
1916	Lucknow Pact	Agreement between Congress and League.
1917	Champaran Campaign	Gandhi's campaign against Indigo cultivators.
1918	Ahmedabad	Gandhi's first hunger strike.
1918	Kheda	Gandhi's first non-cooperation movement.
1919	RowlattSathyagraha	Protest against Rowlatt Act and Jallianwala Bagh massacre.
1920-22	Non-cooperation and Khilafat Movement	Mass protests against British rule.
1922	Chauri Chaura Incident	Gandhi called off NCM.
1923	Congress Khilafat Swaraj Party	Entered legislative councils.
1924	Belgaum Session	Gandhi elected as Congress president.
1927	Simon Commission	All-white commission to review the 1919 act.
1928	Nehru Committee Report	To determine the principles of the constitution.
1929	Jinnah's 14 Points	
1929	Lahore Session	Purna Swaraj.
1930	Civil Disobedience Movement	Dandi March.
1931	Gandhi Irwin Pact	Gandhi decides to participate in the 2nd RTC.
1931	2nd Roundtable Conference	Held in London.
1932	Communal Award	
1932	Poona Pact	
1935	Government of India Act	Provisional autonomy.
1937	Congress Ministries Begin	18 months rule of Congress.
1939-45	World War II Begins	
1939	Congress Ministries Resign	
1940	August Offer	Linlithgow proposed to seek India's cooperation in World War.
1941	Individual Satyagraha	
1942	Cripps Mission	
1942	Quit India Movement	Mass nonviolent resistance against British rule.
1943	Gandhi's 21 Days Fast	
1944	C R Formula	
1945	Wavell Plan and Shimla Conference	
1945	INA Trails	
1946	RIN Ratings Mutiny	
1946	Cabinet Mission Plan	Formation of Interim Government.
1946	Formation of the Constituent	

	Assembly	
1947	Atlee's Announcement	
1947	Mountbatten Plan	
1947	Indian Independence Act, 1947	Legislation leading to Indian independence.

GOVERNOR GENERALS' TIMELINE

Governor-General	Time in Office	Major Events and Reforms
Warren Hastings	1773–1785	Regulating Act of 1773. - First Maratha War and Treaty of Salbai. - Strained relationship with Chait Singh. - Foundation of Asiatic Society of Bengal (1784).
Lord Cornwallis	1786–1793	Third Mysore War and Treaty of Seringapatam. - Cornwallis Code (1793). - Permanent Settlement of Bengal (1793). - Europeanization of administrative machinery.
Sir John Shore	1793–1798	Charter Act of 1793. - Battle of Kharda.
Lord Wellesley	1798–1805	Introduction of Subsidiary Alliance System. - Fourth Mysore War. - Second Maratha War. - Annexation of Tanjore, Surat, and Carnatic. - Treaty of Bassein.
Sir George Barlow	1805–1807	Vellore Mutiny.
Lord Minto I	1807–1813	Treaty of Amritsar with Ranjit Singh.
Lord Hastings	1813–1823	Anglo-Nepal War and Treaty of Sagauli. - Third Maratha War and creation of Bombay Presidency. - Strife with Pindaris. - Establishment of Ryotwari System.
Lord Amherst	1823–1828	First Burmese War. - Capture of Bharatpur.
Lord William Bentinck	1828–1835	Abolition of sati and thugi. - Charter Act of 1833. - Educational reforms and introduction of English. - Annexation of Mysore, Coorg, and Central Cachar. - Treaty with Ranjeet Singh.
Lord Metcalfe	1835–1836	New press law removing press restrictions.
Lord Auckland	1836–1842	First Afghan War. - Death of Ranjit Singh.
Lord Ellenborough	1842–1844	Annexation of Sindh. - War with Gwalior.
Lord Hardinge I	1844–1848	First Anglo-Sikh War and Treaty of Lahore. - Social reforms.
Lord Dalhousie	1848–1856	Second Anglo-Sikh War and annexation of Punjab. - Annexation of Lower Burma. - Doctrine of Lapse and annexations. - Educational reforms and railway development. - Telegraph and postal reforms. - Widow Remarriage Act.
Lord Canning	1856–1857	Establishment of universities. - Revolt of 1857.

VICEROYS' TIMELINE

Viceroy	Time in Office	Major Events and Reforms
Lord Canning	1858–1862	Transfer of control from East India Company to the Crown (Government of India Act, 1858). - 'White Mutiny' by European troops (1859). - Indian Councils Act of 1861.
Lord Elgin I	1862–1863	Wahabi Movement.
Lord John Lawrence	1864–1869	Bhutan War (1865). - Establishment of High Courts at Calcutta, Bombay, and Madras (1865).
Lord Mayo	1869–1872	Opening of Rajkot College and Mayo College. - Establishment of Statistical Survey of India. - Establishment of Department of Agriculture and Commerce. - Introduction of state railways.
Lord Northbrook	1872–1876	Visit of Prince of Wales (1875). - Trial of Gaekwar of Baroda. - Kuka Movement in Punjab.
Lord Lytton	1876–1880	Famine of 1876–78. - Royal Titles Act (1876). - Vernacular Press Act (1878). - Second Afghan War (1878–80).
Lord Ripon	1880–1884	Repeal of Vernacular Press Act (1882). - First Factory Act (1881). - Financial decentralisation. - Government resolution on local self-government (1882). - Appointment of Education Commission (1882). - Ilbert Bill controversy (1883–84). - Rendition of Mysore.
Lord Dufferin	1884–1888	Third Burmese War (1885–86). - Establishment of Indian National Congress.
Lord Lansdowne	1888–1894	Factory Act (1891). - Categorisation of civil services. - Indian Councils Act (1892). - Setting up of Durand Commission (1893).
Lord Elgin II	1894–1899	Assassination of British officials by Chapekar brothers (1897).
Lord Curzon	1899–1905	Police Commission (1902). - Universities Commission and Indian Universities

		Act (1904). - Establishment of Department of Commerce and Industry. - Partition of Bengal (1905). - Younghusband's Mission to Tibet (1904).
Lord Minto II	1905–1910	Anti-partition and Swadeshi Movements. - Split in Congress (1907). - Establishment of Muslim League (1906).
Lord Hardinge II	1910–1916	Creation of Bengal Presidency (1911). - Transfer of capital to Delhi (1911). - Establishment of Hindu Mahasabha (1915). - Coronation durbar of King George V (1911).
Lord Chelmsford	1916–1921	Formation of Home Rule Leagues. - Lucknow session of Congress (1916). - Lucknow Pact (1916). - Champaran Satyagraha (1916). - Montagu's August Declaration (1917). - Government of India Act (1919). - Rowlatt Act (1919). - Jallianwalla Bagh Massacre (1919). - Non-Cooperation and Khilafat Movements.
Lord Reading	1921–1926	Chauri Chaura incident (1922). - Moplah rebellion (1921). - Repeal of Press Act of 1910 and Rowlatt Act of 1919. - Criminal Law Amendment Act. - Communal riots. - Kakori train robbery (1925). - Murder of Swami Shraddhanand (1926). - Establishment of Swaraj Party. - Simultaneous ICS examinations in Delhi and London.
Lord Irwin	1926–1931	Visit of Simon Commission (1928). - All-Parties Conference at Lucknow (1928). - Nehru Report. - Lahore session of Congress (1929). - Gandhi-Irwin Pact (1931). - Suspension of Civil Disobedience Movement.
Lord Willingdon	1931–1936	Second Round Table Conference (1931). - Announcement of Communal Award (1932). - Gandhi's 'fast unto death' and Poona Pact (1932). - Third Round Table Conference (1932). - Individual Civil Disobedience (1933). - Government of India Act (1935). - Separation of Burma.
Lord Linlithgow	1936–1944	First general elections (1936–37). - Resignation of Congress ministries (1939). - Subhas Chandra Bose elected as Congress president (1938). - Lahore Resolution (1940). - Cripps Mission (1942). - Quit India Resolution and August Revolution (1942). - Lahore Session of Muslim League (1944).
Lord Wavell	1944–1947	C. Rajagopalachari's CR Formula (1944). - Failure of Gandhi-Jinnah talks (1944). - Wavell Plan and Shimla Conference (1942). - End of Second World War (1945). - Proposals of Cabinet Mission (1946). - Direct Action Day (1946). - Formation of Interim Government (1946). - Announcement of end of British rule (1947).
Lord Mountbatten	1947–1948	June Third Plan (1947). - Introduction of Indian Independence Bill. - Boundary commissions for partition of Bengal and Punjab.

INC SESSIONS TIMELINE

Year	Place	President	Year	Place	President
1885	Bombay	W.C. Bonnerjee	**1914**	Madras	Bhupendra Nath Bose
1886	Calcutta	DadabhaiNaoroji	**1915**	Bombay	S.P. Sinha
1887	Madras	Syed Badruddin Tyabji	**1916**	Lucknow	A.C. Majumdar
1888	Allahabad	George Yule	**1917**	Calcutta	Annie Besant
1889	Bombay	William Wedderburn	**1918**	Delhi	Madan Mohan Malaviya
1890	Calcutta	Pherozeshah Mehta	**1919**	Amritsar	Motilal Nehru
1891	Nagpur	P. Ananda Charlu	**1920**	Nagpur	C. Vijayaraghavachariar
1892	Allahabad	W.C. Bonnerjee	**1921**	Ahmedabad	C.R. Das (in prison), Hakim Ajmal Khan (acting president)
1893	Lahore	DadabhaiNaoroji	**1922**	Gaya	C.R. Das
1894	Madras	Alfred Webb	**1923**	Kakinada	Maulana Mohammad Ali
1895	Poona	Surendranath Banerjee	**1924**	Belgaum	M.K. Gandhi
1896	Calcutta	RahimtullaSayani	**1925**	Kanpur	Sarojini Naidu
1897	Amravati	C. Sankaran Nair	**1926**	Gauhati (The first All India Youth Congress came into being.)	S. Srinivasa Iyengar
1898	Madras	A.M. Bose	**1927**	Madras	M.A. Ansari
1899	Lucknow	Romesh Chunder Dutt	**1928**	Calcutta	Motilal Nehru
1900	Lahore	N.G. Chandavarkar	**1929**	Lahore	Jawaharlal Nehru
1901	Calcutta	Dinshaw E. Wacha	**1931**	Karachi	Vallabhbhai Patel
1902	Ahmedabad	Surendranath Banerjee	**1932**	Delhi	Amrit Ranchhorddas Seth

1903	Madras	Lalmohan Ghosh	**1933**	Calcutta	Nellie Sengupta
1904	Bombay	Henry Cotton	**1934**	Bombay (the session held in a village for thefirst time.)	Rajendra Prasad
1905	Benaras	Gopal Krishna Gokhale	**1936**	Lucknow	Jawaharlal Nehru
1906	Calcutta (the word 'swaraj' mentioned for the first time.)	DadabhaiNaoroji	**1936**	Faizpur	Jawaharlal Nehru
1907	Surat	Rash Behari Ghosh	**1938**	Haripura	Subhas Chandra Bose
1908	Madras (Constitution of the Congress drawn)	Rash Behari Ghosh	**1939**	Tripuri	Subhas Chandra Bose
1909	Lahore	Madan Mohan Malaviya	**1940**	Ramgarh	Maulana Abul Kalam Azad
1910	Allahabad	William Wedderburn	**1946**	Meerut	Acharya J.B. Kripalani
1911	Calcutta	Bishan Narayan Dar	**1948**	Jaipur	Pattabhi Sitaramayya
1912	Bankipur	R.N. Mudholkar	**1950**	Purushottam Das Tandon	-
1913	Karachi	Syed Mohammed			

REGIONAL MUSIC AND IMPORTANT PERSONALITIES

Region	Regional Music
Andhra Pradesh	Burrakatha, MadigaDappu, Mala Jamidika
Assam	Bihu Geet, Tokarigeet, KamrupiLokgeet, GoalpariaLokogeet, Borgeet
Bihar	Sohar, Samdaun and Nachari
Chhattisgarh	Pandavani
Garhwal	Basanti/Basant Geet, GhasiyariGeet
Goa	Mando
Gujarat	Garba, Doha, Sanedo
Himachal Pradesh	Laman
Jammu and Kashmir	Bhakha
Jharkhand	Jhumair, Domkach
Karnataka	Bhavageete
Kashmir	Chhakri
Kerala	Bhuta song
Kumaon	Barhamasa, Shakunakhar
Maharashtra	Bhavageete, Lavani, Powada, Bhajan, Pravachan, Bhakteegeete, Natya Sangeet, Bharud, Gondhal, Lalita, Abhang and Tumbadi
Manipur	Songs of Lai Haraoba Festival, Sana Lamok
Mizoram	Chai hia, SaikutiZai
Odisha	Daskathia, Sambalpuri and Lalita
Punjab	Tappa, Mahiyan
Rajasthan	Lotia, Pankhida, Teej Songs
Tamil Nadu	Ammanaivari, VilluPattu, NaattupuraPadalgal
Telengana	JanapadhaGeyalu
Uttar Pradesh	Alha, Hori, Kajri, Sohar, RasiyaGeet
West Bengal	Tamang Selo, Bahula, bhatiyali, Kirtan
Bhojpuri	SukarkeBiah Bhojpuri Song

Type of Carnatic Music	Notable Musicians
Vocal Music	M.S. Subbulakshmi, Semmangudi Srinivasa Iyer, Balamuralikrishna
Violin Music	Lalgudi Jayaraman, M.S. Gopalakrishnan, T.N. Krishnan
Veena Music	Emani Sankara Sastry, Chitti Babu, Jayanthi Kumaresh
Flute Music	T.R. Mahalingam, N. Ramani, Shashank Subramanyam
Mridangam (Percussion)	Palghat Mani Iyer, Umayalpuram K. Sivaraman, T.K. Murthy

Category	Name	Contribution
Pitamaha of Carnatic music	PurandaraDasa	Renowned composer and considered the father of Carnatic music.
Male Trinity	Tyagaraja	Prolific composer with widespread and revered compositions.
	Muthuswami Dikshitar	Composer known for unique compositions in Sanskrit and intricate melodic patterns.
	SyamaSastri	Renowned for emotive compositions that added depth to the Carnatic music repertoire.
Female Trinity	M.S. Subbulakshmi	Legendary Carnatic vocalist, first musician to be awarded the Bharat Ratna.
	M.L. Vasanthakumari	Eminent Carnatic vocalist known for powerful and emotive renditions.
	D.K. Pattammal	Prominent Carnatic vocalist who broke gender barriers and made significant contributions to the tradition.

CLASSICAL MUSIC AND IMPORTANT PERSONALITIES

DHRUPAD

Gharana	Founder	Important Persons
Dagar gharana	Dagar family	Ustad Nasir Moinuddin Dagar, Ustad Nasir AminuddinDagar, Ustad Nasir FaiyazuddinDagar
Bishnupur gharana	Kirtankars in West Bengal (13th century)	Bahadur Khan, Radhika Prasad Goswami, Kanhailal
Darbhanga gharana	-	Ram Ashreya Jha, Siyaji Mishra, Bahadur Hussain Khan
Dumraon Gharana	Dumraon Maharaj, Pandit Ghanarang Dubey	Pandit Ghanarang Dubey
Bettiah gharana	-	Baijnath Prasad, Bindhyabasini Devi
Talwandi gharana	-	Talwandi family
Mewati gharana	Wahid Khan (Beenkar), Ghagge Nazir Khan	UstadAllabande Khan, Pandit Jasraj
Kalpi gharana	-	Kalpi family

KHAYAL

Gharana	Founder	Approximate Founding Date	Famous Exponents
Qawwal Bacchon ka gharana	Abu'l Hasan Yamīnud-DīnKhusrau& His 12 Students	13th Century	Amir Khusrau, Mir Bula Kalawant, Shah ShahSadarang, Haji Muhammed Siddiq Khan
Dilli gharana	Hazrat Amir Khusrau, MiyanSamti	13th century	Sadarang, Adarang, MiyanAchpal, Tanras Khan
Gwalior gharana	Nathan Pir Baksh, Hassu Khan, Haddu Khan, Nathu Khan	Mid 16th Century	Vishnu Digambar Paluskar, Omkarnath Thakur, D. V. Paluskar, Malini Rajurkar
Agra gharana	GhaggeKhudabaksh	Mid-19th century	Faiyaz Khan, Vilayat Hussain Khan, Sharafat Hussain Khan
Kirana gharana	Abdul Karim Khan, Abdul Wahid Khan	Late 17th century	Sawai Gandharva, Bhimsen Joshi, Amir Khan
Bhendibazaar gharana	Chhajju Khan, Nazeer Khan, Khadim Hussain Khan	Late 19th century	Aman Ali Khan, Amir Khan
Jaipur-Atrauli gharana	Alladiya Khan	Late 19th century	KesarbaiKerkar, Mallikarjun Mansur, KishoriAmonkar
Patiala gharana	Bade Fateh Ali Khan, Ali Baksh Khan	Late 19th century	Bade Ghulam Ali Khan, Fateh Ali-Amanat Ali Khan, Ajoy Chakrabarty
Rampur-Sahaswan gharana	Inayat Hussain Khan	Mid 19th century	Mushtaq Hussain Khan, Shanno Khurana, Rashid Khan
Indore gharana	Amir Khan	Mid 20th century	-
Mewati gharana	Ghagge Nazir Khan	Mid 19th century	Jasraj, Kala Ramnath, Sanjeev Abhyankar
Sham Chaurasia gharana	Miyan Chand Khan, Miyan Suraj Khan	Late 16th century	Salamat Ali and Nazakat Ali Khan

Kunwar Shyam gharana	Goswami Lalji Maharaj ("Kunwar Shyam")	Late 19th century	Laxman Prasad Jaipurwale, BhavdeepJaipurwale, Amit Chaudhuri

THUMRI

Gharana	Characteristics	Founders/Revivers	Notable Exponents
Benares gharana	Words in the text musically embellished to convey meaning	Kirtankars in the 13th century, revived by Siddheshwari Devi, Rasoolan Bai, Badi Moti Bai, Mahadev Mishra, Girija Devi (mid-20th century), Savita Devi	Siddheshwari Devi, Rasoolan Bai, Badi Moti Bai, Girija Devi, Savita Devi
Lucknow gharana	Presents intricately embellished and delicate thumris, explicit in eroticism	-	-
Patiala gharana	Incorporates the tappa element from the Punjab region	-	-

OTHERS

Dadra	Rasoolan Bai, Shobha Gurtu, C.R. Vyas
Bhajan	Kumar Gandharva, Bhimsen Joshi, KishoriAmonkar
Drupad	Ustad Nasir Moinuddin Dagar, Ustad Zia FariduddinDagar
Dhamar	Gundecha Brothers (Umakant, Ramakant, and Akhilesh), UstadFariduddinDagar
Tarana	UstadAllauddin Khan, Pandit Ravi Shankar, Ustad Amir Khan
Tappa	Barkat Ali Khan, Akhtari Bai, Shobha Gurtu
Kawwali	Nusrat Fateh Ali Khan, Sabri Brothers, Rahat Fateh Ali Khan
Ghazal	Mehdi Hassan, Jagjit Singh, Farida Khanum

IMPORTANT PAINTERS AND PAINTINGS

Painter	Famous Paintings
Abanindranath Tagore	Bharat Mata, My Mother, Journey's End, The Passing of Shah Jahan, Asoka's Queen
Amrita Sher-Gil	Three Girls, Self-Portrait, Brahmacharis, Siesta, Village Scene, In the Ladies Enclosure, Young Girls
Francis Newton Souza	Birth, Crucifixion, Man and Woman Laughing, Words and Lines, Degenerates
V S Gaitonde	Untitled (1995), The Bird and an Egg, Painting in White
Ganesh Pyne	The Reticent, Woman and the Bird, Lady with Flower, The Wooden Horse
S L Haldankar	Glow of Hope, The Divine Flame
M.F. Husain	Horses, Ganesh, Three Dynasties, Mother Teresa, The Mahabharata, The Ramayana
Manishi Dey	Daughter of the Soil, Bengal Women
Jamini Roy	Mother and Child, Three Pujarins, Krishna
Nandalal Bose	Bapu, Dandi March, Darjeeling and Fog, New Clouds, Dolan Champa
Rabindranath Tagore	Self Portrait, Dancing Woman, Head Study (Geometric)
Raja Ravi Varma	Shakuntala, Woman Holding a Fruit, Stolen Interview, There Comes Papa, The Maharashtrian Lady
Satish Gujral	Days of Glory, Mourning en masse, Tree of Life, Raising of Lazarus
Sayed Haider Raza	Saurashtra, Composition Geometrique, Ankuran, La Terre, Bindu
Tyeb Mehta	A Figure on a Rick-Shaw, Kali, Untitled, Mahishasura, Gesture Girl in Love

IMPORTANT FOLK DANCES

State	Folk Dances
Andhra Pradesh	Kuchipudi, Vilasini Natyam, Andhra Natyam, Bhamakalpam, Veeranatyam, Dappu, TappetaGullu, Lambadi, Dhimsa, Kolattam, Butta Bommalu
Arunachal Pradesh	Bardo Chham, Buiya, Chalo, PasiKongki, Ponung, Popir, Wancho
Assam	Bihu, Bichhua, Natpuja, Maharas, Kaligopal, Bagurumba, Naga dance, Khel Gopal, TabalChongli, Canoe, JhumuraHobjanai
Bihar	Jata-Jatin, Bakho-Bakhain, Panwariya, Sama Chakwa, Bidesia

Chhattisgarh	Gaur Maria, Panthi, Raut Nacha, Pandwani, Vedamati, Kapalik, BhartharicCharit, Chandaini
Goa	Tarangamel, Koli, Dekhni, Fugdi, Shigmo, Ghode, Modni, Samayinrutya, Jagar, Ranmale, Gonph, Tonnya mell
Gujarat	Garba, Dandiya Ras, TippaniJuriun, Bhavai
Haryana	Jhumar, Phag, Daph, Dhamal, Loor, Gugga, Khor, Gagor
Himachal Pradesh	Jhora, Jhali, Chharhi, Dhaman, Chhapeli, Mahasu, Nati, Dangi
Jammu and Kashmir	Rauf, Hikat, Mandjas, Kud Dandi Nach, Damali
Jharkhand	Alkap, Karma Munda, Agni, Jhumar, Janani Jhumar, MardanaJhumar, Paika, Phagua, Hunta Dance, Mundari Dance, Sarhul, Barao, Jhitka, Danga, Domkach, GhoraNaach
Karnataka	Yakshagan, Huttari, Suggi, Kunitha, Karga, Lambi
Kerala	Kathakali (Classical), OttamThulal, Mohiniattam, Kaikottikali
Lakshadweep	Lava, Kolkali, Parichakali
Madhya Pradesh	Jawara, Matki, Aada, KhadaNach, Phulpati, Grida Dance, Selalarki, Selabhadoni, Maanch
Maharashtra	Lavani, Nakata, Koli, Lezim, Gafa, DahikalaDasavtar or Bohada
Manipur	Dol Cholam, Thang Ta, Lai Haraoba, PungCholom, KhambaThaibi, Nupa Dance, Raslila, KhubakIshei, Lhou Sha
Meghalaya	Ka Shad Suk Mynsiem, Nongkrem, Laho
Mizoram	Cheraw Dance, Khuallam, Chailam, Sawlakin, Chawnglaizawn, Zangtalam, Par Lam, Sarlamkai/Solakia, Tlanglam
Nagaland	Rangma, Bamboo Dance, Zeliang, Nsuirolians, Gethinglim, Temangnetin, Hetaleulee
Odisha	Odissi (Classical), Savari, Ghumara, Painka, Munari, Chhau
Punjab	Bhangra, Giddha, Daff, Dhaman, Bhand, Naqual
Rajasthan	Ghumar, Chakri, Ganagor, Jhulan Leela, Jhuma, Suisini, Ghapal, Kalbeliya
Sikkim	Chu Faat Dance, Sikmari, SinghiChaam or the Snow Lion Dance, Yak Chaam, DenzongGnenha, TashiYangku Dance, KhukuriNaach, ChutkeyNaach, Maruni Dance
Tamil Nadu	Bharatanatyam, Kumi, Kolattam, Kavadi
Tripura	Hojagiri
Uttar Pradesh	Nautanki, Raslila, Kajri, Jhora, Chappeli, Jaita
Uttarakhand	Garhwali, Kumayuni, Kajari, Jhora, Raslila, Chappeli

CLASSICAL DANCE AND IMPORTANT PERSONALITIES

Classical Dance Form	Famous Personalities
Bharatanatyam	E Krishna Iyer, Rukmini Devi Arundale, Padma Subrahmanyam, Vyjayanthimala, SheemaKermani, Padmini, Alarmel Valli, SonalMansingh, Mrinalini Sarabhai, Yamini Krishnamurthy, Tanjore Balasaraswati, Mallika Sarabhai
Kathak	Birju Maharaj, Nahid Siddiqui, Lacchu Maharaj, Gopi Krishna, Saswati Sen, Manjari Chaturvedi, Shovana Narayan, Kumari Kamala
Kathakali	Kalamandalam Krishnan Nair, Kalamandalam Gopi, Sadanam Balakrishnan, KottakkalSivaraman, ChemancheriKunhiraman Nair, Mrinalini Sarabhai
Kuchipudi	Siddhendra Yogi, V. Satyanarayana Sarma, Deepa Shashindran, Yamini Reddy, Raja and Radha Reddy, Guru VempatiChinna Satyam, Yamini Krishnamurthy, Mallika Sarabhai
Manipuri	Guru Bipin Singh, Darshana Jhaveri, Jhaveri Sisters, DevjaniChaliha, Amala Shankar
Mohiniyattam	KalamandalamKalyanikutty Amma, Shobhana, Sunanda Nair, Kalamandalam Radhika, Thankamani, KalamandalamHymavathy
Odissi	Sujata Mohapatra, Madhavi Mudgal, Kelucharan Mohapatra, Surendra Nath Jena, ShobanaSahajananan, Minati Mishra, SonalMansingh
Sattriya	SrimantaSankardev

IMPORTANT NEWSPAPERS AND MAGAZINES DURING FREEDOM STRUGGLE

Name	Founder	Year	Newspaper/Journal	Language	Note
The Bengal Gazette	JK Hickey	1780	English	English	First Newspaper in India
Madras Courier	Richard Johnson	1785	English	English	First Newspaper in Madras
Bombay Herald	-	1789	English	English	First Newspaper in Bombay (Maharashtra). Later became Bombay Gazette.
Samachar Darpan	Baptist Missionary Society	1818	Bengali	Bengali	First Indian newspaper in any vernacular language

SambadKaumudi	Raja Ram Mohun Roy	1821	Bengali	Bengali	Weekly
Mirat-ul-Akhbar	Raja Ram Mohun Roy	1822	Persian	Persian	First Persian language Newspaper
Banga Dutta	Raja Ram Mohun Roy	1822	Bengali, Persian, Hindi, English	Bengali, Persian, Hindi, English	First weekly published in multiple languages
Bombay Samachar	FardunjeeMarzban	1822	Gujarati, English	Gujarati, English	First newspaper in Gujarati and oldest continuously published newspaper in India
East Indian	HLV Derozio	1822	English	English	
Darpan	BalshastriJambhekar	1832	Marathi	Marathi	First Marathi language newspaper
SambadParvakar	Ishwar Chandra Gupta	1832	Bengali	Bengali	First Bengali daily newspaper
Times of India	Raobahadur Narayan Dinanath Velkar	1838	English	English	Oldest English-language newspaper in India
Digdarshan	BalshastriJambhekar	1840	Marathi	Marathi	First Marathi language monthly magazine
MangaluruSamachara	Rev. Hermann Friedrich Mögling	1843	Kannada	Kannada	First and oldest running newspaper in Kannada
Hindoo Patriot	Girish Chandra Ghosh	1853	English	English	Weekly
RastGoftar	DadabhaiNaoroji	1854	Gujarati	Gujarati	Fortnightly paper especially published for the Parsi community
Som Prakash	DwarakanathVidyabhusan	1858	Bengali	Bengali	Weekly newspaper conceptualized by Ishwar Chandra Vidyasagar
Indian Mirror	Manmohan Ghosh and Devendranath Tagore	1861	Bengali	Bengali	Published from Kolkata
Native Opinion	VN Mandalik	1864	English	English	Started Marathi Edition in 1866
The Pioneer	George Allen	1865	English	English	Second oldest English language newspaper in India still in circulation
Kavi Vachan Sudha	Bhartendu Harishchandra	1867	Hindi	Hindi	Monthly
Amrita Bazar Patrika	Sisir Kumar Ghose and Moti Lal Ghosh	1868	Bengali, English	Bengali, English	Became bilingual weekly in 1871. Became a daily in 1891. Described as the best nationalist newspaper in India by Vladimir Lenin in 1920. Oldest Indian-owned English daily newspaper.
Tahzib-ul-Akhlaq	Sir Syyed Ahmad Khan	1871	Urdu	Urdu	
Bangadarshan	BankimchandraChatterji	1872	Bengali	Bengali	Revived under the editorship of Rabindranath Tagore in 1901
The Statesman and New Friend of India	Robert Knight	1875	English	English	Daily
The Hindu	G. SubramaniaIyer	1878	English	English	Originally started as Triplicane Six
The Bengalee	Surendranath	1879	English	English	

	Banerjee				
The Tribune	Dayal Singh Majeetia	1881	English	English	
Kesari	Bal Gangadhar Tilak	1881	Marathi	Marathi	
Maratha	Bal Gangadhar Tilak	1881	English	English	
Swadesimitram	G. SubramaniaIyer	1882	Tamil	Tamil	
Paridasak	Bipin Chandra Pal	1886	Bengali	Bengali	
Deepika	Nidhiry Mani Kathanar	1887	Malayalam	Malayalam	Oldest Malayalam newspaper in circulation
Sudharak	Gopal Ganesh Agarkar	1887	English, Marathi	English, Marathi	
Prabuddha Bharata (Awakened India)	P Aiyasami, BR RajamIyer, GG Narasimhacharya, BV KamesvaraIyer	1896	English	English	India's longest-running journal
Udbodhana	Swami Vivekananda	1899	Bengali	Bengali	
Krishna Patrika	Krishna Rao	1902	Telugu	Telugu	
New India	Annie Besant	1902	English	English	
Bande Mataram	Aurobindo Ghosh	1905	Bengali	Bengali	
JugantarPatrika	Barindra Kumar Ghosh, Abhinash Bhattacharya, BhupendranathDutt	1906	Bengali	Bengali	
Free Hindustan	Tarak Nath Das	1907	English	English	
Swadesh Sevak (Servants of the Motherland)	Tarak Nath Das	1907	Gurumukhi (Punjabi)	Gurumukhi (Punjabi)	
Bande Mataram (Paris publication)	Madam BhikajiCama	1909	English	English	
Talwar	Madam BhikajiCama	1909	English	English	Originally named Madan's Talwar after Shaheed Madan Lal Dhingra
The Leader	Madan Mohan Malviya	1909	English	English	
Bombay Chronicle	Firoze Shah Mehta	1910	English	English	
The Comrade	Mohammad Ali Johar	1911	English	English	
Al-Hilal	Abul Kalam Azad	1912	Urdu	Urdu	Forced to shut down under the Press Act of 1914. Azad started another Urdu weekly, Al-Balagh, in 1914
Pratap	Ganesh Shankar Vidyarthi	1913	Hindi	Hindi	
Commonweal	Annie Besant	1914	English	English	
Independent	Motilal Nehru	1919	English	English	
Navjivan	MK Gandhi	1919	Gujarati	Gujarati	
Young India	MK Gandhi	1919	English	English	
Mooknayak (Leader of the Silent)	BR Ambedkar	1920	Marathi	Marathi	Started with the help of 2500 rupees by Shahaji II, the then Maharaj of Kolhapur
Vanguard	MN Roy	1922	English	English	
Hindustan Times	Sunder Singh Lyallpuri	1924	English	English	
KudiArasu	Periayar	1925	Tamil	Tamil	
Harijan	MK Gandhi	1932	Hindi, English, Gujarati	Hindi, English, Gujarati	Started from Yerwada Jail. The Gujarati Edition was known as Harijan Bandu, and the Hindi Edition used to be published as Harijan

					Sevak.
Hindustan Dainik	Madan Mohan Malaviya	1936	Hindi	Hindi	

IMPORTANT BOOKS DURING FREEDOM STRUGGLE

Author Name	Book(s)
Abanindranath Tagore	PatherDabi
Annie Besant	The Ancient Wisdom; My Path to Atheism; Commonweal; New India
Arvind Ghosh	The Life Divine; Savitri; New Lamps for Old; Bhavani Mandir
Bankim Chandra Chatterjee	Anandamath; Kapalkundala; Mrinalini; Devi Chaudharani; Durgesh Nandini; Bang Darshan
Bhagat Singh	Why I am an Atheist
Bhagwati Charan Bohra	Philosophy of the Bomb
BR Ambedkar	Annihilation of Caste; The Buddha and his Dhamma; Pakistan or the Partition of India; Riddles in Hinduism; Who were the Shudras?
Chittaranjan Das	India For Indians
Dayanand Saraswati	Satyarth Darpan
Dinbandhu Mitra	Neel Darpan; Bharat Durdasha
Dr. Rajendra Prasad	India Divided; At the Feet of Mahatma Gandhi; Satyagraha in Champaran
Gopal Krishna Gokhale	Nation
Jawaharlal Nehru	The Discovery of India; Glimpses of World History; Meri Kahani
Jayaprakash Narayan	Why Socialism
Kenopanishads	A Defence of Hindu Theism; The Precepts of Jesus- The Guide to Peace and Happiness
Keshav Chandra Sen	Indian Mirror; VaamBodhini
Lala Har Dayal	Hints for Self Culture; Glimpses of World Religions
Lala Lajpat Rai	Unhappy India; England's Debt to India; The Arya Samaj; The United States of America: A Hindu's Impression and a Study; The Story of My Deportation; The Problems of National Education in India
Madan Mohan Malviya	Abhyuday; Hindustan; Leader
Maulana Abdul Kalam Aazad	Al Hilal; India Wins Freedom; GubareKhatir
Muhammad Ali	Comred; Hamdard
Muhammad Iqbal	Tarane Hind; Baange Dara
M. N. Rai	India in Transition
Nayantara Sahgal	A Voice Of Freedom
Paranjape	Kaal
Ram Manohar Lohia	Guilty Men of India's Partition
Raja Ram Mohan Roy	Tuhfat-ul-Muwahhiddin (a gift to deists); Vedanta Gantha; Translation of an abridgement of the Vedanta Sara; Kenopanishads; Ishopanishad; Kathopanishad; Mundaka Upanishad; A Defence of Hindu Theism; The Precepts of Jesus- The Guide to Peace and Happiness; Bengali Grammar; The Universal Religion; History of Indian Philosophy; GaudiyaVyakaran; SamvadKaumudi; A Conference between the Advocate for, and an Opponent of Practice of Burning Widows Alive (Bengali and English)
RavindraNath Tagore	Geetanjali; Home and The World; Gora; Hungry Stones; Chandalika; Visarjan; The Post Office; Chokher Bali; Kabuliwala; My Reminiscences; The Crescent Moon; Letters from Russia
Romesh Chunder Dutt	Economic History of India; The Civilization of India; Peasantry of Bengal
Sarojini Naidu	The Golden Threshold; The Bird of Time; The Feather of the Dawn
Sri Aurobindo (Aurobindo Ghose)	Love and Death; The Life Divine; Essays on the Gita; Collected Poems and Plays; The Synthesis of Yoga; The Human Cycle; The Ideal of Human Unity; Savitri: A Legend and a Symbol; On the Veda
Subhash Chandra Bose	Indian Struggle; An Indian Pilgrim
Tarak Nath Das	Free Hindustan
Tarashankar Bandyopadhyay	Gandevata
Veer Savarkar	The Indian War of Independence; Hindu Pad Padashahi; Hindutva: Who is a Hindu?
Valentine Chirol	Indian Unrest

IMPORTANT SLOGANS OF FREEDOM FIGHTERS

Freedom Fighter	Slogan/Phrase
Ashfaqullah Khan	"There is no dream and if there is, there only one to see my children struggling for the same and for which I am expected to be finished."
B. R. Ambedkar	"My final words of advice to you are educated, agitate and organize; have faith in yourself. With justice on our side, I do not see how we can lose our battle. The battle to me is a matter of joy. The battle is in the fullest sense spiritual. There is nothing material or social in it. For ours is a battle not for wealth or for power. It is a battle for freedom. It is the battle of reclamation of human personality."
Bal Gangadhar Tilak	"Our nation is like a tree of which the original trunk is swarajya and the branches are swadeshi and boycott."
Bankim Chandra Chattopadhyay	"VandeMataram"
Bhagat Singh	"Bombs and pistols don't make a revolution. The sword of revolution is sharpened on the whetting stone of ideas."
Bhagat Singh	"Inquilab Zindabad"
Bhagat Singh	"They may kill me, but they cannot kill my ideas. They can crush my body, but they will not be able to crush my spirit."
Chandra Shekhar Azad	"Dushman ki goliyon ka hum samnakarenge, Azad heerahein hain, Azad heerahenge"
Chandra Shekhar Azad	"If yet your blood does not rage, then it is water that flows in your veins. For what is the flush of youth, if it is not of service to the motherland."
Jawaharlal Nehru	"AraamHaraamhai"
Jawaharlal Nehru	"Blood and tears are going to be our lot, whether we like them or not. Our blood and tears will flow; maybe the parched soil of India needs them so that the fine flower of freedom may grow again."
Lal Bahadur Shastri	"Jai Jawaan, Jai Kisaan"
Lal Bahadur Shastri	"The preservation of freedom is not the task of soldiers alone. The whole nation has to be strong."
Lal Bahadur Shastri	"True democracy or the swaraj of the masses can never come through untruthful and violent means."
Lal Bahadur Shastri	"We have now to fight for peace with the same courage and determination as we fought against aggression."
Mahatma Gandhi	"Civil disobedience becomes a sacred duty when the state becomes lawless or corrupt."
Mahatma Gandhi	"Do or Die"
Mahatma Gandhi	"Freedom is never dear at any price. It is the breath of life. What would a man not pay for living?"
Mahatma Gandhi	"Freedom is not worth having if it does not connote freedom to err. It passes my comprehension how human beings, be they ever so experienced and able, can delight in depriving other human beings of that precious right."
Mahatma Gandhi	"HumneGhutneTekkar Roti MangiKintuPathar Mile"
Mahatma Gandhi	"You can chain me, you can torture me, you can even destroy this body, but you will never imprison my mind."
Pandit Madan Mohan Malaviya	"Satyamev Jayathe"
Rabindranath Tagore	"I am willing to serve my country, but my worship I reserve for Right which is far greater than my country. To worship my country as a god is to bring a curse upon it."
Rabindranath Tagore	"Patriotism cannot be our final spiritual shelter; my refuge is humanity. I will not buy glass for the price of diamonds, and I will never allow patriotism to triumph over humanity as long as I live."
Ramprasad Bismil	"Even if I have to face death a thousand times for the sake of my Motherland, I shall not be sorry. Oh, Lord! Grant me a hundred births in India. But grant me this, too, that each time I may give up my life in the service of the Motherland."
Written by BismilAzimabadi, popularised by Ramprasad Bismil	"Sarfaroshi Ki Tamanna, Ab hamaredilmeinhai"
Sardar Vallabhbhai Patel	"Manpower without Unity is not a strength unless it is harmonized and united properly, then it becomes a spiritual power."
Subhash Chandra Bose	"Freedom is not given – it is taken."
Subhash Chandra Bose	"Give me blood, I will give you freedom"

Subhash Chandra Bose	"It is our duty to pay for our liberty with our own blood. The freedom that we shall win through our sacrifice and exertions, we shall be able to preserve with our own strength."
Subhash Chandra Bose	"Jai Hind"
Subhash Chandra Bose	"One individual may die but that idea will, after his earth, incarnate itself in a thousand lives."
Subhash Chandra Bose	"Soldiers who always remain faithful to their nation, who are always prepared to sacrifice their lives, are invincible."

IMPORTANT ORGANISATIONS/MOVEMENTS DURING FREEDOM STRUGGLE

Political Organizations before Congress

Organizations	Year of Formation	Founder/Associates
BangabhasahaPrakasika Sabha	1836	Associates of Raja Ram Mohan Roy
Zamindari Association/Landholders' Society	1838	Dwarkanath Tagore
British India Society*	1839 (England)	William Adam, Friend of Raja Ram Mohan Roy
The Bengal British India Society	1843	George Thomson. Members included 'Young Bengal' group
British Indian Association	1851	- The merger of Zamindari Association and the Bengal British India Society.
Bombay Association (Bombay Native Association)	1852	Jagannath Shankersheth, Sir Jamshedji Bhai, NaorojiFardonji, DadabhaiNaoroji
Madras Native Association	1849	GazuluLakshminarasu Chetty
The Madras Mahajan Sabha	1884	M. Viraraghavachari, B. SubramaniyaAiyer, P. Ananda Charlu
The Poona Sarvajanik Sabha at Pune	1867	S. H. Chiplunkar, Ganesh Vasudeo Joshi, Mahadev Govind Ranade
The Bombay Presidency Association	1885	Badruddin Tyabji, Pherozshah Mehta, and K. T. Telang
The East India Association*	1866 (London)	Dada Bhai Naoroji
The Indian League	1875	Sisir Kumar Ghosh
The Indian Association of Calcutta (Indian National Association)	1876	Surrendranath Banerjee and Ananda Mohan Bose
The Madras Mahajan Sabha	1884	M. Viraraghavachari, B. SubramaniyaAiyer, P. Ananda Charlu

Movements

Movement	Founder(s)	Year
Atmiya Sabha	Raja Ram Mohan Roy	1815
Young Bengal Movement	Henry Vivian Derozio	1826
Brahmo Samaj	Raja Ram Mohan Roy	1829
Dharma Sabha	Radhakant Dev	1830
Tatvabodhini Sabha	Debendranath Tagore	1839
ParamhansaMandili	DadobaPanderung	1849
RahnumaiMazdhyan Sabha	DadabhaiNaroji	1851
Radhaswami Satsang	Shiv Dayal Saheb	1861
Brahmo Samaj of India	Keshav Chandra Sen	1866
Prarthana Samaj	Dr.Atmaram Pandurang	1867
Arya Samaj	Swami Dayanand	1875
Sadharan Brahmo Samaj	Anand Mohan Bose	1878
Deccan Educational Society	G.G Agarkar	1884
Indian National Social Conference	M.G Ranade	1887
Dev Samaj	Shivnarayan Agnihotri	1887
Ram Krishna Mission	Swami Vivekanand	1897
Servants of Indian Society	Gopal Krishna Gokhale	1905
Pune Seva Sadan	Mr. Ramabai Ranade & G.K Deodhar	1909
Social Service League	N.M Joshi	1911
Seva Samiti	H.N Kunjru	1914
Wahabi/Walliullah Movement (Revivalist)	Abdul Wahab of Arabia and Shah Walliullah	1702-1763
Titu Mir's Movement (Revivalist)	Mir Nithar Ali (known as Titu Mir)	1818
Haji ShariatullahFara'idi Movement	Haji Shariatullah	1818
Ahmadiyya Movement, 1889 (Reformist)	Mirza Ghulam Ahmad	1889

Aligarh Movement (Reformist)	Sir Syed Ahmed Khan	1875
Deoband School (Revivalist)	Muhammad QasimNanotavi and Rashid Ahmed Gangohi	1866
RahnumaiMazdayasnan Sabha (Religious Reform)	Group of English-educated Parsis	1851
Sikh Movement (Akali Movement)	Guru Nanak and subsequent Sikh Gurus	1920s onwards
Theosophical Society	Helena Petrovna Blavatsky, Henry Steel Olcott	1886
Missionaries of Charity	Mother Teresa	1950s
Home Rule Movement	Annie Besant & Bal Gangadhar Tilak	1916
Bharatiya Vidya Bhavan	KanhaiyalalManeklal Munshi	1938
People's Union for Civil Liberties and Democratic Rights	Jaya Prakash Narayan	1976
Chinmaya Mission	Swami Chinmayananda	1953
People's Education Society	Dr B.R.Ambedkar	1945
Vishwa Bharti	Rabindranath Tagore	1921
Abhinav Bharat	Veer Savarkar	1904
Chipko	Sunderlal Bahuguna	1970
Narmada Bachao	Medha Patkar	1985
Servants of People Society	Lala Lajpat Rai	1921
Satyasodhak Samaj	Jyotiba Phule	1873
Servants of God or KhudaiKhidmatgar	Khan Abdul Gaffar Khan	1929
Van Mahotsav	K M Munshi	1950
Bhoodan Movement	VinobhaBhave	1951
Dadoba Pandurang Paramhansa Sabha	DadobaPanderung	1849
Seva Sadon	Behramii M Malabari	1885
Self Respect Movement	E V Ramaswami Naicker	1925

For more on Tribal Movements:

IMPORTANT FOREIGN TRAVELLERS

Traveler	Country	Time/Period	Contribution
Deimachus	Greek	300-263 BC	Ambassador during Bindusara's reign
Megasthenes	Greek	302-296 BC	Ambassador of Seleucus-1, wrote "Indica" detailing Mauryan rule
Fa Hien	China	405-411 AD	Buddhist monk, collected relics, travelogue "Records of Buddhist Kingdoms"
Hiuen Tsang	China	627-645 AD	Visited during Harshavardhana's reign, wrote "See You Key" and "Records of the Western World"
I-Siang	China	671-695 AD	Came to India to spread Buddhism
Suleiman	Arab	9th century	Came to India during the reign of the First Feast
Al-Masudi	Arab	953 AD	Detailed India in "Muruj-ul-Jehab"
Al Biruni	Persia	1017 AD	Studied in India, considered founder of Indology, wrote "Tahfiq-e-Hind"
Marco Polo	Italy	1292-1294 AD	Visited Kakatiya province, economic history in "The Book of Sir Marco Polo"
Ibn Battuta	Morocco	1334-1348 AD	Appointed judge by Muhammad bin Tughlaq, wrote "Rihla"
Shihabuddin Al-Umari	Arab	1348 AD	Gave details about India in "MasalikAlbasar Fi-Mamalik Al-Amsar"
Nicolo Conti	Italy	1420-1421 AD	Detailed Vijayanagara Empire during Debray's reign
Abdur Razzak	Persia	1441-1444 AD	Ambassador of Taimur dynasty, lived in Vijayanagara Empire
Afanasy Nikitin	Russia	1469-1472 AD	Russian merchant, described travels in "The Journey Beyond Three Seas"
Duarte Barbosa	Portuguese	1503-1517 AD	Valuable narrative on Vijayanagara Empire
Domingo Paes	Portuguese	1520-1522 AD	Visited the court of King Krishnadev Roy of the Tuluv dynasty
FernaoNuniz	Portuguese	1536-1537 AD	Storyteller and horse trader, wrote history during Achyut Raya's reign

Jan Huyghen van Linschoten	Dutch	1596 AD	Traveled extensively with the East Indies, secretary to Portuguese viceroy of Goa
Antonio Cabral	Portuguese	1500	Envoy during Emperor Akbar's reign
Leon Gaumont	French	1563 AD	Envoy during Emperor Akbar's reign
Jerome Xavier	Spain	1595 AD	Envoy to the court of Emperor Akbar
William Hawkins	Britain	1608-1611 AD	English ambassador during Jahangir's reign
Sir Thomas Rowe	Britain	1615-1819 AD	English ambassador during Jahangir's reign
Edward Terry	Britain	1616 AD	Described India's vegetarian diet as the first English writer in the pre-modern era
Pietro Della	Italy	1623-1624 AD	Visited during Vekatappa Naik's reign
Peter Mundy	Italy	1628 AD	Visited the court of Shah Jahan
Gemelli Careri	Italy	1695 AD	Visited the court of Emperor Shah Jahan, described military and administration
François Bernier	French	1656 – 1668 AD	Traveled during Shah Jahan's reign
Sir William Norris	England	1701	Ambassador of the company during Aurangzeb's reign
John Frere	England	1862–1867 AD	English tourist, details about Surat and Bombay

IMPORTANT TEMPLES AND NEAREST RIVERS

Temple Name	Location	Nearest River	Temple Name	Location	Nearest River
Akshardham Temple	Delhi	Yamuna	**Durga Temple (Aihole)**	Aihole, Karnataka	Malaprabha
Badrinath Temple	Badrinath, Uttarakhand	Alaknanda	**Ekambareswarar Temple**	Kanchipuram, Tamil Nadu	Vegavathi
Belur Math	Kolkata, West Bengal	Hooghly	**Ellora Caves**	Ellora, Maharashtra	N/A
Brihadeeswarar Temple	Thanjavur, Tamil Nadu	Kaveri	**Gangotri Temple**	Gangotri, Uttarakhand	Bhagirathi
Chennakesava Temple	Somanathapura, Karnataka	Kaveri	**Gavi Gangadhareshwara Temple**	Bangalore, Karnataka	Vrishabhavathi
Dakshineswar Kali Temple	Kolkata, West Bengal	Hooghly	**Girnar Jain Temples**	Junagadh, Gujarat	Sarasvati
Dwarkadhish Temple	Dwarka, Gujarat	Gomti	**Guruvayur Temple**	Guruvayur, Kerala	Rudratheertha
Golden Temple	Amritsar, Punjab	Beas	**HampiVirupaksha Temple**	Hampi, Karnataka	Tungabhadra
Grishneshwar Temple	Ellora, Maharashtra	Godavari	**Hazratbal Shrine**	Srinagar, Jammu and Kashmir	Dal Lake
Jagannath Temple	Puri, Odisha	Bhargavi	**Hoysaleswara Temple**	Halebidu, Karnataka	Yagachi
Kailashnath Temple	Ellora, Maharashtra	N/A	**ISKCON Temple (Delhi)**	Delhi	Yamuna
Kashi Vishwanath Temple	Varanasi, Uttar Pradesh	Ganges	**Jaisalmer Jain Temples**	Jaisalmer, Rajasthan	N/A
Khajuraho Temples	Khajuraho, Madhya Pradesh	Khuddar	**Jambukeswarar Temple**	Thiruvanaikaval, Tamil Nadu	Kaveri
Konark Sun Temple	Konark, Odisha	Chandrabhaga	**Jwalamukhi Temple**	Kangra, Himachal Pradesh	Beas
Kedarnath Temple	Kedarnath, Uttarakhand	Mandakini	**Kailasanathar Temple**	Kanchipuram, Tamil Nadu	Vegavathi
Lingaraj Temple	Bhubaneswar, Odisha	Kuakhai	**Kalighat Kali Temple**	Kolkata, West Bengal	Adi Ganga
Lotus Temple	Delhi	Yamuna	**KanchiKailasanathar Temple**	Kanchipuram, Tamil Nadu	Vegavathi
Mahabodhi Temple	Bodh Gaya, Bihar	Falgu	**Kandariya Mahadeva Temple**	Khajuraho, Madhya Pradesh	Khuddar
Meenakshi Temple	Madurai, Tamil Nadu	Vaigai	**Kanheri Caves**	Mumbai, Maharashtra	N/A
Naina Devi Temple	Nainital, Uttarakhand	Naina	**Kapaleeshwarar Temple**	Chennai, Tamil Nadu	Buckingham Canal

Palitana Temples	Palitana, Gujarat	Shetrunjaya	**Kedareshwar Temple**	Almora, Uttarakhand	Kosi
Parvati Temple	Pune, Maharashtra	Mutha	**Keerthi Narayana Temple**	Talakad, Karnataka	Kaveri
Ramanathaswamy Temple	Rameswaram, Tamil Nadu	Pamban	**KollurMookambika Temple**	Kollur, Karnataka	Souparnika
Ranakpur Jain Temple	Ranakpur, Rajasthan	Magai	**Kumbhalgarh Fort**	Kumbhalgarh, Rajasthan	Banas
Sabarimala Temple	Sabarimala, Kerala	Pamba	**Kumbharia Jain Temples**	Ambaji, Gujarat	N/A
Sanchi Stupa	Sanchi, Madhya Pradesh	Betwa	**KurinjiAndavarMurugan Temple**	Kodaikanal, Tamil Nadu	N/A
Somnath Temple	Somnath, Gujarat	Sarasvati	**Mahakaleshwar Jyotirlinga**	Ujjain, Madhya Pradesh	Shipra
Sree Padmanabhaswamy Temple	Thiruvananthapuram, Kerala	Padma	**Mahavir Swami Temple**	Patan, Gujarat	Pushpavati
Srinathji Temple	Nathdwara, Rajasthan	Banas	**Mallikarjuna Jyotirlinga**	Srisailam, Andhra Pradesh	Krishna
Sun Temple, Modhera	Modhera, Gujarat	Pushpavati	**Mamleshwar Temple**	Omkareshwar, Madhya Pradesh	Narmada
Tungnath Temple	Rudraprayag, Uttarakhand	Mandakini	**Manikarnika Ghat**	Varanasi, Uttar Pradesh	Ganges
Udupi Sri Krishna Matha	Udupi, Karnataka	Swarna	**Mehandipur Balaji Temple**	Dausa, Rajasthan	N/A
Vaishno Devi Temple	Katra, Jammu and Kashmir	Ban Ganga	**Minakshi-Sundareshwara Temple**	Madurai, Tamil Nadu	Vaigai
Virupaksha Temple	Hampi, Karnataka	Tungabhadra	**Murdeshwar Temple**	Murdeshwar, Karnataka	Arabian Sea
Yamunotri Temple	Yamunotri, Uttarakhand	Yamuna	**Nageshwar Jyotirlinga Temple**	Dwarka, Gujarat	Arabian Sea
Adi Kumbeswarar Temple	Kumbakonam, Tamil Nadu	Kaveri	**Nellaiappar Temple**	Tirunelveli, Tamil Nadu	Thamirabarani
Adinath Temple	Ranakpur, Rajasthan	Magai	**Nellitheertha Cave Temple**	Uttara Kannada, Karnataka	Aghanashini
Amarnath Temple	Amarnath, Jammu and Kashmir	Amaravati	**Omkareshwar Temple**	Omkareshwar, Madhya Pradesh	Narmada
Annapurna Devi Temple	Indore, Madhya Pradesh	Narmada	**PanchaBhootaStalam**	Various locations in Tamil Nadu	Various rivers
Badami Cave Temples	Badami, Karnataka	Malaprabha	**Parashurameshvara Temple**	Bhubaneswar, Odisha	Kuakhai
Baidyanath Jyotirlinga Temple	Deoghar, Jharkhand	Mayurakshi	**Pattadakal Monuments**	Pattadakal, Karnataka	Malaprabha
Balaji Temple (Tirupati)	Tirupati, Andhra Pradesh	Swarnamukhi	**Rukmini Devi Temple**	Dwarka, Gujarat	Gomti
Banashankari Temple	Badami, Karnataka	Malaprabha	**Sai Baba Shirdi Temple**	Shirdi, Maharashtra	Godavari
Basilica of Bom Jesus	Goa	Mandovi	**Shantadurga Temple**	Kavalem, Goa	Kushawati
Bhimashankar Temple	Pune, Maharashtra	Bhima	**Sharadamba Temple**	Sringeri, Karnataka	Tunga
Birla Mandir (Jaipur)	Jaipur, Rajasthan	N/A	**Siddhivinayak Temple**	Mumbai, Maharashtra	N/A
Boudhanath Stupa	Kathmandu, Nepal	N/A	**Somanathapura Temple**	Somanathapura, Karnataka	Kaveri
Chidambaram Nataraja Temple	Chidambaram, Tamil Nadu	Kaveri	**Someshwara Temple**	Kolar, Karnataka	Pinakini
LepakshiVeerabhadra Temple	Lepakshi, Andhra Pradesh	Pennar	**Dilwara Temples**	Mount Abu, Rajasthan	Banas

IMPORTANT HANDICRAFTS

State	Crafts
Andhra Pradesh	Dhokra Metalware, Nirmal Painting, Leather Puppetry (TholuBommalu), Metalware, Terracotta, Wood Carving, Dolls, Krishnashila Stone Carving, Silver Filigree, Veena Making, Kalamkari Prints, Wood Block

	Making, Kondapalli Toys, Handloom - Paagadubandhu, Handloom - Telia/Ikkat, Grass and Fibre (MounguAkku), Metalware - IthadiNakshi Kala, Banjara Embroidery, Bidriware, Lac Bangles, Jute Craft, Lac Turnery, Veena Making, Crochet Lace, Musallah Rug, Painted Scrolls, Metalware - IthadiNakshi Kala, Crochet, Knotted Carpet, Pochampalli Ikat, Uppada Jamdani Sarees, Mangalagiri saree
Arunachal Pradesh	Coiled Cane Hats, Textile Handloom, Flattened Bamboo Containers, Carpet Weaving, Cane and Bamboo Bridges, Wood Carving (Muwang Cha), Jewellery (Bead Work), Pottery, ApaTani Bamboo Products
Assam	Cane Furniture, Bamboo Nesting Baskets, Bamboo Craft, Salakati, Bonorgaon, Tenhali, Kokrajhar, Eri Silk Spinning, Textiles - Handloom, Flattened Bamboo Mat, Telekhalerpar, Shitapara, Coiled Cane Craft, Brass Ware, Sheetalpatti Grass Mat, Banlakuchi,Muga Silk
Bihar	Madhubani painting, grass craft: sikki, sujuni embroidery, khatwa applique work, tassar silk, lahath and kiri lac bangles, wooden toys, papier mache
Chandigarh	Phulkari, mitti da kaam
Chhattisgarh	Dhokra - Metal Casting, Iron Craft, Pata Weaving, Terracotta and Pottery, Bronze Ware, Handloom, Bamboo Basketry, Brass Vessels, Painted Clay Relief, Champa Silk Saree and Fabrics
Delhi	Carved Wooden Furniture, Chik Making, Naqquashi - Engraving, Paper Craft, Papier Mache, Sandalwood Carving, Terracotta, Wood Inlay, Zardozi - Gold Embroidery
Goa	Kashtakari, menawati candle making, ottimkaam, sea shell craft, manichekaam
Gujarat	Lipan clay work, Namda rugs, Bandhani dyeing, Kachchhi Embroidery, Rogan Painting, katab Embroidery, Ajrakh Printing, pithora painting, mashru weaving, sompurkaam, matanipichedi painting, patola weaving, aari Embroidery, Akik agate stone work, Bohra caps, Sujuni weaving, vaaskam, devru metal craft, molela plaque, Kutch Embroidery, Tangaliya Shawl, patola saree
Haryana	Palm Leaf Work, Sarkanda Work, Jutti - Leather Footwear, Surahi - Pottery, Brass Ware
Himachal Pradesh	Textiles handloom, Silver jewellery, Doll making, Knitted socks, Thangka painting, Thakkar ka kaam sheet metal work, Pula chappal (grass footwear), Basketry, Wood work of Dharamsala, Metal work, Drasdrubma applique thangka, Embroidery on leather, Chambarumal, Chamba painting, Kinnauri Shawl
Jammu and Kashmir	Kari Kalamdani / Kar-i-Munaksh Paper mache, Embroidery: Kashidakari, Crewel work and Sozni, Copper Ware: Naqqashi/kalai, namda rugs, Wicker Work: Kangri /Shakshaj, Kari Kalamdani / Kar-i-Munaksh Gabba embroidered rugs, Walnut Wood Carving : dun, basholi and thangka painting, paabu boots, Khabdan - Pile Carpets, Tsungdul/tsungdan rugs, Wood Carving: Pinjrakari/ Khatumband, Thigma -Tie Resist Dyeing, zari, Kani Shawl, Jamawar saree
Jharkhand	Kasi grass, Black & red pottery & clay, Chhau mask, Dhokhra metal casting, Jadupatua painting, Terracotta jewellery, Jute, Khovar and sohrai painting, Bamboo work, Musical instruments, Tribal jewellery, tussar silk saree
Karnataka	Mysore Silk, Kasuti Embroidery, Ilkal Saree, Navalgund Durries, Molakalmuru Sarees, SandurLambani Embroidery, Sandalwood carving, Lambani or Lambada embroidery, Wood inlay - rosewood, Tibetan carpets, Stone carving - soapstone - shilpi, Painting - Ganjifa cards, Mysore Painting, Metalware: Panchaloha, Metalware - sheet metal embossing, Surpurpainting, Yakshagana costume making, Wood carving - bhoota figures, Grass and fibre - areca palm leaf craft, Metalware - sheet metal embossing, Lambani or Banjara embroidery, Bidri craft, Ilkal saree.
Kerala	Odu utensils, Ola basketry, Ramacham Root Products, Kombu horn craving, vallam boat making, Metal Mirror : Aramulla, Kiritam/mudiPooram Crafts, Wood Carving : Marapani, Koramat weaving : Paya, Screwpine craft : Thazha, Netturpetti jewellery boxes, Symmetric wood stringing, AranmulaKannadi, Balaramapuram Sarees and Fine Cotton Fabrics, Kasaragod Sarees, Kuthampully Sarees, kallkothu stone craft, Kasavu saree
Madhya Pradesh	Wood carving, Papier Mache, Handloom, Bohra caps, Stone carving, Terracotta and pottery, Gond Chitrakari (tribal painting), Pithora painting, Zardosi (gold embroidery), Leather toys, Block printing of Bagh, Bandhani (tie resist dyeing), Wood and lac turnery, Jute craft, Dhokra (lost wax metal casting), chanderi fabric, Maheshwari saree
Maharashtra	Kolhapuri chappal, Solapur Chaddar, Solapur Terry Towel, Paithani Sarees and Fabrics, Ganjifa cards, Chandichekaam - Silver Ware, TambatKaam - Copper & Brass, Terracotta & Pottery : Kunbhaarkaam, uthavachekaam - Metal Embossing, Metal Dies & Metal Casting: RupantarKruti, banajara embroidery, dhurrie weaving, warli painting, Patuakaam - Jewellery stringing work, Stringing of Flowers: Pushpa Grathan, Brass Musical instruments Taal , Jhaanj , Ghanta, Bamboo Work: KalkKalakruti, Narayan peth
Manipur	Reed mats (KaunaPhak), Traditional bamboo products, Thongjao pottery, Bell metal work (Senjeng).
Meghalaya	Bamboo rain shields (Knup), Bamboo carrying baskets, Garo bamboo house (Nokachik), Handloom weaving.
Mizoram	Bamboo basketry, Cane stool, Mizo puan handloom weaving, Gourd craft.
Nagaland	Loin loom weaving, Wood carving, Pottery, Kophi (cane baskets), Musical instruments, Blacksmithy, Cane & bamboo (morung house).
Odisha	Ganjappa Cards, Cowdung Toys, Pipli Applique, Solapith Craft, Patharkama, straw craft, Kotpad Sari, Brass & Bell Metalware, patachitra, Talapatrakhdai: Palm Leaf Engraving, Khumbarkama, Kathokama wood craft, katki chappal, Bandha Yarn Tie Resist Dye, Silver Filigree: Chanditarkashi, DongariaScraf – Kapragonda, KotpadHandloom fabric, Orissa Ikat, Bomkai

Puducherry	Kora mat weaving
Punjab	Phulkari, Bagh textiles, khunda bamboo staves, Galeecha- Knotted carpets, Panja dhurries, Wood Inlay of Hoshiarpur, tilajutti
Rajasthan	Kota doria, lac ware, Blue pottery, Koftgiri Weaponry, Namda Felt, Meenakari& Kundan, Leheriya:Resist dyeing, Bhant / Chappakaam block making, Koftgiri Weaponry, Thewa Gold leaf work, mojari footwear, bahi, Sanjhi Paper stencils, Terracotta of Molela, Sandalwood carving, kinarikaamgota work, tarkashi, UstaKaam gesso painting, Gangaur Idol Making, phad painting, Meghwal embroidery, Bitti Chitra, Kawad Mobile shrines, Camel Trappings, Seep Kaam: Shell Craft, Bone work, Panja Durrie Weaving, Dabu printing, Bandhej - Tie Dye, Pattu Weaving, Pichhwai Paintings, Damascening, Musical Instruments
Sikkim	Choktse tables, Ku
Tamil Nadu	Salem Fabric, Kancheepuram Silk, Kanjivaram, Salem Silk (Salem Venpattu), Kovai Cora Cotton, Arani Silk, panaolai, bobbin lace work, Kora Mat Weaving: Pai, Sheet Metal Cladding : Kavasam, Wood Carving: Mara Silai, Shell Craft : Chippi, Silk Garland Making, Stucco Work:Suthai, Doll Making :Bommai, Root Carving : Vella Eruku, Pith Work : NettiVelai, Muthangi Peal Studded attire, Applique Embroidey : Thomba, Bronze casting : Panchalokkam, Stone Carving: KalSilai, Mara silai, toda embroidery, Bhavani Durries Jamakalam, Thanjavur Art Plate, Tie Resist Dyeing Sungadi, Thanjavur Glass Painting
Telengana	Gadwal, Pochampalli Ikat (with AP)
Tripura	Bamboo furniture of Katlamara, Pressed clay work of Melaghar
Uttar Pradesh	Banaras Brocades and Sarees, Handmade Carpet of Bhadohi, Zari and Zardozi, ChiallaiTakai, chappai block painting, tharu applique, epousseKalne Ka Kaam/Nakkashi, Calligraphy: Quitabat, Chikankari Embroidery, Metal work embroidery: Kaamdani/FardikaKaam, sazhar stone jewellery, Pottery (Khurja/Chinhat)
Uttarakhand	Tibetan Carpets, Loin Loom Weaving, Ringaal (Basketry), Likhai (Wood Carving), Handloom, Aipan (Ritual Floor Painting), Rambaans (Natural Fiber Craft), Lantana Furniture (Panchphulli), Nettle Fibre Craft (Bichhu Buti), Copper Ware (Tamta).
West Bengal	Santipore Saree, Art metal ware/ metal crafts, Hill Painting, galeecha carpet, Konglan Stitched Boot, bet o bansh furniture, SheetalpatiReedmats, gambira masks, sholapith craft, Sherpai Measuring bowls, clay work of Krishnanagar, Kantha Cloth Embroidery, Terracotta of Bankura, Patachitra- Scroll Painting, Beaten Silver work - RuporKoda, chhau mask, PoraMatiropere Gala Lac Coated Toys, Baluchari Sarees, Kantha Stitch Sarees, Tant, Dhakai Jamdani, Tant

IMPORTANT FAIRS AND FESTIVALS

State	Major Festivals
Andhra Pradesh	Brahmotsavam, BhishmaEkadasi, Deccan Festival, Pitr, Sankranthi, Tyagaraja Festival, Sankranti, Ugadi, Dasara, Diwali, Ugadi / Chaitra SuddhaPadyami
Arunachal Pradesh	Losar Festival, ChaloLoku, Pongtu, Torgya, Reh, Nyokum
Assam	Bohag Bihu, Magh or Bhogali Bihu, Rongali Bihu, Bihu, Durga Puja, Bohag Bihu, Magh Bihu, Bhogali Bihu, Wangala
Bihar	Chhath Puja, Sonepur Cattle Fair, Makar Sankranti
Chhattisgarh	Bastar Dussehra, Maghi Purnima, Chakradhar Samaroh
Goa	Carnival, Shigmo Mela, Sunburn Festival, SamvastsarPadvo
Gujarat	Janmashtami, Diwali, Navaratra, Kutch Rann Utsav, Uttarayan
Himachal Pradesh	Gochi Festival, Mahashivaratri, Rakhadumni, Kullu Dussehra, Losar, Himachal Winter Carnival
Haryana	GuggaNaumi, Surajkund Mela, Baishakhi, Teej, Surajkund Handicrafts Mela, Diwali
Jammu and Kashmir	Eid-ul-Fitr, Eid-ul-Azha, Bahu Mela, Chhari, Urs, Har Navami
Jharkhand	Karam Festival, Holi, Sarhul, Karma, Sohrai
Karnataka	Ugadi, Mahamastakabhisheka, Mysore Dasara, Makar Sankramana, Ugadi / Chaitra SuddhaPadyami, Vishu (April)
Kerala	Onam, Vishu, Pooram, Thrissur Pooram, Puthando, Vishu
Madhya Pradesh	Lokrang Festival, Diwali, Khajuraho Dance Festival, Tansen Music Festival
Maharashtra	Ganesh Chaturthi, Nag Panchami, Navratri, GudiPadva, Diwali, GudiPadva (March)
Manipur	Yaoshang, Cheiraoba, Kang Festival
Meghalaya	Nongkrem Dance Festival, Wangala Festival, Ka PomblangNongkrem (November)
Mizoram	ChapcharKut, MimKut, Pawl Kut
Nagaland	Hornbill Festival, Sekrenyi, Moatsu Festival
Odisha	Rath Yatra, Raja Parba, Akshaya Tritiya, Konark Dance Festival, Nuakhai (August)
Punjab	Lohri, Baisakhi, BandiChhor Divas, Guru Parab, Diwali
Rajasthan	Gangaur Festival, Teej, Pushkar Fair, Urs at Ajmer, Pushkar Camel Fair, Chandrabahaga Fair, Pushkar Fair

Sikkim	Losar, Saga Dawa, Dasain
Tamil Nadu	Pongal, Thyagaraja Aradhana, Jallikattu, PanguniUthiram, Puthandu, Navratri, Diwali, Puthando, Vishu (April)
Telangana	Bonalu, Bathukamma, MedaramJatara or SammakkaSaralammaJatara
Tripura	Kharchi Puja, Tripureshwari Temple Festival, Durga Puja, Diwali
West Bengal	Durga Puja, Gangasagar Fair, Naba Barsha, Nabanna (November and December)
Uttaranchal	Ganga Dusshera, Purna Kumbh Mela, Nanda Devi Fair
Uttar Pradesh	Navaratri, Ram Navmi, Brahmostav, Kans ka Mela, Sravana festival, Ram Leela, Ganga Mahotsav, Kumbh Mela, Nauchandi Fair, Diwali

IMPORTANT FOLK PAINTINGS

State	Folk Paintings
Andhra Pradesh	Kalamkari, Nirmal Paintings, Cheriyal Scroll Painting
Arunachal Pradesh	Thangka Painting, Adi Tribe Art, Monpa Art
Assam	Assamese Village Art, Bodo Paintings, Mishing Art
Bihar	Madhubani, Manjusha Art, Patna Kalam
Chhattisgarh	Pithora, Phad Painting, Kosa Silk Painting
Goa	Kunbi Art, Ganjifa Cards, Naïve Goan Art
Gujarat	Warli Painting, Pithora, LippanKaam
Haryana	Phulkari, Wall Paintings of Gurugram
Himachal Pradesh	ChambaRumal, Kangra Painting, Basohli Paintings
Jharkhand	Sohrai and Khovar, Jadopatia Paintings, Santal Painting
Karnataka	Mysore Painting, Tanjore Painting, Lambani Art
Kerala	Mural Painting, Kalamezhuthu, Theyyam Face Painting
Madhya Pradesh	Gond Painting, Bhil Art, Malwa Painting
Maharashtra	Warli Painting, Paithani Saree Art, Kalamkari
Manipur	Thangka Painting, Lai Haraoba Paintings
Meghalaya	Naga Tribal Art, Khasi Tribal Art, Garo Paintings
Mizoram	Bamboo and Cane Craft, Mizo Traditional Art
Nagaland	Naga Tribal Art, Ao Naga Wall Painting
Odisha	Pattachitra, Manjapa Painting, Tarakasi Silver Filigree
Punjab	Kangra Painting, Phulkari, Khatra Painting
Rajasthan	Phad Painting, Miniature Painting, Meenakari
Sikkim	Thangka Painting, Sikkimese Art
Tamil Nadu	Tanjore Painting, Chettinad Paintings, Kolam Art
Telangana	Cheriyal Scroll Painting, Nirmal Paintings, Bidri Art
Tripura	Jhar Craft, Bamboo Craft, Goria Paintings
Uttar Pradesh	Mughal Miniature Painting, Sanjhi Art, Banarasi Saree
Uttarakhand	Aipan Art, Garhwali Painting, Jagar Painting
West Bengal	Kalighat Painting, Patua Sangeet, Kantha Embroidery

IMPORTANT PUPPETRY FORMS

Puppetry Tradition	State/Region	Characteristics
String Puppets	Rajasthan	Kathputli - Colorful wooden puppets, medieval Rajasthani style.
	Odisha	Kundhei - Light wood, versatile, influenced by Odissi dance music.
	Karnataka	Gombeyatta - Stylized characters from Yakshagana plays.
	Tamil Nadu	Bommalattam - Wood, combination of rod and string puppetry.
	Uttar Pradesh	KundliNaach - Traditional string puppetry.
Shadow Puppets	Karnataka	TogaluGombeyatta - Small-sized puppets with classical music.
	Andhra Pradesh	TholuBommalata - Large puppets, colored on both sides.
	Odisha	Ravanachhaya - Opaque shadow puppets with dramatic poses.
Rod Puppets	West Bengal	Putul Nautch - Carved wood, Jatratheater-style costumes.
	Orissa	Orissa Rod Puppets - Smaller size, combined elements of rod and string.
	Bihar	Yampuri - Single-piece wooden puppets without joints.
Glove Puppets	Uttar Pradesh	Glove Puppets - Present social themes.
	Orissa	Glove Puppets - Based on Radha and Krishna stories.
	Kerala	Pavakoothu - Influenced by Kathakali, episodes from epics.

IMPORTANT TRADITIONAL THEATRE FORMS

State	Traditional Theater Forms
Andhra Pradesh	Kuchipudi, Yakshagana, Burrakatha
Arunachal Pradesh	Wancho Dance
Assam	Bhaona, Sattriya, Ankiya Nat, Jhumura, Ojapali, Raas Leela
Bihar	Bidesia, Maithili, Nautanki, Bhikhari Thakur's plays
Chhattisgarh	Raut Nacha, Panthi, Dewar Nacha
Goa	Zagor, Dashavatara, Tiatr
Gujarat	Bhavai, Sangeet Natak, Garba, Ras, Akhyana
Haryana	Rasa Leela, Swang, Phag Dance
Himachal Pradesh	Karyala, Nati
Jammu and Kashmir	Bhandpather, Harikatha
Jharkhand	Chhau, Jatra, Jhumar, Domkach, MardanaJatra
Karnataka	Yakshagana, Bayalata, BhoothaAradhane
Kerala	Kathakali, Koodiyattam, Theyyam, ChakyarKoothu, Kalaripayattu, Kudiyattam, Padayani, Theyyam, Tholpavakoothu
Madhya Pradesh	Tamasha, Lavanis, Bhagoria, Pandwani, Maach
Maharashtra	Tamasha, Lavani, Dashavatara, Kirtan, Marathi Keertan, Powada
Manipur	Ras Lila, KhambaThoibi, Manipuri Dance, Manipuri Sankirtana, Tang-ta, Wari-leeba
Meghalaya	Ka Shad Suk Mynsiem
Mizoram	Cheraw Dance
Nagaland	Naga Warrior Dance
Odisha	Odissi, Pala, Daskathia, Gotipua, RabanaChhaya
Punjab	Punjabi Naatak, Nautanki, Bhangra, Giddha, Naqal
Rajasthan	Bhawai, Tamasha, Maand, Rammat
Sikkim	Chhaam, Tamang Selo, Yak Cham
Tamil Nadu	Therukoothu, Kattaikkuttu, Bhagavata Mela, Terukkuttu
Telangana	Perini Thandavam, Burra Katha
Tripura	Hojagiri Dance
Uttar Pradesh	Ramlila, Raslila, Nautanki, Swang
Uttarakhand	Langvir Nritya, Jhora, Chaupalia
West Bengal	Jatra, Chhau Dance, Baul Singing, Kathakatha

IMPORTANT TRADITIONAL TOYS

State	Traditional Toys
Andhra Pradesh	Kondapalli Toys, Etikoppakka Toys
Arunachal Pradesh	Wancho Dance
Assam	Assamese traditional dolls, Bhaona crafts, Jhumura
Bihar	Kanyaputri Dolls, Sikki Work, Bamboo Work
Chhattisgarh	Gharwha art, Wood art, Bamboo and metal toys
Goa	Goan woodcraft, Cradles, Baby carts
Gujarat	Clay and Terracotta Toys, Patang (Kite) making
Haryana	Babushka dolls, Lacquer dolls, String puppets, Clay Indian toys
Himachal Pradesh	Traditional toys from Toys Extension Centre
Jammu and Kashmir	Walnut Wood Carving, Paper Mache
Jharkhand	Wooden toys, Lacquered wooden toys
Karnataka	Channapatna Toys, Lacquerware toys
Kerala	Coconut palm leaf toys, Coir toys, Woodcraft, Lacquer Ware
Madhya Pradesh	Adivasi GudiaHastashilpa (Dolls), Betel Nut's Toys, Tin Toys
Maharashtra	Wooden Toys of Sawantwadi, Bahatuktli
Manipur	Traditional dolls made from wood and cloth
Mizoram	Cheraw Dance
Nagaland	Naga Warrior Dance
Odisha	Pipli Applique work, Wooden toys, Papermache toys
Punjab	Folk toys, Handwai, Chankana, Lattu, Ghuggu
Rajasthan	Wooden toys from Udaipur, Bassi and Jaipur, Traditional puppetry
Sikkim	Chhaam, Tamang Selo, Yak Cham

Tamil Nadu	Thanjavur Dancing Dolls, Choppu Saman, Tholpavakoothu puppets
Telangana	Nirmal Toys
Tripura	Traditional toys and crafts made with bamboo, wood, and clay
Uttar Pradesh	Varanasi lacquered toys, Mirzapur wooden lacquer ware and toys
Uttarakhand	Damru (Large), Wooden toy-making
West Bengal	Wooden dolls, Traditional wooden-dolls and toys
Andaman & Nicobar	Exotic local markets with small but exotic range of toys
Chandigarh	Wooden Boards, Wooden Jali, Sunmica Boards, Wooden Showcase, God statues
Delhi	Handmade toys, Home decors, Craft items
Daman & Diu	Mat Weaving Craft, Tortoise shell toys and crafts

State	Martial Arts
Andhra Pradesh	Kuchipudi (Classical Indian dance form with martial aspects), Kathi Samu
Assam	Bihu Mukha, Thang-ta
Bihar	MallaYuddha (Traditional wrestling)
Haryana	Gatka (Sikh martial art), Kalaripayattu
Himachal Pradesh	Nati (Folk dance with martial elements)
Jharkhand	HaathiDaav, Chhau Dance (includes martial movements)
Karnataka	Kalaripayattu (Also present in Kerala), Gatka
Kerala	Kalaripayattu (One of the oldest martial arts in the world)
Maharashtra	Mardani Khel (Traditional wrestling in Kolhapur)
Manipur	Thang-ta (Sword and Spear martial art)
Mizoram	Sarlamkai (Mizo martial art)
Odisha	PaikaAkhada (Traditional martial art of Odisha)
Punjab	Gatka (Traditional Sikh martial art)
Rajasthan	Pehlwani (Traditional Indian wrestling)
Sikkim	Lingdem (Sikkimese martial art)
Tamil Nadu	Silambam (Stick-fighting martial art), Varma Kalai
Telangana	Telangana Martial Arts (Incorporating Silambam)
Uttar Pradesh	Pehlwani, Lathi Khela (Stick fighting)
Uttarakhand	Mallakhamb (Pole gymnastics with martial elements)
West Bengal	Lathi Khela (Stick fighting), BoliKhela

IMPORTANT MEDIEVAL INDIA LITERATURE

Book Name	Author	Language
Tabakat-i-Nasiri	Minhaj-us-Siraj	Persian
Miftah-ul-Futuh	Amir Khusrau	Persian
Tariq-i-Alami	Amir Khusrau	Persian
Padmavat	Malik Mohammed Jayasi	Awadi
Tughlaq Nama	Amir Khusrau	Persian
Kitab-ul-Rihala	Ibn Battuta	Arabic
Tariq-i-Firozshahi	Zia-ud-din Barani	Persian
Fatwa-i-Jahandari	Zia-ud-din Barani	Persian
Inayat Namai-Ilahi	Zia-ud-din Barani	Persian
Tibb-i-Firozshahi	Shah Quli	-
Futuhat-i-Firozshahi	Firoz shah Tughlaq	Persian
Tariq-i-Mubaraqshahi	Yahya-bin-Ahmed	-
Tuzuk-i-Babari	Babar	Turkish
Humayun Nama	Gulbadan Begum	Persian
Ain-i-Akbari	Abul Fazl	-
Akbarnama	Abul Fazl	-
Razmnama	Akbar	Persian
Hamzanama	Akbar	Persian
Tuzuk-i-Jahangiri	Jahangir	Persian
Padshahnama	Abdul Hamid Lahori	Persian
Zik-i-Shahjahani	Mulla Fareed	Persian
Fatwa-i-Alamgiri	Aurangzeb	Arabic/Persian

IMPORTANT KEYWORDS AND THEIR MEANINGS

ANCIENT HISTORY

Vedic Period

Term	Description
Aghanya	Not to be killed (Cow)
Akshavapa	Accountant
Aitareya Brahmana	A Brahmana text associated with the Rigveda
Ajamana	Ritual sponsor, the person for whom a Yajna is performed
Anagni	An unmarried woman or virgin
Anukramani	A catalog or index, often referring to the index of Vedic hymns
Antyesti	Funeral rites and rituals for the deceased in Vedic tradition
Aranyakas	Vedic texts composed by hermits
Ashtaka	A unit of measurement, often used in Vedic rituals
Ashvamedh	A sacrifice associated with Political paramountcy
Apsu	Symbolizing the cosmic waters, often mentioned in Vedic hymns
Ayas	Term used for copper or bronze
Bali	Voluntary offerings to the chief by the people
Bhagadugha	Tax Collector
Brahmanas	Collection of ancient Indian texts with annotations on the hymns of the four Vedas
Brahmasutra	Aphorisms that summarize the philosophical teachings of the Upanishads
Dasas	Early branch of Aryans
Dasuhatya	Slaughter of Dasyus
Devadasi	Female dancer and servant in the temple, dedicated to a deity
Dikshita	One who had undergone initiation for Vedic sacrifice
Dandins	Officials responsible for enforcing discipline and justice in a kingdom
Dvija	"Twice-born," a term referring to the three upper varnas (Brahmins, Kshatriyas, Vaishyas)
Gavishti	Search for cows
Gavyuti	Unit of measure of distance
Gramini	Head of the Village
Hiranyaka	Goldsmith
Hotri	The priest of Rigveda
Jatavedas	Epithet for Agni, the god of fire, meaning "One who knows all"
Jivagribha and Ugra	Police Officers
Kshata	Keeper of the King's household
Kulapa (Dampati)	Head of the family
Kula	The clan or extended family
Mahishi	Chief Queen
Madhyamasi	Mediator in Disputes
Niyoga	An ancient practice of begetting children through a designated person in case of infertility
Palagala	Messenger
Pravargya	A ritual involving the preparation and consumption of Soma
Purohita	Chief priest and advisor to the king in Vedic times
Pushkara	Tank
Rajan (GopatiJanasya or Janasyagopa)	King
Ratnin	Official
Raka	Benevolent beautiful goddess
Rajsuya	A sacrifice symbolizing the cycling process of regeneration of the universe
Sabhavati	Women who attended the assembly
Samiti	Folk assembly for transacting tribal business
Sangrahitri	Treasurer
Senani	Commander
Shrauta	Grand Sacrifice
Shrestins	Elder men
Sinivali	Goddess that bestows children
Sita	Furrow land
Somapa	A priest who prepares and offers the Soma during rituals
Spasa	Spy
Suta	Charioteer
Suvira	Brave son
Upanishads	Philosophical texts included in Vedic literature

Vaitarani	A mythical river crossed by the souls of the deceased in the afterlife
Varna	Four-fold division of Hindu society
Vidhatha	Assembly meant for secular, religious, and military purposes
Vipra	A learned or wise person, often referring to a Brahmin
Vrajapati	Officer in Charge of Pastoral Lands
Yajna	Ritualistic sacrifice or offering
Yajnashala	Ritual hall or place specifically constructed for performing Yajnas

Mauryan Empire

Term	Description
Adhyaksha	Head of a department or division, looked after various departments
Aganya	Not to be killed (Cow)
Akaradhyaksha	Superintendent of Mining
Akshapataladhyaksha	Accountant General who was in charge of currency and accounts
Amatya	Administrative personnel or civil servants who filled the highest administrative and judicial appointments
Anga	Present day Bhagalpur
Asvadhyaksha	Commander of Cavalry
Atavivala	Troops supplied by forest tribes
Avanti Ujjain	Region or city in ancient India
Ayas	Term used for copper or bronze
Ayukta	Title of an officer often used in the Mauryan period
Bali	Voluntary offerings to the chief by the people
Bhagadugha	Tax Collector
Bhishaka	Physicians
Bhritakas	Hired troops
Chedi	Ancient region in Eastern Bundelkhand
Dasas	Early branch of Aryans
Dasuhatya	Slaughter of Dasyus
Devadasi	Female dancer and servant in the temple, dedicated to a deity
Dikshita	One who had undergone initiation for Vedic sacrifice
Dhanya	A generic term for grain
Duhitri	Daughter; Milcher of Cow
Dvija	"Twice-born," referring to the three upper varnas (Brahmins, Kshatriyas, Vaishyas)
Ekrat	Sole Sovereign Title used for Mahananda
Gana	Tribal Republic or oligarchy
Ganika	Accomplished Courtesan
Gavyuti	Unit of measure of distance
Gopa	Accountant to the unit of 5-10 villages which was an intermediate level of administration between district level and that of village
Guddhapurushas	Secret agents in the espionage department
Hiranyaka	Goldsmith
Hotri	The priest of Rigveda
Jatavedas	Epithet for Agni, the god of fire, meaning "One who knows all"
Kalinga	Ancient region in Odisha
Kammika	Royal customs official
Kantakasodhanas	Courts dealing with criminal cases
Karishu	Manure land
Kulapa (Dampati)	Head of the family
Kula	The clan or extended family
Kulyavapa	Units of land measurement
Lavananyadhyaksha	Salt superintendent
Mahishi	Chief Queen
Mahashilakantaka	A war engine of Ajatashatru that catapulted big stones
Malla	Ancient region around Kusinagar
Matsya	Ancient region in Jaipur
Nivartan	Unit of land measurement
Panchala	Ancient region in Rohilkhand
Palagala	Messenger
Pani	Rich People
Pravargya	A ritual involving the preparation and consumption of Soma
Prashasti	Prison head
Pushkara	Tank
Purohita	Chief priest and advisor to the king in Vedic times

Rajan (GopatiJanasya or Janasyagopa)	King
Rajbhatas	Royal officials to protect the property of traders-travellers
Rajukas	Responsible for surveying and assessing land
Rathamusala	Kind of chariot with a mace
Raka	Benevolent beautiful goddess
Ratnin	Official
Rajsuya	A sacrifice symbolizing the cycling process of regeneration of the universe
Samiti	Folk assembly for transacting tribal business
Santhagara	Assembly hall of Gana
Sangrahitri	Treasurer
Sannidhata	Treasurer and keeper of the stores
Sita	State's land
Sresthi	Bankers
Spasa	Spy
Sthanika	The tax was collected by the sthanika who worked directly under the Pradesika.
Sthapathi	Commander-in-Chief
Suradhyaksha	Superintendent of Excise who controlled the manufacture and sale of liquor
Setthi	A rich businessman
Shreni , Nigam, Puga	Guild
Shukla Yajurveda	One of the four Vedas, focusing on white (pure) Yajurveda rituals
Sinivali	Goddess that bestows children
Sitadhyaksha	Superintendent of Agriculture
Somapa	A priest who prepares and offers the Soma during rituals
Sresthi	Elder men
Suvira	Brave son
Udgatri	Priest of Samaveda
Upanishads	Philosophical texts included in Vedic literature
Upanayan	Leading forth of a boy for study under a teacher
Vaitarani	A mythical river crossed by the souls of the deceased in the afterlife
Varna	Four-fold division of Hindu society
Vidhatha	Assembly meant for secular, religious, and military purposes
Vipra	A learned or wise person, often referring to a Brahmin
Vrajapati	Officer in Charge of Pastoral Lands
Yajna	Ritualistic sacrifice or offering
Yajnashala	Ritual hall or place specifically constructed for performing Yajnas

Jainism

Term	Description
Tirthankara	"Ford-maker" or a spiritual teacher who establishes a passage across the cycle of rebirths (samsara)
Mahavira	The 24th Tirthankara and the founder of Jainism, considered a contemporary of the Buddha
Jina	"Conqueror" or one who has conquered inner passions and achieved enlightenment
Ahimsa	Non-violence, a fundamental principle in Jainism
Sallekhana	The practice of voluntarily fasting to death in Jainism
Digambara	"Sky-clad" or naked sect of Jain monks who renounce all worldly possessions
Shvetambara	"White-clad" sect of Jain monks who wear white robes
Kevala Jnana	Omniscience, the perfect knowledge possessed by a Tirthankara in Jainism
Moksha	Liberation from the cycle of birth and death (samsara)
SiddhasenDivakara	A prominent Jain philosopher and commentator on Jain scriptures
Paryushana	An annual Jain festival of self-reflection and repentance

Tirthankara	Symbol	Tirthankara	Symbol
Abhiaandam	Monkey	**Parshwanatha**	Serpent
Adinatha	Bull	**Sambharnath**	Horse
Ajithanatha	Elephant	**Shantinath**	Deer
Chandrajit prabhu	Moon	**Shitalnath**	Srivatsa
Dharamnath	Vajra (Thunderbolt)	**Shreyansanath**	Rhinoceros
Kuntunath	He-goat	**Suvidhinath**	Crocodile
Mahavira	Lion	**Suprashwanath**	Swastika
Mallinatha	Water Pot	**Sumatinath**	Curlew
Neminath	Blue Lotus	**Vasupujya**	Buffalo
Padamprabhu	Red Lotus	**Vimalnath**	Boar

Buddhism

Term	Description
Buddha	"Awakened one" or "Enlightened one," the title given to Siddhartha Gautama, the founder of Buddhism
Dharma	The teachings of the Buddha and the cosmic law governing the universe
Sangha	The monastic community of Buddhist monks and nuns
Four Noble Truths	The foundational principles of Buddhism: suffering, the cause of suffering, the end of suffering, and the path to the end of suffering
Eightfold Path	The path to Nirvana, comprising right understanding, intention, speech, action, livelihood, effort, mindfulness, and concentration
Nirvana	Liberation from the cycle of rebirth and suffering in Buddhism
Samsara	The cycle of birth, death, and rebirth in Buddhist cosmology
Theravada	"Teaching of the Elders," a traditional form of Buddhism that emphasizes the original teachings of the Buddha
Mahayana	"Great Vehicle," a broad tradition of Buddhism that includes various schools and emphasizes the bodhisattva path
Vajrayana	"Diamond Vehicle" or "Thunderbolt Vehicle," a form of Buddhism that emerged later and incorporates esoteric practices
Bodhisattva	An enlightened being who postpones their own Nirvana to help others achieve enlightenment
Anatta	The concept of non-self or the absence of a permanent, unchanging soul

Satavahanaand Kushanas

Term	Description
Ahara	Districts
Amatyas and Mahamatyas	Officers in charge of provinces
Chaitya hall	A hall where Buddhist monks and worshipers meet, marked by a stupa or sacred symbol for worship
Chattu	A group of traders traveling together
Devaputra	A title associated with Shunga rulers, giving them divine authority to rule
Devkula	A temple dedicated to a deceased Kushan King
Dinarii	Roman gold coin that influenced Kushan and Gupta gold coins
Gaulamika	Administrators of villages during the Satavahana period
Gandhika	Traders who specialize in selling perfumes
Gathasatsai	A treaty or poem on rural love written in Prakrit by a Satavahana ruler
Kataka and Skandhavaras	Military camps and settlements
Khatiya-dapa-mana-mada	A title referring to GautamiputraSatkarni who subdued the pride of Kshatriyas
Niryamaka	Pilot of a merchant ship
Pamchanekame	A coin jointly issued by five guilds
Parihar	Exemption from immunity
Purana	A silver coin used during the Kushana period
Ratnadvipa	Sri Lanka
Raja, Mahabhoja, and Maharathi or Senapati	Three grades of feudatories
Shaska	Captain of a merchant ship
Shantalnath	Deer
Shrenibala	A guild of warriors
Shreyansanath	Rhinoceros
Shudra women	Women meant for pleasure
Skandhavaras	Military camps and settlements
Stridhana	Immovable property that a woman holds
Suvarnadvipa	Southeast Asia
Suprashwanath	Swastika
Sambharnath	Horse
Uparakshitha	Individuals charged with building caves for monks
Valaikkarars	Troops in royal service during the Satavahanas
Vasupujya	Buffalo
Vimalnath	Boar
Vrata kshatriya	Outsider ruling group associated in the caste group as Vrata kshatriya
Vrishali	Shudra women meant for pleasure
Yueh-chi	A Chinese tribal clan associated with Kushan rulers

Guptas

Term	Description
Akshyanivi	Inalienable land grant
Aprabata	Forested land
AshtkulaAdhikarna	A group of eight people taking part in urban administration
Bali	An additional oppressive tax on people
Bedakbhog	Irrigation Tax
Bhadagaradhikreta	Head of Royal Treasury
Bhaga	King's share in produce to be paid by the cultivators
Bhog	Periodic supplies of fruits, firewoods, etc., to king
Bhukti	Gupta period administrative unit of a kingdom (Province)
Bhuta	Cess for maintenance of rituals
Brahmadeya	Religious grants to brahmans, individually or collectively
Charasana	Grazing Tax
Chargah Bhoomi	Pasture Land
Chat	Security Tax
Dandapashika	Head of Police department
Devagrahara or Devadana	Grants to institutions such as temples and monasteries
Dharma	Right to enjoy the full fruit of land along with power of transfer and sale
Gopasramin	Officer during Samudragupta's period who looked into matters of accounts to recover royal dues
Hrinya	King's Share in agriculture
Kalpita/Upkilpta	Sales Tax and Purchase Tax
Kanchuki	Head of Queen's Haram
Klipta-upklipta	Vakata tax on cash transactions
Kshetra	Fertile land
Kulika	Chief Architect
Kulaputra	Subordinate Vakataka officer
Kutumbis and Mahattaras	Village-level officers
LicchviDuhitra	Grandson of Licchvis - Samudragupta
Lokpala	Provincial governor under Gupta ruler
Mahabaladhikrita	Commander in Chief
Mahadandnayaka	Chief Justice
Mahapratihar	Maintenance of Royal Palaces
Mahasandhivigrahika or Sandhivigrahaka	Minister of War and Peace
Mahamahipalapati	Commander of the Elephants (Control & Executor of elephantry)
Mahaprajapati	Chief officer of elephant corps
Mahashvapati	Chief of cavalry
Nagarashreshthin	Chairman of the city corporations in the towns
Nishka, Pala	Gold coins
Paura	Council responsible for city administration
Pradesha/Adhisthana/Pattana	Districts (Each province was divided into districts)
Prathamakayastha	Represented Government official community
Prathamakulika	Represented crafting communities (artisans)
Pustapala	Junior (district level) record officers
Rajyadhikrita	Provincial governor under Vakataka ruler
Rupaka, Satmana, Panna	Silver coins
Samanta	A neighbouring subsidiary ruler who was a friendly tributary of the Gupta overlords
Sarthavaha	Represented trading communities
Sarvadhyaksha	Inspector of all central departments
Sarvarishti	Forced Tax
Senabhakta	Form of a tax i.e., army was to be fed by the people whenever it passed through the countryside
Shaulkika	Collector of Shulka
Shulka	Urban toll tax
Taradaya	Tax on navigation
Udaranga	Police Tax
Uparikar	Tax collected from all subjects
Uparnik	Tax taken from the border area
Vastu	Habitable land
Vinayapura	One who represented guests to King's court
Vishayapathi	Incharge of districts during Gupta period
Vishayas	Districts during Gupta age
Yuktapurusha	Officer to keep accounts of war booty

Sangam Literature

Terms	Meaning/Function	Terms	Meaning/Function
Akam	A love poem	**Nadukul**	A memorial celebrating the death of a brave fighter in war
Amaichar	Minister	**Nagarakkani**	An urban revenue unit
Arashar	King	**Nadu**	The locality consisting of several settlements
Araghatta	Persian wheel (used for irrigation)	**Nattar**	Governing assembly of Natu
Avai	Imperial Court	**Neital**	Coastal/littoral
Bellalar	Agriculturist (Rich & Poor)	**Orar**	Spies
Devalayam	Temple	**Pada**	Army
Duttar	Messenger	**Palai**	Pastoral tract
Ervirya	Tank maintenance committee	**Panchvaram**	Ministerial Council
Gauvda	Village headman	**Perur**	Big Village
Heggade	Revenue official	**Pinch Tinnal**	Love marriage
Irabu	Offerings to the King	**Pradesha / Adhisthana / Pattana**	Districts (Each province was divided into districts)
Iravu	Forced gift	**Pullain**	Rope Makers
Irai	Tribute paid by feudatories and booty collected in war	**Puram**	A poem defining war
Kalanju	Gold coin of Cholas	**Puhar**	Harbour area
Kalatika	Superintendent of Pearls	**Sabhai**	Assembly of Brahmana in Brahmadeya village
Karai	Land tax	**Salai**	Highway
Karpu	Marriage with permission of parents	**Sangam**	A college/assembly of literary figures
Kardhsiyar	The title for low caste women	**Sirur**	Small village
Ko	King	**Taniyur**	A brahmadeya under a Nadu but free from its jurisdiction
Ko konmaikondan	King of Kings	**Ulgu**	Custom duties
Korravan	King	**Uparikar**	Tax collected from all subjects
Kudinikki	A situation in which previous settlers in a village were removed	**Vattakirutual**	Ritual suicide of a defeated king
Kudininga	It means that previous settler should not be disturbed	**Vellar**	Rich peasant
Kuti	A clan-based descent group of Sangam society	**Vendar**	Crowned king
Mahadandnayaka	Chief Justice	**Velir**	A chief
Maharum	Supreme Court	**Vari**	Tax
Marutam	Wetland	**Variyar**	Tax collector
Miyatachi	Superior right of donees	**Variyam**	A unit of territory yielding tax
Mullai	Pastoral tract	**Vastu**	Habitable land
Murdur	Old village	**Vaishiyar**	Traders
		Yupas	Sacrificial posts

MEDIEVAL INDIA

Cholas

Terms	Description
Alunganattar	Executive Committee
Anjuvanam	Foreign merchant organization
Jivitas	Land
Kadagams	Cantonments
Kaikkolar	Royal troops receiving regular pay from the treasury (comprised infantry, cavalry, elephant corps, and navy.)
Kummanachcheri	Artisans' quarters
Mahasabha	Gathering of the adult men in the Brahmana villages which were called agraharas.
Mandalam	Province
Manigramam	Great Nagaram
Nanadesis	Merchant guild having a wide network
Nattam	The residential part of the village
Nattuppadai	The militia men employed only for local defence
Nadu/Kurram/Kottam	Group of villages
Paracheri	The outcastes hamlet

Puravuvaritinaikalam	Department of land revenue
Salabhoga	Tenures meant for educational purpose
Sudugadu	The burning ground
Tankurrams	Autonomous administration for town and townships
Taniyur	A very large village, administrated as a single unit
Upper Perundanam and Lower Sirudanam	The officers who tended to form a separate class in the society, were organized in two ranks.
Udankuttam	Higher officers
Ur	General assembly of the village
Valandu	District
Valanjiyar	Merchant guild
Variyam Committee	
Velaikkarars	The most dependable troops in the royal service ready to defend the king and his cause with their lives.
Variyar	Reporters appointed by the sabha

Vijaynagar

Terms	Description
Ashtadiggajas	A group of eight Telugu scholars and poets in the court of Emperor Krishnadevaraya.
Chihalsutun	A hall with forty pillars.
Gauda	A village headman or leader.
Gramas	Small settlements or villages.
KudiraiChetti	A horse merchant.
Mahanayakacharya	An officer who serves as a contact point between villages and the central administration.
Mandalams or Rajyas	Provinces, larger administrative regions within a kingdom.
Matikaratalu or Vaishyas	Merchants who engage in trade and commerce.
Nalavajativaru or Sudras	Mainly agriculturists, but some may also have other professions.
Nadus	Districts, smaller administrative divisions within a province.
Naik	A governor who administers each province.
Nayaks	Chiefs of Amarams, military chiefs assigned land under the Nayaka system.
Pagodas or Varahas	Gold coins issued by Vijayanagara rulers.
Rajulu or Rachavaru	Individuals associated with the ruling dynasty, assisting in matters of state and warfare. The rulers and generals were Sudras, but called rachavaru based on their position.
Sist	Land tax, a form of tax related to agricultural land.
Sthalas	Sub-districts, smaller divisions within districts.
Varahas	Gold coins issued by Vijayanagara rulers.
Viprulu	Brahmins, individuals following the traditional roles of teachers and priests.

Sultanate

Term	Description
Aamir – I – Shikar	Master of Hunting: Responsible for royal hunting activities
Abwabs	Additional cess laid by Muhammad-Bin-Tughlaq (MBT)
Adha and Bikh	Coins by FST: Currency issued by the Delhi Sultanate
Adha = 50% of Jittal; Bikh = 25% of Jittal	Coinage system
Amil	Revenue officer: Official responsible for revenue collection
Amir	Governor: Regional leader
Amir-i-Akhur	Officer commanding Royal Horses
Amir-i-bahr	Officer in charge of police & transport naval port
Amir-i-dad	Public Prosecutor: Legal officer
Amir-i-hazib	Officer in charge of the Royal court
Amir-i-imarat	Public work department: Department overseeing public works
Amir-i-majlis	Officer in charge of Royal feasts & festivals
Amir-i-wazir	Military leader + supervisor of collection of income and expenditure
Ashraf	A person of noble birth: An individual born into nobility
Bandagan	An elite slave officer
Barid	Intelligence officer: Officer responsible for intelligence gathering
Barid-i-Mumalik	Head of state news agency
Batai system	System of sharing crops introduced by Giyasuddin Tughlaq
Biswa	A common measure of area in northern India, equivalent to 1/20 of a bigha
Charai	Cattle tax: Tax on livestock
Chihalgani	A select body of Turkish nobility originally slaves of Iltumish
Chachar	Land out of cultivation for 3-4 years: Uncultivated land for several years
Dag system	Branding of Horse: A system for marking horses

Dar – ul – Shafa	Charitable hospitals with facilities: Hospitals providing aid to the needy
Diwan-i-Arz	Department of Military
Diwan-i-Bandagan	Department of Slaves
Diwan-i-Insha	Department of Correspondence
Diwan-i-Ishtiaq	Department of Pensions
Diwan-i-Khairat	Department of Charity
Diwan-i-Kohi	Department of Agriculture
Diwan-i-Mamaliq	Head of Military Department
Diwan-i-Mustakhraj	Department of Arrears
Diwan-i-Qaza-i-Mamalik	Department of Justice
Diwan-i-Risalat	Department of Appeals
Diwan-i-Wazriyat	Department of Finance

Term	Description
Farman	A royal order issued by the Sultan
Fawazil	Excess amount of surplus revenue from Iqta
Gaj – I – Sikandari	Measurement unit for land introduced by Sikander
Gharai	House tax on residential properties
Hajib-i-hinduan	Office possibly dealing with Hindus, managing Hindu affairs
Haq – I – Sharb	Water tax by Firoz Shah Tughlaq (FST), tax on water usage
Hammam	Room for bathing with hot and cold water facilities
Hundi	Bill of Exchange, a financial document for fund transfer
Iqtadar	Governor in charge of Iqta, overseeing a revenue assignment
Iqta	Grant of revenues for a piece of land, allocated for collection
Jaziya	Tax paid by non-Muslims, levied by FST on non-Muslims
Jil-i-illahi	A shadow of God on earth, an honorary title to exalt the Sultan
Jitals	Copper coins of the Delhi Sultanate
Khan – I – Khan	Deputy Sultan, second-in-command to the Sultan
Khalisha	Area with reserved revenue for the Sultan's treasury, not given in Iqtas
Khams	1/6th of the booty captured during the war by FST, a portion of war spoils
Khara	A land tax of 1/10th of the produce of land by FST, a land tax on agricultural produce
Khuts	Land owners, owners of land
Kotwal	Head of city administration, chief city administrator
Muqaddam	Village headman, leader of a village
Muqata	Revenue farming unit, land assigned for revenue farming
Muqti	Provincial governor, governor of a province
Mustakharaj	Special officer for collection of revenue, tasked with revenue collection
Naib	Assistant to an official or leader
Naibwazir	Deputy Minister, assistant to the Minister
Nazir/Wakuf	Officials responsible for collecting revenue in the provinces

Term	Description
Sahib-i-diwan	Maintained accounts of the provinces and sent them to central administration
Sadr-i-jahan	Officers in charge of religious matters and endowments
Sadr-us-sudur	Dealt with religious matters and endowments
Sarrafs	Bankers
Sar - I – Jandar	Chief of royal bodyguards
Sarai – Adi	Open market for sale of all goods by Allauddin Khilji
Shahana – I – Mandi	Registrar of Market: Oversees market registration and activities
Shiqdar	An officer in charge of an area of land described as a shiq
Sondhar	Loan for agricultural activity
Svappch	Untouchable: A person considered outside the caste system
Taj – ul – Mulk	Closest Vazim: Key official position
Tanka	Silver coin of the Delhi Sultanate: Currency in silver
Taqavi	Agricultural loan: Loan for agricultural purposes
Trabeate	A form of architecture under Delhi Sultanate: Architectural style in the Delhi Sultanate
Ushr	A land tax, charged on the land held by a Muslim and watered by natural means. These lands were known as Ushri
Wakil – I – Dar	Maintained the decorum of the court: Ensured court etiquette
Zakat	2.5% tax on property (by Muslims only) by FST: Religious tax on property

Mughals

Term	Description
Bhaoli	The crops are reaped, stacked, and divided in the presence of a party.
Chahar Bag	A huge garden.
Dahsala	Mughal land revenue system.
Diwan	The head of the revenue department.
Diwan-i-khas-i-oam	The ceremonial hall of public and private audience.
Farr-i-izadi	A light emanating from God. A concept originated by Abul Fazal to justify the Mughal sovereignty.
Fauzdar	In charge of the sarkar (province).
HashtBishti	A central hall surrounded by eight rooms.
Jins-i-kamil	Perfect crops.
Jashn –i-wajan Tula Dan	A celebration with music and dance.
Khanzada	Elite social class.
Kotwa	Officer to maintain law and order.
Kharbandi	Scrubland.
Khalisa	Land under royal administration.
Lang Batai	Division of heap.
Mansab	Military rank conferred by the Mughal government.
Mandal	Village headman.
Mirbakshi	Royal paymaster.
Mujtahid Iman – I – Adil	Final interpreter of Islamic Law.
Naubat	Royal band.
Pai-baqi	Land meant for assignment.
Patwari	Village Accountant.
Qasba	A small town.
Rai	Revenue collection method based on yield per unit area.
Rahdari	Protection money paid by travelers.
Sarkar	A unit like a modern district.
Siqdar	Administrative head of Paragana.
Subedar	Head of a province.
Sulh-i-Kul	A doctrine of peace between different religions.
Suyurghal	Grant of revenue in charity.
Tajwij	A petition to the king.
Tainat-i-rakab	Noble stationed at the royal court.
Taqsimat	Revenue estimate.
Zabti	Revenue collection method based on the yield of crops.

Marathas

Term	Description
Amatya or Mazumdar	Finance Minister
AshtPradhari	Council of Ministers
Bargis	Category of Horsemen
Chauth	Tax levied by Shivaji on regions outside his kingdom
Chitnis	Correspondence Clerk
Dabir (Sumanta)	Foreign Minister
Daftardar	Chief Officer of Records Department
Deshpande or Patel	Chief of Village
HazarMajils	Highest Court or Court of the King
Karkhani	Commissary
Majumdar (Amatya)	Accountant General
Mamlatdar or Viceroy	Head of Provinces
Mirsadar	Zamindar
Mokasa	Land Revenue Unit
Nayayadhish	Judiciary
Paga	Regular Soldier
Pandit Rao	Charity And Religious Affairs
Peshwa	Prime Minister
Potnis	Cash Keeper
Rai	Revenue Collection Method
Samant or Dabir	Dealing with the Outsiders
Sar – I -Naubat	Military Commander

Sar-i- 'Karkun' or the 'Prantpati'	Head of the Province
Sar-i-nabuat	Army Affairs
Saranjam	Revenue Grant
Sardeshmukhi	Claim to one-tenth of standard land revenue
Silahdar	Loose Auxiliary
Siqdar	Administrative Head of Paragana
Subedar	Head of Province
Sulh-i-Kul	Doctrine of Peace Between Different Religions
Surunavis (Sachiv)	Minister Of Correspondence
Vakia-Navis	Home Minister
Waqenavis (Mantri)	Intelligence, Posts And Household Affairs
Zabti	Revenue Collection Method
Zabti System	Land Revenue System Based on Measurement and Assessment

UNESCO LISTS AND GI TAGS

UNESCO TANGIBLE LIST

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GI TAGS

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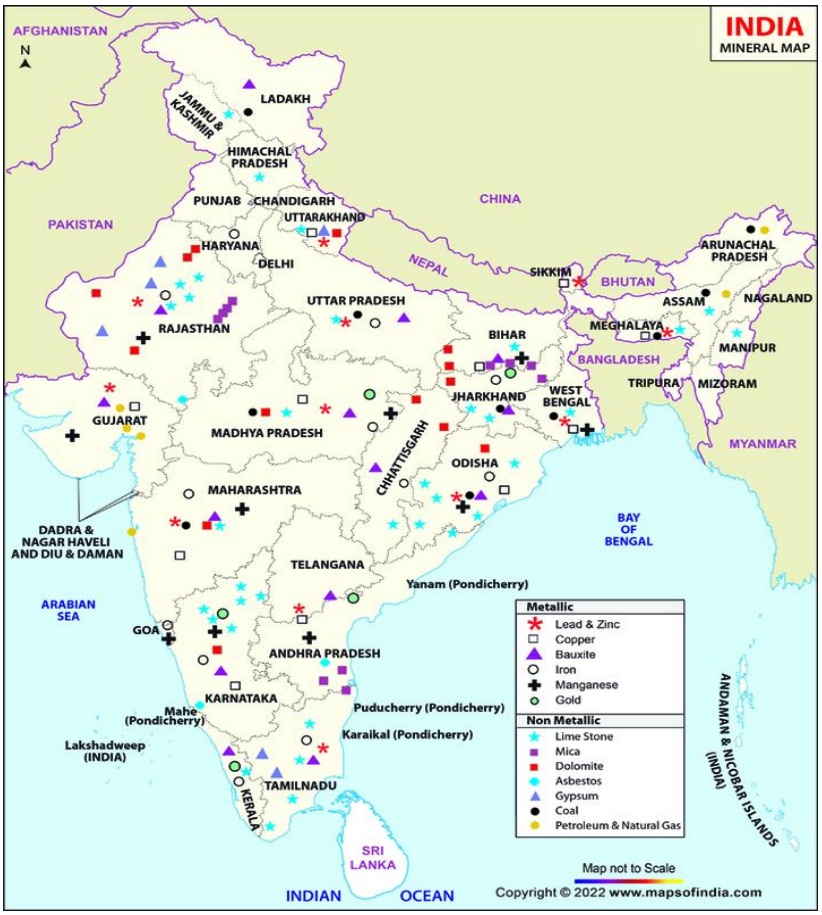
2 GEOGRAPHY

MINERAL PRODUCERS IN INDIA (STATE-WISE) AND OTHER COUNTRIES

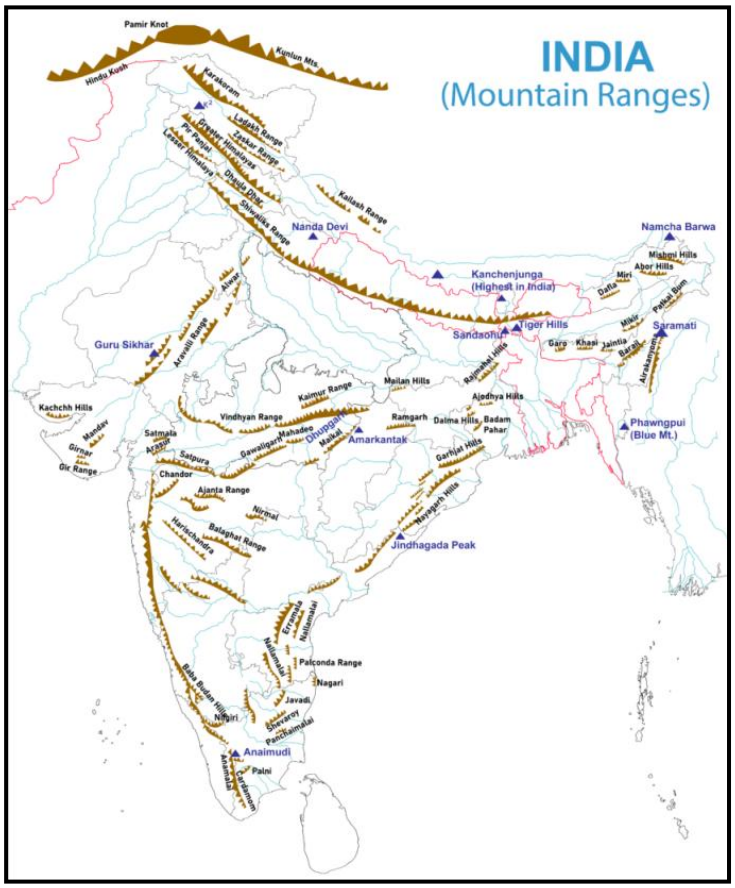
MINERAL	MINES	TOP PRODUCERS (STATES)	TOP PRODUCERS (COUNTRIES)
IRON ORE	Barabil – Koira Valley (Odisha) Bailadila Mine (Chhattisgarh) Dalli-Rajhara (CH) – the largest mine in India	1. Odisha 2. Chhattisgarh 3. Karnataka	1. Australia 2. Brazil 3. China 4. India
MANGANESE	Balaghat – Madhya Pradesh Nagpur – Bhandara Region (Maharashtra) Gondite Mines (Orissa) Khondolite deposits (Orissa)	1. Madhya Pradesh 2. Maharashtra 3. Odisha	1. South Africa 2. Australia 3. China
CHROMITE	Sukinda Valley (Orissa) Hasan Region (Karnataka)	1. Odisha 2. Karnataka 3. Andhra Pradesh	1. South Africa 2.Kazakhstan 3. India
NICKEL	Sukinda Valley (Orissa) Singhbhum Region (Jharkhand)	1. Odisha 2. Jharkhand	1. Indonesia 2. Philippines 3. Canada
COBALT	Singhbhum Region (Jharkhand) Kendujhar (Orissa) Tuensang (Nagaland)	1. Jharkhand 2. Odisha 3. Nagaland	1. Democratic Republic of Congo 2. Russia 3. Australia
BAUXITE	Balangir(Orissa) Koraput (Orissa) Gumla(Jharkhand) Shahdol (Madhya Pradesh)	1. Odisha 2. Jharkhand 3. Gujarat	1. Australia 2. China 3. Brazil
COPPER	Malanjkhand Belt (Madhya Pradesh) Khetri Belt (Rajasthan) Kho-Dariba (Rajasthan)	1. Madhya Pradesh 2. Rajasthan 3. Jharkhand	1. Chile 2. Peru 3. China
GOLD	Jamui District (Bihar) (Still exploring) Kolar Gold Field (Karnataka) Hutti Gold Field (Karnataka) Ramagiri Mines (Andhra Pradesh) Sunarnarekha Sands (Jharkhand)	1. Bihar 2. Rajasthan 3. Karnataka 4. West Bengal	1. China 2. Australia 3. Russia
SILVER	Zawar Mines (Rajasthan) Tundoo Mines (Jharkhand) Kolar Gold Fields (Karnataka)	1. Rajasthan 2. Jharkhand 3. Andhra Pradesh 4. Karnataka	1.Mexico 2. Peru 3. China
LEAD	Rampura Aghucha (Rajasthan) Sindesar Mines (Rajasthan)	1. Rajasthan 2. Andhra Pradesh 3. Madhya Pradesh	1. China 2. Australia 3. USA
TIN	Dantewada (Chhattisgarh)	Chhattisgarh (the only state in India)	1. China 2. Indonesia 3. Peru
MAGNESIUM	Chalk Hills (Tamilnadu) Almora (Uttarakhand)	1. Tamil Nadu 2. Uttarakhand 3. Karnataka	1. China 2. Russia 3. Turkey
LIMESTONE	Jabalpur (Madhya Pradesh) Satna (Madhya Pradesh) Cuddapah (AP)	1. Madhya Pradesh 2. Rajasthan	1. China 2. USA 3. India
MICA	Gudur Mines (Andhra Pradesh) Aravalis (Rajasthan) Koderma (Jharkhand)	1. Andhra Pradesh 2. Rajasthan 3. Orissa	1. China 2. Russia

DOLOMITE	Bastar, Raigarh (Chhattisgarh) Birmitrapur (Orissa) Khammam Region (Andhra Pradesh)	1. Chattisgarh 2. Andhra Pradesh	China Belgium Spain
ASBESTOS	Pali (Rajasthan) – **largest mine** Cuddapah (Andhra Pradesh)	1. Rajasthan 2. Andhra Pradesh 3. Karnataka	1. Russia 2. China
KYANITE	Pavri Mines (Maharashtra) – **Oldest kyanite mine in India.** Nawargaon Mines (Maharashtra)	1. Jharkhand 2. Maharashtra 3. Karnataka	1. USA 2. China 3. Japan
GYPSUM	Jodhpur, Bikaner, Jaisalmer-Rajasthan	1. Rajasthan 2. Tamil Nadu 3. Gujarat	1. USA 2. China 3. Iran
DIAMOND	Majhgawan Panna Mines (Madhya Pradesh) – only active diamond mine in India	1. Madhya Pradesh – only diamond-producing state	1. Russia 2. Botswana 3. Democratic Republic of Congo
COAL	Korba Coalfield, Birampur –Chhattisgarh Jharia Coalfield, Bokaro Coalfield, Girdih –(Jharkhand) Talcher field – (Orissa) Singaruli coalfields (Madhya Pradesh)	1. Jharkhand 2. Orissa 3. Chattisgarh	1. China 2. USA 3. India
PETROLEUM	Lunej, Ankleshwar, Kalol–Gujarat Mumbai high–Maharashtra – **largest oil field** Digboi–Assam–**Oldest oil field in India**	1. Maharastra 2. Gujarat	1. USA 2. Saudi Arabia 3. Russia
URANIUM	Jaduguda mine (Jharkhand) Tummalapalle mine (Andhra Pradesh) – **largest mine.** Domiasiat Mine (Meghalaya)	1. Andhra Pradesh 2. Jharkhand 3. Karnataka	1. Kazakhstan 2. Canada 3. Australia
THORIUM		1. Kerala 2. Jharkhand 3. Bihar	1. Australia 2. USA 3. India



LIST OF MOUNTAIN PEAKS IN INDIA

Peak	Range/Region	State	Height
Arma Konda	Eastern Ghats	Andhra Pradesh	1680 m
Kangto	Eastern Himalaya	Arunachal Pradesh	7060 m
Someshwar Fort	West Champaran District	Bihar	880 m
Bailadila Range	Dantewada District	Chhattisgarh	1276 m
Sonsogor	Western Ghats	Goa	1166 m
Girnar	Junagadh District	Gujarat	1069 m
Karoh Peak	Morni Hills	Haryana	1467 m
ReoPurgyil	Western Himalaya	Himachal Pradesh	6816 m
Parasnath	Parasnath Hills	Jharkhand	1370 m
Mullayanagiri	Western Ghats	Karnataka	1930 m
Anamudi	Western Ghats	Kerala	2695 m
Dhupgarh	Satpura	Madhya Pradesh	1350 m
Kalsubai	Western Ghats	Maharashtra	1646 m
Mount Iso	Senapati District	Border of Manipur and Nagaland	2994 m
Shillong Peak	Khasi Hills	Meghalaya	1965 m
Phawngpui	Saiha District	Mizoram	2157 m
Mount Saramati	Naga Hills	Nagaland	3826 m
Deomali	Eastern Ghats	Odisha	1672 m
Guru Shikhar	Aravalli Range	Rajasthan	1722 m
Kanchenjunga	Eastern Himalaya	Sikkim	8586 m
Doddabetta	Nilgiri Hills	Tamil Nadu	2637 m
Doli Gutta	Deccan Plateau	Border of Telangana and Chhattisgarh	965 m
Betalongchhip	Jampui Hills	Tripura	930 m
Amsot Peak	Shivalik Hills	Uttar Pradesh	945 m
Nanda Devi	Garhwal Himalaya	Uttarakhand	7816 m
Sandakphu	Eastern Himalaya	West Bengal	3636 m



DISTRIBUTION OF KEY NATURAL RESOURCES ACROSS INDIA

Eastern States	**Odisha:** Iron ore, coal, bauxite, manganese, chromite, limestone, graphite, china clay, nickel, vanadium, titanium. **Chhattisgarh:** Coal, iron ore, limestone, dolomite, bauxite, tin, manganese, copper, gold, diamond. **Jharkhand:** Coal, iron ore, copper, mica, bauxite, limestone, manganese, uranium, graphite, gold, diamond. **West Bengal:** Coal, iron ore, copper, manganese, limestone, dolomite, china clay, glass sand.
Northern States	**Rajasthan:** Copper, lead, zinc, gypsum, sandstone, marble, granite, salt, mica, wolfram, beryl. **Madhya Pradesh:** Coal, iron ore, manganese, limestone, dolomite, bauxite, copper, diamond, gold. **Uttar Pradesh:** Limestone, dolomite, glass sand, gypsum, magnesite, soapstone, feldspar, clay. **Himachal Pradesh:** Limestone, dolomite, slate, gypsum, magnesite, bauxite, lead, zinc, copper.
Southern States	**Karnataka:** Iron ore, gold, manganese, chromite, bauxite, limestone, copper, lead, zinc, granite, kaolin. **Andhra Pradesh:** Coal, iron ore, limestone, dolomite, manganese, bauxite, copper, asbestos, barytes, mica. **Telangana:** Coal, iron ore, limestone, dolomite, manganese, bauxite, copper, diamond, gold. **Tamil Nadu:** Lignite, limestone, gypsum, bauxite, clay, sand, gravel, salt, mica, graphite.
Western States	**Gujarat:** Lignite, limestone, bauxite, manganese, salt, gypsum, fuller's earth, agate, marble. **Maharashtra:** Coal, iron ore, manganese, bauxite, limestone, dolomite, china clay, asbestos, gypsum, marble. **Goa:** Iron ore, bauxite, manganese, limestone, dolomite, silica sand, laterite, clay.
Northeastern States	**Assam:** Coal, oil, natural gas, limestone, dolomite, clay, sand, gravel. **Meghalaya:** Coal, limestone, dolomite, fireclay, kaolin, sillimanite, corundum, feldspar, glass sand. **Arunachal Pradesh:** Limestone, dolomite, marble, slate, graphite, copper, lead, zinc, gold.

DISTRIBUTION OF KEY RESOURCES ACROSS THE WORLD

Resources	Major Producers
Oil	Saudi Arabia, Russia, United States, Canada, China, Iraq, United Arab Emirates, Brazil.
Natural Gas	United States, Russia, Qatar, Iran, Canada, China, Norway.
Coal	China, India, United States, Australia, Indonesia, Russia, South Africa.
Iron Ore	Australia, Brazil, China, India, Russia, South Africa, Canada.
Copper	Chile, Peru, China, the United States, Congo (DRC), Australia, and Zambia.
Gold	China, Australia, Russia, United States, Canada, South Africa, Peru.
Silver	Mexico, Peru, China, Russia, Australia, Bolivia, Poland.
Diamonds	Russia, Botswana, the Democratic Republic of Congo, Canada, Australia, Angola, and South Africa.
Phosphates	China, United States, Morocco, Russia, Jordan, Saudi Arabia, Tunisia.
Uranium	Kazakhstan, Canada, Australia, Namibia, Niger, Russia, Uzbekistan.
Aluminum	China, Russia, Canada, United Arab Emirates, Australia, India, Brazil.
Lithium	Australia, Chile, China, Argentina, Zimbabwe, Portugal, Brazil.
Natural Rubber	Thailand, Indonesia, Vietnam, India, China, Malaysia, Ivory Coast.
Timber and Forest Products	Russia, Canada, Brazil, United States, China, Indonesia, Australia.
Bauxite	Australia, China, Guinea, Brazil, India, Jamaica, Russia.
Tin	China, Indonesia, Myanmar, Brazil, Peru, Bolivia, Malaysia.
Nickel	Indonesia, Philippines, Russia, New Caledonia, Canada, Australia, and Brazil.
Zinc	China, Peru, Australia, United States, Canada, India, Mexico.
Lead	China, Australia, the United States, Peru, Russia, Mexico, and India.
Phosphate Rock	Morocco, China, Algeria, Syria, Jordan, South Africa, Russia.
Cobalt	Democratic Republic of Congo, Zambia, Australia, Canada, Cuba, Russia, Madagascar.
Manganese	South Africa, Australia, China, Gabon, Brazil, India, Ukraine.
Platinum	South Africa, Russia, Zimbabwe, Canada, United States.
Rare Earth Elements	China, Australia, United States, Russia, Brazil, India, Malaysia.
Phosphorus	China, United States, Morocco, Western Sahara, Russia, Tunisia, Jordan.
Gypsum	China, Iran, Spain, Thailand, Germany, United States, Canada.
Silica	China, United States, Russia, Brazil, India, France, Germany.
Graphite	China, India, Brazil, Canada, Mozambique, North Korea, Russia
Magnesium	China, Russia, North Korea, Brazil, Austria, Israel, Kazakhstan.

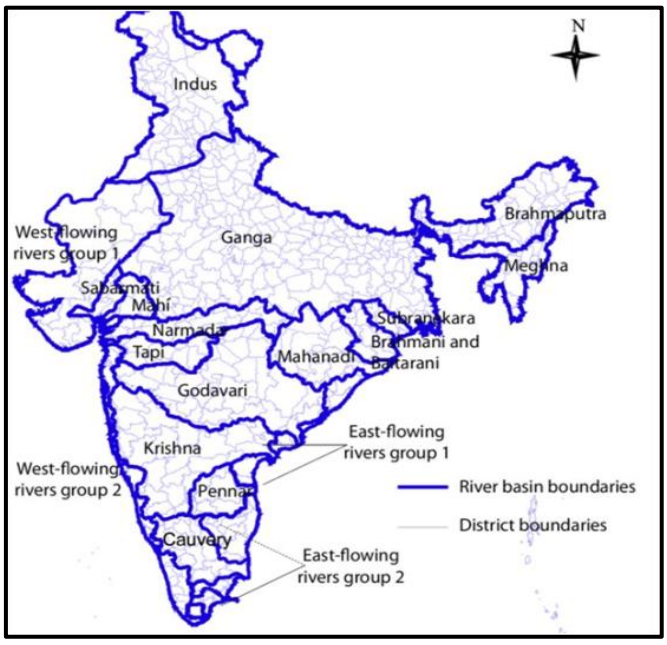
Potash	Canada, Russia, Belarus, Germany, China, Israel, Jordan.
Sulfur	United States, Canada, Russia, China, Poland, Germany, Mexico.
Tungsten	China, Vietnam, Russia, Bolivia, Portugal, Canada, Austria.
Vanadium	China, Russia, South Africa, Brazil, Australia, Canada, Peru
Limestone	China, United States, India, Japan, Brazil, Russia, Indonesia.
Asbestos	Russia, China, Kazakhstan, Brazil, Canada, Zimbabwe, South Africa.
Quartz Crystal	China, Brazil, United States, Japan, Russia, France, Germany.

RIVER SYSTEM (INDIA)

Rivers	Origin	Length (km)	End-point
Ganga	Gangotri Glacier (Bhagirathi), Uttarakhand	2,525	Bay of Bengal
Yamuna	Yamunotri Glacier, Uttarakhand	1,376	Merges with Ganga at Allahabad (Triveni Sangam – Kumbh Mela spot
Brahmaputra	Himalayan Glacier in Tibet, but enters India in Arunachal Pradesh	1,800	Merges with Ganga and ends in the Bay of Bengal
Chambal	Tributary of Yamuna river, starting at Madhya Pradesh	960	Joins Yamuna river in UP
Son	Tributary of Ganga, starting at Amarkantak, Madhya Pradesh	784	Joins Ganga just above Patna – also considered part of the Vindhya river system
Gandak	Nepal; Ganges tributary at Indo-Nepal border (Triveni Sangam)	630	Joins Ganga near Patna
Kosi	Starts from Bihar near the Indo-Nepal border	720	Joins Ganga near Katihar district of Bihar
Betwa	Tributary of Yamuna, rises at Vindhya region, MP	590	Joins Yamuna at Hamirpur in UP
Gomti	Tributary of Ganga, starting at Gomat Taal, UP	900	Joins Ganga in Varanasi district
Ghaghara	Himalayan Glacier in Tibet, a tributary of Ganga	1080	Joins Ganga in Bihar
Hugli (Hooghly)	Tributary of Ganga near West Bengal	260	Merges with Ganga at the Bay of Bengal
Damodar	Tributary of Hugli near Chandwara, Jharkhand	592	Merges with Hugli in West Bengal
Mahananda	Paglajhora falls, Darjeeling, West Bengal	360	Merge in Ganga
Alaknanda	Satopanth& Bhagirathi-Kharak	190	Merge in Ganga, Devprayag, Uttarakhand

	glacier		
Bhagirathi	Gaumukh, Uttarakhand	205	Merge in Ganga, Devprayag, Uttarakhand
Indus	Originates in Tibetan plateau, Enters India in J&K	3180	Merges into the Arabian Sea near Sindh
Chenab	Upper Himalayas in the Spiti district of Himachal Pradesh	960	Merges with Indus
Jhelum	Tributary of Chenab river, Punjab	725	Merges with Chenab at Jhang (Pakistan)
Ravi	Starts from Bara Bhangal, Kangra district, Himachal Pradesh	720	Joins Chenab in Pakistan
Sutlej	Tributary of the Indus River originates at Rakshastal, Tibet	1500	Meets the Beas River in Pakistan and ends at the Arabian Sea
Beas	Rises in the Himalayas in central Himachal Pradesh	470	Joins Sutlej river in Punjab, India
Parbati	Mantalai Glacier near Pin Prabati Pass	–	Mixes with Beas River at Bhuntar, near Kullu of Himachal Pradesh
Suru	Panzella Glacier, Pensi La Pass, Kargil	185	Indus, Nurla, Skardu, Pakistan
Dras	Machoi Glacier, Zoji La, ear Sonamarg, Jammu & Kashmir	86	Suru River at Kharul, Kargil
Zanskar	Doda River (First Branch), Kargyag and Tsarap River (Second Branch)	–	Indus River near Nimmu in Ladakh
Tsarap	Pankpo La, Sarchu	182	Zanskar River, Padum, Kargil
Doda	Drang-Drung Glacier, Pensi La	79	Zanskar River, Padum, Kargil
Kaveri	Talakaveri in Western Ghats in Karnataka	765	Ends in the Bay of Bengal
Krishna	Originates in the Western Ghats near Mahabaleshwar in Maharashtra	1400	Ends in the Bay of Bengal near Andhra Pradesh
Godavari	Starts in Maharashtra and passes through 7 Indian states	1465	Empties in the Bay of Bengal
Tungabhadra	Tributary of Krishna river staring at Karnataka	531	Joins Krishna river along the border of Telangana and Andhra Pradesh
Tapti	Rises in Eastern Satpura Ranges, Madhya Pradesh	724	Empties into the Gulf of Khambhat, Gujarat
Mahi	Rises in Madhya Pradesh	580	Flows into the Arabian Sea from Gujarat
Narmada	Starts from Amarkantak, Madhya Pradesh	1315	Drains into the Arabian Sea via the Gulf of Cambay
Indravati	Dandakaranya range, Kalahandi district, Odisha	535	Godavari near the border of Maharashtra, Chhattisgarh and Telangana
Pranhita	Confluence of Wardha and Wainganga, near SirpurKaghaznagar	113	Godavari, near Kaleshwaram, Telangana
Wardha	Satpura range, Multai, Betul district of Madhya Pradesh	528	Pranhita River
Kolab (Sabari)	Sinkaran hills, Koraput, Odisha	200	Godavari
Manjira	Balaghat hills	724	Godavari, near Kandakurthi, Karnataka
Wainganga	Satpura range, Mundara, Seoni district, Madhya Pradesh	579	Pranhita River
Painganga	Ajanta range, Aurangabad, Maharashtra	676	Wardha river, Chandrapur district, Maharashtra
Vedavathi	Confluence of Veda and Avathi	–	Tungabhadra river, near Siruguppa
Bhima	Bhimashankar	861	Krishna river, near Raichur
Indrayani	Lonavala, Maharashtra		Bhima river
Pavana	Sahyadri range, Lonavala Maharashtra	58	Mula river
Ghataprabha	Western ghats, Sindhudurg, Maharashtra	283	Krishna river, Almatti
Venna	Mahabaleshwar, Maharashtra	130	Krishna river, Satara, Maharashtra
Koyna	Mahabaleshwar, Maharashtra	130	Krishna river, near Karad, Satara
Amravati	Anamalai Hills, Pambar, Chinnar rivers	282	Kaveri river at Karur, Tamil Nadu
Bhavani	Silent Valley National Park, Kerala	135	Kaveri river at Kongu Nadu region of Tamil Nadu
Hemavati	Western Ghats, Chikmagalur, Karnataka	245	Kaveri river near Krishna Raja Sagara, Karnataka

Mahanadi	Dhamtari, Dandakaranya, Chhattisgarh	858	Bay of Bengal, near False Point, Kendrapara, Odisha
Subarnarekha	Chota Nagpur plateau, near Ranchi, Jharkhand	395	Kirtania Port, near Talsari, Bay of Bengal
Kangsabati	Chota Nagpur plateau, Purulia district, West Bengal	465	Bay of Bengal near Haldia
Penner (Penna)	Nandi Hills, Chikkaballapur district, Karnataka	597	Bay of Bengal, near Nellore, Andhra Pradesh
Palar	Nandi hills, Kolar District Karnataka	348	Bay of Bengal, near Vayalur, Tamil Nadu
Vaigai	Varusanadu Hills, Tamil Nadu	258	Palk Strait, Tamil Nadu
Vellar	Shevaroy Hills	150	Bay of Bengal, near Parangipettai, Tamil Nadu
Ponnaiyar	Nandidurg, Chikkaballapur	400	Bay of Bengal
Noyyal	Velliangiri Hills, Western Ghats, Tamil Nadu	180	Kaveri river
Gomai	Satpura Range	–	Tapti river, near Prakasha, Nandurbar, Maharashtra
Panzara	Near Pimpalaner, Dhule, Maharashtra	–	Tapti river
Purna	Satpura Range, Betul, Madhya Pradesh	–	Tapti river, near Changdev, Maharashtra
Kolar	Vindhya Range, near Sehore district, Madhya Pradesh	101	Narmada, near Raisen district of Madhya Pradesh
Tawa	Satpura Range, Betul, Madhya Pradesh	172	Narmada near Hoshangabad district
Sabarmati	Dhebar lake, Aravalli range, near Udaipur, Rajasthan	371	Gulf of Khambhat
Zuari	Hemad-Barshem in western ghats	34	Arabian sea
Ulhas	Near Rajmachi hills, the Sahyadri range	122	Vasai Creek, Mumbai
Mithi	Vihar lake and Powai lake	15	Arabian sea, Mahim creek, Mumbai
Mandovi	Bhimgad, Karnataka	77	Arabian sea
Kali	Kushavali, Karnataka	184	Arabian sea
Netravati	Kudremukh, Chikmagalur, Karnataka	–	Arabian sea, near Mangalore, Karnataka
Sharavati	Western Ghats, Tirthahalli, Karnataka	128	Arabian sea, near Honnavar, Uttar Kannada district, Karnataka
Periyar	Sivagiri hills, Sundaramala, Tamil Nadu	244	Lakshadweep sea, Kerala
Bharathappuzha	Anamalai Hills, Tamil Nadu	209	Lakshadweep sea, Ponnani, Kerala
Pamba	Pulachimalai Hills, Western Ghats	176	Vembanad Lake
Chaliyar	Elambaleri Hills, Western Ghats, Wayanad, Kerala	169	Lakshadweep sea, Kerala



LIST OF HYDROELECTRIC POWER PLANTS IN INDIA

States	River	Hydroelectric Power Plant
Andhra Pradesh	Krishna	Nagarjunasagar Hydro Electric Power plant
Andhra Pradesh	Krishna	Srisailam Hydro Electric Power plant
Gujarat	Narmada	Sardar Sarovar Hydro Electric Power plant
Himachal Pradesh	Sutlej	Bhakra Nangal Hydroelectric Power plant
Himachal Pradesh	Beas	Dehar Hydroelectric Power plant
Himachal Pradesh	Sutlej	NathpaJhakri Hydroelectric Power plant
Jammu and Kashmir	Chenab	Salal Hydro Electric Power plant
Jammu and Kashmir	Jhelum	Uri Hydro Electric Power plant
Jharkhand	Subarnarekha	Subarnarekha Hydroelectric Power plant
Karnataka	Kalinadi	Kalinadi Hydro Electric Power plant
Karnataka	Sharavathi	Sharavathi Hydroelectric Power plant
Karnataka	Kaveri	Shivanasamudra Hydroelectric Power plant
Kerala	Periyar	Idukki Hydro Electric Power plant
Madhya Pradesh	Sone	Bansagar Hydroelectric Power plant
Madhya Pradesh	Narmada	Indira Sagar Hydro Electric Power plant
Madhya Pradesh, Uttar Pradesh	Rihand	Rihand Hydroelectric Power plant
Maharashtra	Koyna	Koyna Hydroelectric Power plant
Manipur	Leimtak	Loktak Hydro Electric Power plant
Odisha	Sileru	Balimela Hydro Electric Power plant
Odisha	Mahanadi	Hirakud Hydro Electric Power plant
Sikkim	Rangit	Rangit Hydroelectric Power plant
Sikkim	Teesta	Teesta Hydro Electric Power plant
Uttarakhand	Bhagirathi	Tehri Hydro Electric Power plant
Himachal Pradesh	Satluj	NathpaJhakri Hydro Electric Power Plant
Himachal Pradesh	Beas	Pandoh Dam
Himachal Pradesh	Ravi	Chamera
Himachal Pradesh	Beas	Pong
Jammu and Kashmir	Chenab	Dulhasti

LIST OF THE INDIAN CITIES ON RIVER BANKS

City	River	State	City	River	State
Gangakhed	Godavari	Maharashtra	Shimoga	Tunga River	Karnataka
Agra	Yamuna	Uttar Pradesh	Bhadravathi	Bhadra	Karnataka
Ahmedabad	Sabarmati	Gujarat	Hospet	Tungabhadra	Karnataka
Allahabad	At the confluence of Ganga, Yamuna and Saraswati	Uttar Pradesh	Karwar	Kali	Karnataka
Ayodhya	Sarayu	Uttar Pradesh	Bagalkot	Ghataprabha	Karnataka
Badrinath	Alaknanda	Uttarakhand	Honnavar	Sharavathi	Karnataka
Banki	Mahanadi	Odisha	Himmatnagar	Hathmati	Gujarat
Cuttack	Mahanadi	Odisha	Gwalior	Chambal	Madhya Pradesh
Baranagar	Ganges	West Bengal	Gorakhpur	Rapti	Uttar Pradesh
Brahmapur	Rushikulya	Odisha	Lucknow	Gomti	Uttar Pradesh
Chhatrapur	Rushikulya	Odisha	Kanpur Cantonment	Ganges	Uttar Pradesh
Bhagalpur	Ganges	Bihar	Shuklaganj	Ganges	Uttar Pradesh
Kolkata	Hooghly	West Bengal	Chakeri	Ganges	Uttar Pradesh
Cuttack	Mahanadi	Odisha	Malegaon	Girna River	Maharashtra
New Delhi	Yamuna	Delhi	Sambalpur	Mahanadi	Odisha
Dibrugarh	Brahmaputra	Assam	Rourkela	Brahmani	Odisha
Deesa	Banas	Gujarat	Patan	Saraswati	Gujarat
Ferozpur	Sutlej	Punjab	Pune	Mula, Mutha	Maharashtra
Guwahati	Brahmaputra	Assam	Rairangpur	Khadkhai	Odisha
Haridwar	Ganges	Uttarakhand	Valsad	Auranga	Gujarat
Hyderabad	Musi	Telangana	Madurai	Vaigai	Tamil Nadu
Karimnagar	Maner	Telangana	Thiruchirapalli	Kaveri	Tamil Nadu
Ramagundam	Godavari	Telangana	Chennai	Cooum, Adyar	Tamil Nadu
Jabalpur	Narmada	Madhya Pradesh	Coimbatore	Noyyal	Tamil Nadu
Kanpur	Ganges	Uttar Pradesh	Erode	Kaveri	Tamil Nadu
Kota	Chambal	Rajasthan	Tirunelveli	Thamirabarani	Tamil Nadu
Jammu	Tawi	Jammu & Kashmir	Bharuch	Narmada	Gujarat
Jaunpur	Gomti	Uttar Pradesh	Karjat	Ulhas	Maharashtra
Patna	Ganges	Bihar	Nashik	Godavari	Maharashtra
Rajahmundry	Godavari	Andhra Pradesh	Mahad	Savitri	Maharashtra
Srinagar	Jhelum	Jammu & Kashmir	Nanded	Godavari	Maharashtra
Surat	Tapi	Gujarat	Navsari	Purna	Gujarat
Varanasi	Ganges	Uttar Pradesh	Kolhapur	Panchaganga	Maharashtra
Vijayawada	Krishna	Andhra Pradesh	Nellore	Pennar	Andhra Pradesh
Vadodara	Vishwamitri	Gujarat	Kurnool	Tungabhadra	Andhra Pradesh
Mathura	Yamuna	Uttar Pradesh	Nizamabad	Godavari	Telangana
Modasa	Mazum	Gujarat	Sangli	Krishna	Maharashtra
Mirzapur	Ganga	Uttar Pradesh	Karad	Krishna, Koyna	Maharashtra
Morbi	Machchu	Gujarat	Hajipur	Ganges	Bihar
Auraiya	Yamuna	Uttar Pradesh	Ujjain	Shipra	Madhya Pradesh
Etawah	Yamuna	Uttar Pradesh	Ashta	Parwati	Madhya Pradesh
Bangalore	Vrishabhavathi	Karnataka	Kanchipuram	Vegavathi, Palar	Tamil Nadu
Farrukhabad	Ganges	Uttar Pradesh	Thanjavur	Vennaaru, Vadavaaru	Tamil Nadu
Rangpo	Teesta	Sikkim	Murshidabad	Hooghly	West Bengal
Gaya	Falgu (Neeranjana)	Bihar	Munger	Ganges	Bihar
Fatehgarh	Ganges	Uttar Pradesh	Jamalpur	Ganges	Bihar
Kannauj	Ganges	Uttar Pradesh	Purnia	Koshi	Bihar
Mangalore	Netravati, Gurupura	Karnataka	Golegaon	Godavari	Maharashtra
			Budaun	Sot	Uttar Pradesh
			Amaravati	Krishna	Andhra Pradesh

IMPORTANT LAKES IN INDIA

Lakes	State	Lakes	State
Pulicat lake	Andhra Pradesh	Umiam Lake	Meghalaya
Kolleru Lake	Andhra Pradesh	Tam Dil	Mizoram
Haflong Lake	Assam	Chilika Lake	Odisha
DeeporBeel	Assam	Harike	Punjab
Chandubi Lake	Assam	Kanjli	Punjab
Kanwar lake	Bihar	Sambhar Lake	Rajasthan
Hamirsar Lake	Gujarat	Tsomgo Lake	Sikkim
Kankaria Lake	Gujarat	Chembarambakkam	Tamil Nadu
Badkhal Lake	Haryana	Kaliveli	Tamilnadu
Brahma Sarovar	Haryana	Hussain Sagar	Telangana
Chandra Taal	Himachal Pradesh	Govind Bhallabh Pant Sagar	Uttar Pradesh
MaharanaPratap Sagar	Himachal Pradesh	Belasagar	Uttar Pradesh
Dal Lake	Jammu Kashmir	Bhimtal	Uttarakhand
Wular Lake	Jammu Kashmir	Pangong Lake	Ladakh
Agara Lake	Karnataka	Hussain Sagar Lake	Telangana
Ulsoor Lake	Karnataka	Oxbow Lake	Assam
Pampa Sarovar	Karnataka	Kankaria Lake	Gujurat
Karanji Lake	Karnataka	Gobind Sagar Lake	Himachal Pradesh
Kuttanad Lake	Kerala	Govind Bhallabh Pant Saga	Uttara Pradesh
Sasthamkotta	Kerala	Bhojtal Lak	Madhya Pradesh
Vembanad Lake	Kerala	Jaisamand Lak	Rajasthan
Bhojtal	Madhya Pradesh	Hesarghatta Lake	Karnataka
Indira Sagar Lake	Madhya Pradesh	Shanthi SagaraSulekere Lak	Karnataka
Shivaji sagar	Maharashtra	Sankey Tank	Karnataka
Loktak lake	Manipur	Chembarambakkam	Tamilnadu
		Ousterilak	Puducherry

VARIOUS FOREST TYPES, DESERTS OF THE WORLD

Forest Type	Climatic Condition	Characteristics	Vegetation	Wildlife	Countries
Tropical Rainforest	High temperatures, high humidity, abundant rainfall	Diverse flora and fauna	Broad-leaved trees that form a dense upper canopy	Diverse array of vegetation and other life	Myanmar to Fiji, Thailand, Malaysia, Indonesia, the Philippines, Papua New Guinea, the Solomon Islands, and Vanuatu and parts of Indochina and tropical Australia; tropical South and Central America, especially the Amazon basin; and West and Central Africa
Temperate Deciduous Forest	Temperate regions with distinct seasons	Deciduous trees that shed leaves in the fall	Deciduous trees	Various species adapted to temperate climates	Northern Hemisphere
Boreal Forest (Taiga)	In high latitudes, primarily in the Northern Hemisphere, cold temperatures	Coniferous trees dominate	Coniferous trees	Species adapted to short growing seasons of long days that vary from cool to warm	North America and Eurasia
Temperate Rainforest	Coastal regions with moderate temperatures and high	Lush vegetation, including coniferous and deciduous trees	Coniferous and deciduous trees	Various species adapted to moderate climates	Pacific Northwest rainforest (North America), Southern Chile

	rainfall				
Mangrove Forest	Coastal areas with brackish water	Salt-tolerant trees and shrubs	Salt-tolerant trees and shrubs	Various species adapted to brackish water	Sundarbans (India and Bangladesh), Florida Everglades
Coniferous Forest (Montane Forest)	Mountainous regions	Coniferous trees adapted to colder temperatures	Coniferous trees	Various species adapted to mountainous climates	Various mountainous regions
Tundra	Polar regions with very cold temperatures	Short growing seasons, low vegetation	Low vegetation	Various species adapted to very cold climates	Arctic tundra, Antarctic tundra
Desert Scrub	Arid regions with low precipitation	Adapted plants like cacti and succulents	Cacti and succulents	Various species adapted to arid climates	Sonoran Desert (North America), Sahara Desert
Tropical Dry Forest	Tropical regions with a distinct dry season	Deciduous trees adapted to seasonal changes	Deciduous trees	Various species adapted to seasonal changes	Dry forests in India, Madagascar
Grasslands/Savannas	Dominated by grasses with scattered trees	Found in tropical and temperate regions	Grasses with scattered trees	Various species adapted to grassland climates	African savannas, North American prairies

Continent	Desert and Country	Continent	Desert and Country
Asia	**Arabian Desert:** Egypt, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Syria, Yemen **Gobi Desert:** China, Mongolia **Karakum Desert:** Kazakhstan, Turkmenistan **Kyzylkum Desert:** Kazakhstan, Uzbekistan **Syrian Desert:** Iraq, Jordan, Syria **Taklamakan Desert:** China **Thar Desert:** India, Pakistan **Dasht-e Lut:** Iran **Rub' al Khali: Saudi Arabia, Oman, Yemen, United Arab Emirates** **Betpak-Dala Desert:** Kazakhstan **Lut Desert:** Iran **Registan Desert:** Afghanistan	**Australia**	**Great Victoria Desert,** Great Sandy Desert, **Simpson Desert, Gibson Desert,** Strzelecki Desert, Sturt Stony Desert, Tirari Desert, Pedirka Desert
Africa	**Sahara Desert:** Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Western Sahara, Sudan, and Tunisia. **Kalahari Desert:** Botswana, Namibia, and South Africa **Namib Desert:** Namibia, Angola, South Africa **Nubian Desert:** Sudan **Samhan Mountain Desert:** Oman, Yemen, and Saudi Arabia **Karoo Desert:** South Africa **Danakil Desert:** Djibouti, Eritrea, Ethiopia **Chalbi Desert:** Kenya **Guban Desert:** Somalia **Nyiri Desert:** Kenya **Lompoul Desert:** Senegal **Ogaden Desert:** Ethiopia, Somalia **Grand Bara Desert:** Djibouti **Moçâmedes Desert:** Angola **Eritrean Coastal Desert:** Eritrea, Djibouti **Nubian Desert:** Sudan, Eritrea **Libyan Desert:** Egypt, Libya, Sudan **Blue Desert:** Egypt	**North America**	**Sonoran Desert:** United States and Mexico **Mojave Desert:** United States **Great Basin Desert:** United States **Sonoran Desert:** United States, Mexico **Chihuahuan Desert:** United States, Mexico **Colorado Plateau Desert:** United States **Black Rock Desert:** United States **Death Valley Desert:** United States **Red Desert Desert:** United States **Great Kobuk Sand Dunes Desert:** United States **Carcross Desert:** Canada
		South America	**Atacama Desert:** Chile, Peru **La Guajira Desert:** Colombia, Venezuela **Monte Desert:** Argentina **Patagonian Desert:** Argentina, Chile **Sechura Desert:** Peru **Salar de Uyuni Desert:** Bolivia **Peruvian Coastal Desert:** Peru **LençóisMaranhenses Desert:** Brazil **Salinas Grandes Desert:** Argentina

MOUNTAIN/RANGE/BASIN/ PLATEAU IN MAP

Mountain/Plateau	State	Mountain/Plateau	State
Saltoro Mountains	Ladakh	Mishmi Hills	Arunachal Pradesh
Karakoram	Ladakh	Kangchenjunga	Sikkim
Deosai Mountain	Jammu & Kashmir	Garo Hills	Meghalaya
Ladakh Range	Jammu & Kashmir	Khasi Hills	Meghalaya
Zanskar Range	Jammu & Kashmir	Jaintis Hills	Meghalaya
Pir Panjal Range	Jammu & Kashmir, Himachal Pradesh	Mikir Hills	Assam
Dhauladhar Range	Jammu & Kashmir	Rengma Hills	Assam
Garhwal Himalaya	Uttarakhand	Patkai Bum	Arunachal Pradesh
Girnar Range	Gujarat	Naga Hills	Nagaland
Aravalli Range	Gujarat, Rajasthan, Haryana, Delhi	Langpangkong Range	Nagaland
Malwa Plateau	Madhya Pradesh, Rajasthan	Barail Range	Assam, Nagaland
Rajpipla Hills	Gujarat	Laimatol Range	Manipur
Gawilgarh Hills	Maharashtra, Madhya Pradesh	Bhuban Hills	Assam, Mizoram
Mahadeo Hills	Madhya Pradesh	Atharamura Range	Tripura
Maikal Hills	Chhattisgarh	Lushai Hills or Mizo Hills	Mizoram
Kaimur Range	Jabalpur, Madhya Pradesh	Satmala Hills	Maharashtra
Vindhya Range	Gujarat, Madhya Pradesh, Uttar Pradesh, Bihar, Chhattisgarh	Ajanta Hills	Maharashtra
Satpura Range	Gujarat, Maharashtra, Madhya Pradesh, Chhattisgarh	Harishchandra Range	Maharashtra
Chota Nagpur Plateau	Jharkhand	Balaghat Range	Maharashtra
Rajmahal Hills	Jharkhand	Kudremukh	Chikkamagaluru, Karnataka
Hazaribagh Plateau	Jharkhand	Baba Budan Hills	Karnataka
Ranchi Plateau	Jharkhand	Nilgiri Mountains	Tamil Nadu
Garhjat Hills	Jharkhand, Chhattisgarh, Odisha	Anaimalai Hills	Tamil Nadu, Kerala
Dafla Hills	Arunachal Pradesh	Palani Hills	Tamil Nadu, Kerala
Miri Hills	Arunachal Pradesh	Cardamom Hills	Tamil Nadu, Kerala
Abor Hills	Arunachal Pradesh	Varushnad Hills	Tamil Nadu

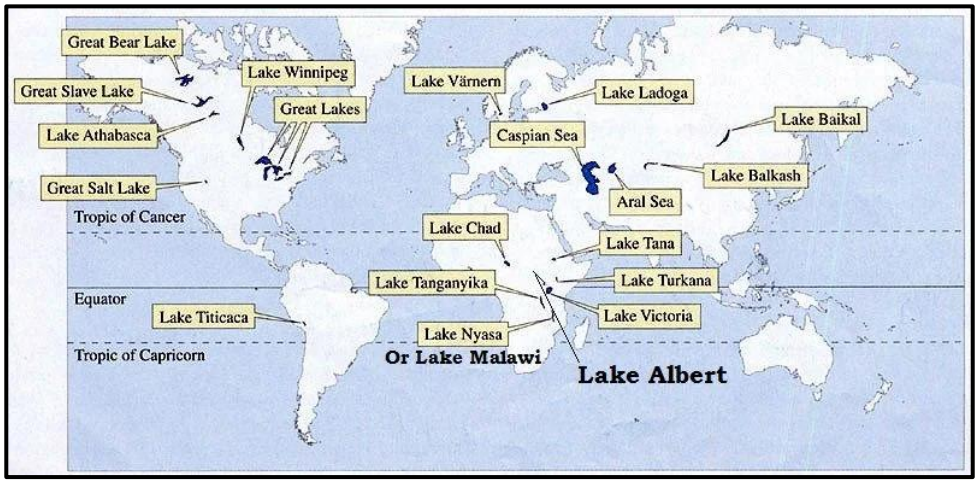
RIVERS OF THE WORLD

River Names	Outflow	Drainage Basin
Nile– White-Nile –Kagera –Nyabarongo – Mwogo –Rukarara	Mediterranean	Ethiopia, Eritrea, Sudan, Uganda, Tanzania, Kenya, Rwanda, Burundi, Egypt, the Democratic Republic of the Congo, South Sudan
Amazon–Ucayali–Tambo–Ene–Mantaro	Atlantic Ocean	Brazil, Peru, Bolivia, Colombia, Ecuador, Venezuela, Guyana
Yangtze (Chang Jiang; Long River)	East China Sea	China
Mississippi–Missouri–Jefferson–Beaverhead–Red Rock–Hell Roaring	Gulf of Mexico	United States, Canada
Yenisei–Angara–Selenge–Ider	Kara Sea	Russia, Mongolia
Yellow River (Huang He)	Bohai Sea	China
Ob–Irtysh	Gulf of Ob	Russia, Kazakhstan, China, Mongolia
Río de la Plata–Paraná–Rio Grande	Río de la Plata	Brazil, Argentina, Paraguay, Bolivia, Uruguay
Congo–Chambeshi (Zaïre)	Atlantic Ocean	Democratic Republic of the Congo, Central African Republic, Angola, Republic of the Congo, Tanzania, Cameroon, Zambia, Burundi, Rwanda
Amur–Argun–Kherlen (Heilong Jiang)	Sea of Okhotsk	Russia, China, Mongolia
Lena	Laptev Sea	Russia
Mekong (Lancang Jiang)	South China Sea	China, Myanmar, Laos, Thailand, Cambodia, Vietnam
Mackenzie–Slave–Peace–Finlay	Beaufort Sea	Canada
Niger	Gulf of Guinea	Nigeria, Mali, Niger, Algeria, Guinea, Cameroon, Burkina Faso, Côte d'Ivoire, Benin, Chad
Brahmaputra–Tsangpo	Ganges	India, China, Nepal, Bangladesh, Disputed India/China, Bhutan
Murray–Darling–Culgoa–Balonne–Condamine	Southern Ocean	Australia
Tocantins–Araguaia	Atlantic Ocean, Amazon	Brazil
Volga	Caspian Sea	Russia
Indus–SênggêZangbo	Arabian Sea	Pakistan (93%), India and China
Shatt al-Arab–Euphrates–Murat	Persian Gulf	Iraq, Turkey, Syria
Madeira–Mamoré–Grande–Caine–Rocha	Amazon	Brazil, Bolivia, Peru
Purús	Amazon	Brazil, Peru
Yukon	Bering Sea	United States, Canada
São Francisco	Atlantic Ocean	Brazil
Syr Darya–Naryn	Aral Sea	Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan
Salween (Nu Jiang)	Andaman Sea	China, Myanmar, Thailand
Saint Lawrence–Niagara–Detroit–Saint Clair–Saint Marys–Saint Louis–North (Great Lakes)	Gulf of Saint Lawrence	Canada, United States
Rio Grande	Gulf of Mexico	United States, Mexico
Lower Tunguska	Yenisei	Russia
Danube–Breg (Donau, Dunăre, Duna, Dunav, Dunaj)	Black Sea	Romania, Hungary, Austria, Serbia, Germany, Slovakia, Bulgaria, Croatia, Ukraine
Irrawaddy River–N'Mai River–Dulong River–Kelaoluo–Gada Qu	Andaman Sea	China, Myanmar
Zambezi (Zambesi)	Mozambique Channel	Zambia, Angola, Zimbabwe, Mozambique, Malawi, Tanzania, Namibia, Botswana
Vilyuy	Lena	Russia
Araguaia	Tocantins	Brazil
Ganges–Hooghly–Padma (Ganga)	Bay of Bengal	India, Bangladesh, Nepal
Amu Darya–Panj	Aral Sea	Uzbekistan, Turkmenistan, Tajikistan, Afghanistan
Japurá (Rio Yapurá)	Amazon	Brazil, Colombia
Nelson–Saskatchewan	Hudson Bay	Canada, United States
Paraguay (Río-Paraguay)	Paraná	Brazil, Paraguay, Bolivia, Argentina
Kolyma	East Siberian Sea	Russia

Pilcomayo	Paraguay	Paraguay, Argentina, Bolivia
Upper Ob–Katun	Ob	Russia
Ishim	Irtysh	Kazakhstan, Russia
Juruá	Amazon	Peru, Brazil
Ural	Caspian Sea	Russia, Kazakhstan
Arkansas	Mississippi	United States
Colorado (western U.S.)	Gulf of California	United States, Mexico
Olenyok	Laptev Sea	Russia
Dnieper	Black Sea	Russia, Belarus, Ukraine
Aldan	Lena	Russia

LAKES OF THE WORLD

Lake	Country	Lake	Country
Lake Eyre	South Australia	Aral Sea	Kazakhstan and Uzbekistan
Lake Montbel	France	Dead Sea	Jordan, West Bank, Israel
Lake Tahoe	USA	Pyramid Lake	USA
Lake Chad	Nigeria, Niger, Cameroon, and Chad	Walker Lake	USA
Penuelas Lake	Chile	Salton Sea	USA
Sawa Lake	Iraq	Mono Lake	USA
Sea of Galilee	Israel and Syria	Lake Tanganyika	Tanzania, the Democratic Republic of Congo, Zambia and Burundi
Lake Poopo	Bolivia	Great Lakes (Superior, Michigan, Huron, Erie, Ontario)	North America, shared by the United States and Canada
Lake Urmia	Iran	Great Slave Lake	Located in Canada's Northwest Territories
Hamun Lake	Iran-Afghanistan Border	Great Bear Lake	Located in Canada's Northwest Territories
Razazza Lake	Iraq	Lake Winnipeg	Located in the province of Manitoba, Canada
Lake Assal	Djibouti	Lake Titicaca	Andes Mountains, bordering Peru and Bolivia
Lake Fanguibine	Mali	Lake Maracaibo	Venezuela
Lake Titicaca	Peru and Bolivia	Lake Geneva	Switzerland, France
Lake Mead	USA	Lake Zurich	Switzerland
Owens Lake	USA	Lake Como	Italy
Great Salt Lake	USA	Lake Garda	Italy
Lake Ebinur (Ebi Lake)	China	Lake Maggiore	Italy, Switzerland
Poyang Lake	China	Lake Lucerne	Switzerland
Lake Suchitlan	El Salvador	Lake Constance	Germany, Switzerland, Austria
Lake Garda	Italy	Lake Balaton	Hungary
Lake Baikal	Russia	Lake Neusiedl	Austria, Hungary
Lake Victoria	Africa (Uganda, Kenya, Tanzania)	Lake Peipus	Estonia, Russia
Lake Oguta	Nigeria	Lake Ladoga	Russia
Lake Onega	Russia	Lake Van	Turkey



BORDERS

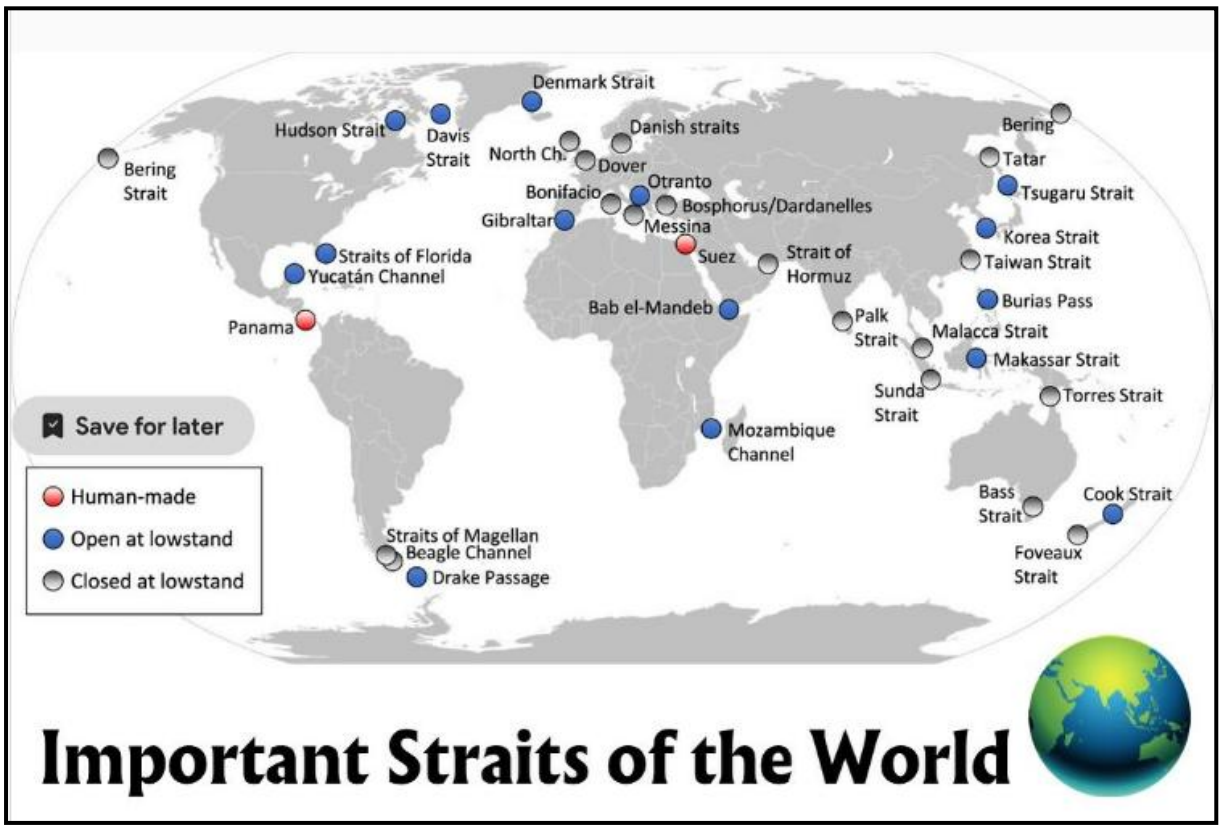
Land Border Country	Length (Km)	Force	Border State
Bangladesh	4,096 kilometres	Border Security Force	West Bengal, Assam, Mizoram, Meghalaya, Tripura
Bhutan	578 kilometres	Sashastra Seema Bal	West Bengal, Assam, Arunachal Pradesh, Sikkim
China	3,488 kilometres	Indo-Tibetan Border Police and Special Frontier Force	Ladakh, Himachal Pradesh, Uttrakhand, Arunachal Pradesh, Sikkim,
Myanmar	1,643 kilometres	Assam Rifles and Indian Army	Arunachal Pradesh, Nagaland, Mizoram, Manipur,
Nepal	1,752 kilometres	Sashastra Seema Bal	Bihar, Sikkim, West Bengal, Uttar Pradesh, Uttrakhand
Pakistan	3,310 kilometres	Border Security Force	Jammu and Kashmir, Punjab, Rajasthan, Gujarat

IMPORTANT INTERNATIONAL BORDERS

Name of Lines/Boundaries	Between	Name of Lines/Boundaries	Between
16th Parallel North	Namibia & Angola	**McMahon Line**	China and India
17th Parallel	South Vietnam and North Vietnam	**Maginot Line**	Germany and France
20th Parallel	Libya and Sudan	**Mannerheim Line**	Russia and Finland
22nd Parallel	Egypt and Sudan	**Oder-Neisse Line**	Poland and Germany
25th Parallel	Mauritania and Mali	**Radcliffe Line**	India and Pakistan
31st Parallel	Iran and Iraq	**Siegfried Line**	France and Germany
38th Parallel	South Korea and North Korea	**Blue Line**	Lebanon and Israel
49th Parallel	USA and Canada	**GreenLine / Attila Line / UN Buffer Zone**	The Republic of Cyprus and Turkish Cyprus
Durand Line	Pakistan and Afghanistan	**Purple Line**	Israel and Syria
Hindenburg Line	Poland and Germany		

Strait	Location	Strait	Location
Gibraltar Strait	Spain (Europe) - Morocco (Africa)	Yugorsky Strait	Russia (Yugorsky Peninsula) - Russia (Novaya Zemlya)
Bosphorus Strait	Turkey (Europe/Asia)	Rama Channel	Thailand - Cambodia
Hormuz Strait	Oman - Iran	Pentland Firth	Scotland (UK) - Orkney Islands (UK)
Malacca Strait	Malaysia (Malay Peninsula) - Indonesia (Sumatra)	Danish Straits	Denmark (Zealand) - Sweden
Bab-el-Mandeb	Yemen (Arabian Peninsula) - Djibouti (Horn of Africa)	Sagami Strait	Japan (Honshu) - Japan (Izu Islands)
Taiwan Strait	Taiwan - China	Farasan Strait	Saudi Arabia - Farasan Islands
Palk Strait	India - Sri Lanka	Taiwan Strait	Taiwan - China
Davis Strait	Greenland (Denmark) - Canada	Davis Strait	Canada (Baffin Island) - Greenland (Denmark)
Torres Strait	Australia - Papua New Guinea	Cebu Strait	Philippines (Cebu) - Philippines (Negros)
Cook Strait	New Zealand (North Island - South Island)	Lavrentiya Strait	Russia (Chukotka) - United States (Alaska)
Magellan Strait	Chile (South America)	Panguipulli Channel	Chile (Chiloé Island) - Chile (Continental)
Sunda Strait	Indonesia (Java) - Indonesia (Sumatra)	Rynninge Sound	Denmark (Zealand) - Sweden
Mozambique Channel	Madagascar - Mozambique (Africa)	Kiautschou Bay	China (Shandong) - China (Shandong)
Luzon Strait	Philippines (Luzon) - Taiwan	Tsugaru Strait	Japan (Hokkaido) - Japan (Honshu)
Tsugaru Strait	Japan (Honshu) - Japan (Hokkaido)	Sumba Strait	Indonesia (Sumba) - Indonesia (Sumbawa)
Johor Strait	Malaysia (Johor Bahru) - Singapore	Rongcheng Bay	China (Shandong) - China (Shandong)
Denmark Strait	Greenland (Denmark) - Iceland	Tatar Strait	Russia (Sakhalin) - Russia (Mainland)

Singapore Strait	Singapore - Indonesia (Sumatra)	Smith Sound	Greenland (Denmark) - Canada (Ellesmere Island)
Kerch Strait	Russia (Crimea) - Russia (Taman Peninsula)	Palk Strait	India (Tamil Nadu) - Sri Lanka
English Channel	England (UK) - France	Belle Isle Strait	Canada (Newfoundland) - Canada (Labrador)
Bonifacio Strait	Corsica (France) - Sardinia (Italy)	St. George's Channel	Wales (UK) - Ireland
Dardanelles	Turkey (Europe/Asia)	Kerch Strait	Russia (Crimea) - Russia (Taman Peninsula)
Menai Strait	Wales (UK) - Anglesey (UK)	Johnstone Strait	Canada (Vancouver Island) - Canada (Mainland)
Bass Strait	Australia (Tasmania) - Australia (Mainland)	Tonkin Gulf	Vietnam - China
Hormuz Strait	Iran - United Arab Emirates (UAE)	Irbe Strait	Latvia - Estonia
Korea Strait	South Korea - Japan	Maloy Sound	Norway - Sweden
Strait of Messina	Italy - Sicily (Italy)	Porsanger Fjord	Norway - Finland
Bosporus Strait	Turkey (Europe/Asia)	Bering Strait	Russia (Chukotka) - United States (Alaska)
Strait of Magellan	Chile (South America)	Ormoc Bay	Philippines (Leyte) - Philippines (Cebu)
Strait of Tartary	Russia (Sakhalin) - Russia (Mainland)	Gulf of Martaban	Myanmar - Thailand
La Pérouse Strait	Russia (Sakhalin) - Japan (Hokkaido)	Beagle Channel	Argentina - Chile
Yucatan Channel	Mexico (Yucatan Peninsula) - Cuba	McMurdo Sound	Antarctica - Ross Island
Belle Isle Strait	Canada (Newfoundland) - Canada (Labrador)	Hanö Bay	Sweden - Denmark
Sibutu Passage	Philippines (Tawi-Tawi) - Malaysia (Sabah)	Samal Strait	Philippines (Davao del Norte) - Philippines (Samal)
Simpson Strait	Canada (Baffin Island) - Canada (Nunavut)	Denmark Strait	Greenland (Denmark) - Iceland
Otranto Strait	Italy - Albania	Frobisher Bay	Canada (Baffin Island) - Canada (Mainland)
Myeik Archipelago Strait	Myanmar (Tanintharyi Region) - Thailand	Tokara Strait	Japan (Kyushu) - Japan (Ryukyu Islands)
Sabang Strait	Indonesia (Sumatra) - India (Andaman and Nicobar Islands)	Skagerrak	Norway - Sweden - Denmark
Denmark Strait	Greenland (Denmark) - Iceland	Brown Strait	Russia (Sakhalin) - Russia (Mainland)
Torres Strait	Australia - Papua New Guinea	Yucatan Channel	Mexico (Yucatan Peninsula) - Cuba
Tsugaru Strait	Japan (Honshu) - Japan (Hokkaido)	Mindoro Strait	Philippines (Mindoro) - Philippines (Luzon)
Sunda Strait	Indonesia (Java) - Indonesia (Sumatra)	Onega Bay	Russia (Karelia) - Russia (Arkhangelsk)
Mozambique Channel	Madagascar - Mozambique	Sonda Strait	Indonesia (Java) - Indonesia (Sumatra)
Palk Strait	India - Sri Lanka	Balabac Strait	Philippines (Palawan) - Philippines (Balabac Island)
Bab-el-Mandeb	Djibouti - Yemen	San Bernardino Strait	Philippines (Luzon) - Philippines (Samar)
Menai Strait	Wales (Anglesey) - Wales (Mainland)	Seram Sea	Indonesia (Seram) - Indonesia (Burum Sea)
Dover Strait	England (UK) - France	Umboi Strait	Papua New Guinea (New Britain) - Papua New Guinea (Umboi Island)
Lombok Strait	Indonesia (Bali) - Indonesia (Lombok)	Tappan Strait	Russia (Sakhalin) - Russia (Mainland)
Dardanelles	Turkey (Gallipoli Peninsula) - Turkey (Anatolia)	La Pérouse Strait	Japan (Hokkaido) - Russia (Sakhalin)
		Bering Strait	Russia - United States (Alaska)



IMPORTANT PORTS

Port	State	Key Points
Jawaharlal Nehru Port (Nhava Sheva)	Maharashtra	Largest container port in India, strategically located near Mumbai
Chennai	Tamil Nadu	The largest port on the East Coast, a major hub for automobiles and petroleum products
Mundra	Gujarat	Private port, significant coal and container traffic
Visakhapatnam	Andhra Pradesh	Deepest port in India, a major coal and iron ore export hub
Paradip	Odisha	Major port for bulk cargo, particularly iron ore
Kolkata (including Haldia)	West Bengal	The oldest operational port in India, strategically located on the Hooghly River
Ennore (Kamarajar)	Tamil Nadu	Thermal coal import hub, expanding container terminal
New Mangalore	Karnataka	Major port for international trade, gateway to South India
Tuticorin (V O Chidambaranar)	Tamil Nadu	Growing port, a major hub for gypsum and salt
Cochin	Kerala	Spice trade hub, growing container traffic
Kandla	Gujarat	Major port for thermal coal and fertilizer
Mormugao	Goa	Iron ore export hub, known for its beautiful beaches
Dighi	Maharashtra	Private port, significant coal and container traffic
Krishnapatnam	Andhra Pradesh	Private port, growing container and bulk cargo traffic
Dhamra	Odisha	Private port, a major hub for steel and coal
Jetty	Karnataka	Private port, significant iron ore exports
Paradeep (Dhamra)	Odisha	Expansion of Paradip Port, focusing on steel and coal exports
Hazira	Gujarat	Private port, a major hub for chemicals and plastics
Ratnagiri	Maharashtra	Private port, focusing on liquid cargo and containers
Vadinar	Gujarat	Private port, a major hub for crude oil and petroleum products
Gangavaram	Andhra Pradesh	Private port, focusing on bulk cargo and containers
Kakinada	Andhra Pradesh	Private port, significant for liquid cargo and bulk commodities
Mangalore	Karnataka	Major port for coastal trade and fertilizer imports
Marmugoa	Goa	Iron ore export terminal
Haldia	West Bengal	Part of the Kolkata Port complex, handling coal, steel, and containers

IMPORTANT PORTS GLOBALLY

Port	Country	Key Features & Points
Shanghai	China	World's busiest container port, major hub for East Asian trade, advanced automation
Singapore	Singapore	Major global transhipment hub, strategic location connecting key trade routes, efficient operations
Rotterdam	Netherlands	The largest port in Europe, a major gateway to the continent, well-developed infrastructure
Jebel Ali	United Arab Emirates	The largest port in the Middle East, a major hub for transhipment and container traffic, focuses on innovation and technology
Hong Kong	China	Deep-water port, strategic location in South China Sea, leading financial centre
Busan	South Korea	The largest port in South Korea, a key hub for Northeast Asian trade, strong container handling capacity
Los Angeles/Long Beach	United States	Combined largest container port complex in the US, a key gateway for West Coast trade, advanced cargo handling technology
Kaohsiung	Taiwan	The largest port in Taiwan, a major hub for container and bulk cargo, focuses on sustainability initiatives
Guangzhou	China	A major port in Pearl River Delta, diverse cargo handling, significant for manufacturing exports
Qingdao	China	A major port in Shandong province, significant for coal and container traffic, expanding hinterland connections
Antwerp	Belgium	A major port in Europe, a key gateway for chemicals and project cargo, with strong inland connections
Hamburg	Germany	The largest port in Germany, a major gateway for Central and Eastern Europe, focuses on intermodal transport
Tokyo	Japan	A major port in Japan, crucial for domestic and international trade, advanced logistics infrastructure
Dubai	United Arab Emirates	A major port in Dubai, important for container, cruise, and tourism industries, focuses on luxury goods and re-exports
Miami	United States	Major port in Florida, leading cruise ship hub, significant for container traffic and perishable goods
Ho Chi Minh City	Vietnam	The largest port in Vietnam, a major hub for Southeast Asian trade, growing container handling capacity
Tanjung Pelepas	Malaysia	A major port in Johor, known for efficiency and container handling capabilities, focuses on automation and technology
Klang	Malaysia	Major port near Kuala Lumpur, key hub for Southeast Asian trade, diverse cargo handling
Nhava Sheva	India	Largest container port in India, located near Mumbai, growing importance in regional trade
Colombo	Sri Lanka	Strategically located port in the Indian Ocean, growing container handling capacity, focus on South Asian trade
Tianjin	China	Major port near Beijing, important for container and bulk cargo, expanding hinterland connections
Barcelona	Spain	A major port in the Mediterranean, a leading cruise ship hub, and significant for container and car exports
Santos	Brazil	The largest port in South America, a major hub for Brazilian exports like soybeans, focuses on infrastructure development
St. Petersburg	Russia	A major port in Russia, a key gateway for Baltic Sea trade, handling diverse cargo types
Piraeus	Greece	Major port in the Mediterranean, growing importance in container traffic, strategic location for East-West trade
TanjungPriok	Indonesia	The largest port in Indonesia, a major hub for Southeast Asian trade, diverse cargo handling
Dalian	China	A major port in Northeast China, significant for coal and iron ore exports

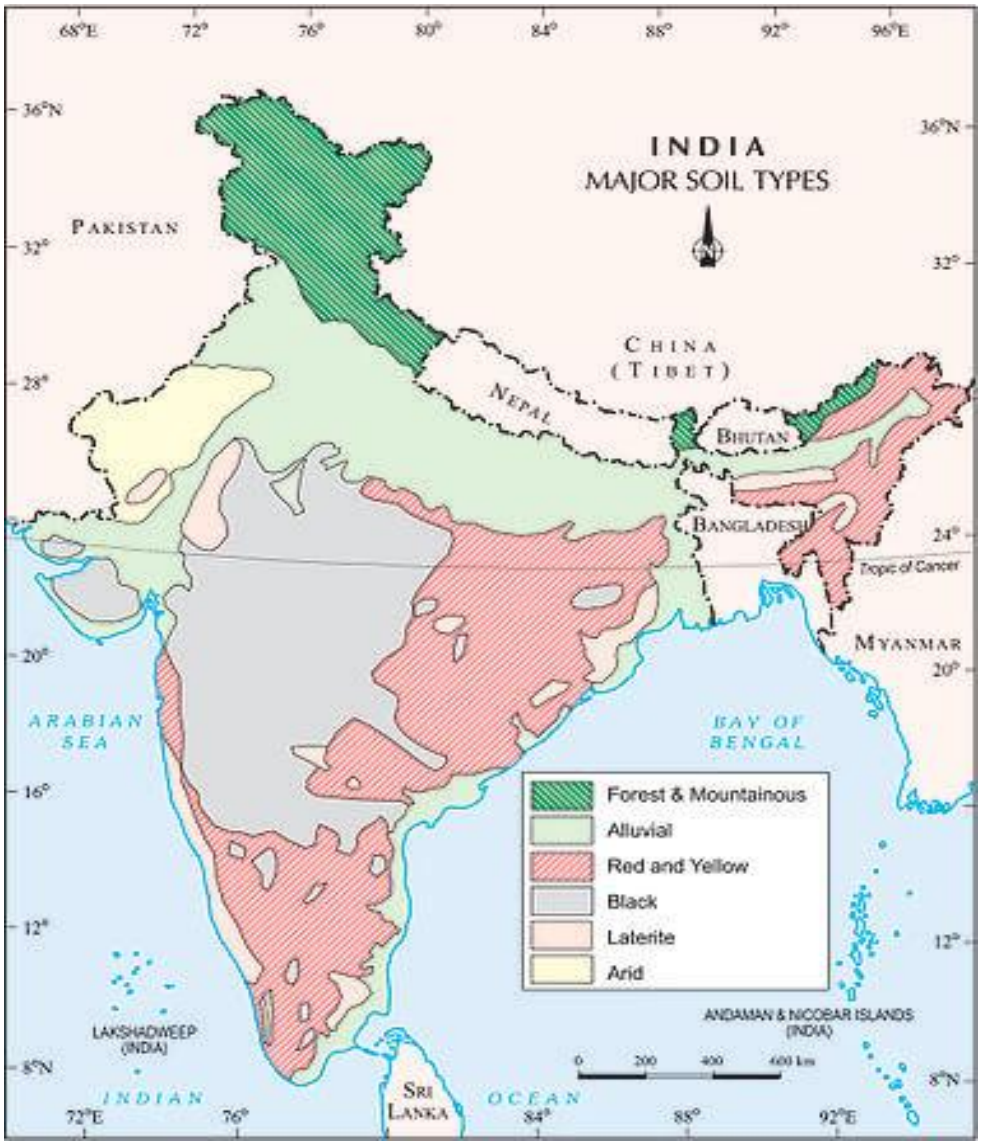
IMPORTANT RESEARCH INSTITUTES IN INDIA

Name of Institute	Headquarter	Name of Institute	Headquarter
Indian Agriculture Research Institute	New delhi	Textile Research Institute	Ahmadabad
Central Rice Research Institute	Cuttack	All Indian Institute of Medical Science	New Delhi
Central Sugarcane Research Institute	Coimbatore	National Aeronautical Laboratory	Bangalore

Central Potato Research Institute	Shimla	National Institute of Oceanography	Panaji
Central Tobacco Research Institute	Rajahmundry	National Geophysics Research Institute	Hyderabad
Central Road Research Institute	New delhi	Indian Institute of Petroleum	Dehradun
National sugar Research Institute	Kanpur	Central Building Research Institute	Roorkee
Indian Lac Research Institute	Ranchi	Tata Institute of Fundamental Research	Mumbai
National Dairy Research Institute	Karnal (Haryana)	High Altitude Research Laboratory	Gulmarg
Central Fuel Research Institute	Dhanbad	National Botanical Research Institute	Lucknow
Central Leather Research Institute	Chennai	Central Food Technological Research Institute	Mysore
Central Mining Research Institute	Dhanbad	Central Glass and Ceramic Research Institute	Kolkata
Central Drug Research Institute	Lucknow	National environmental engineering research institute	Nagpur
Indian Meteorological Observatory	Pune & Delhi	Central Electro –Chemical Research Institute	Karaikudi (Tamil Nadu)
Raman Research Institute	Bangalore	Indian Institute of Chemical Biology	Kolkata
Central Scientific Industrial Organisation	Chandigarh	Industrial Toxicology Research Centre	Lucknow
Central Salt and Marine Chemical Research Institute	Bhavnagar	Central Mechanical Engineering Research Institute	Durgapur
Archeological Survey of India	Kolkata	Centre for Cellular and Molecular Biology	Hyderabad
Central Jute Technological Research Institute	Kolkata	Vikram Sarabhai Space Centre	Thiruvananthapuram
Central Coconut Research Institute	Kasergod, Kerala	Uranium Corporation of India	Jadugoda

SOILS

Type Of Soils	Characteristics	Minerals Deficit	Crops
Alluvial Soil	Fertile, well-drained, rich in organic matter, deposited by rivers	Phosphorus, Potash	Rice, Wheat, Sugarcane, Cotton, Jute
Black Soil (Regur)	Deep, clayey, high water-holding capacity, rich in calcium, magnesium, and potassium	Phosphorus, Potassium, Nitrogen	Cotton, soybean, sugarcane, tobacco, groundnut, jowar, bajra
Red and Yellow Soil	Sandy loam, is porous, rich in iron oxide, and low in organic matter	Nitrogen, Phosphorus, Potassium	Millets, Pulses, Oilseeds, Groundnut, Cotton
Laterite Soil	Acidic, poor in nutrients, high content of iron and aluminium oxides	Nitrogen, Phosphorus, Potassium, Calcium	Cashew, Rubber, Tea, Coffee, Coconut
Forest and Mountain Soil	Loamy texture, rich in organic matter, varies in fertility based on location	Nitrogen, Phosphorus, Potassium, Calcium	Fruits, Vegetables, Spices, Medicinal plants
Arid and Desert Soil	Sandy, saline, low organic matter	Nitrogen, Phosphorus, Potassium	Millets, Dates, Fruits, Vegetables (with irrigation)
Saline and Alkaline Soil	High salt or sodium content, poor drainage	Nitrogen, Phosphorus, Potassium, Calcium	Salt-resistant crops like barley, grasses
Peaty and Marshy Soil	High organic matter, poor drainage	Nitrogen, Phosphorus, Potassium, Calcium	Rice, Sugarcane, Vegetables



TRIBES/ETHNIC GROUP

State	Tribes
Andhra Pradesh	Andh, Sadhu Andh, Bhagata, Bhil, Chenchus (Chenchawar), Chenchu, Gadabas, Gond, Goundu, Jatapus, Kammara, Reddis, Kattunayakan, Kolawar, Kolam, Nayaks, Konda, Manna Dhora, Pardhan, Rona, Savaras, Dabba Yerukula, Nakkala, Dhulia, Kulia, Thoti, Sugalis, Banjara, Kondareddis, Koya, MukhaDhora, Valmiki , Yenadis, Sugalis, Lambadis.
Arunachal Pradesh	Apatanis, Abor, Dafla, Galong, Momba, Sherdukpen, Singpho, Nyishi, Mishmi, Idu, Taroan, Tagin, Adi, Monpa, Wancho, Galo.
Assam	Chakma, Chutiya, Dimasa, Hajong, Garos, Khasis, Gangte, Karbi, Boro, Borokachari, Kachari, Sonwal, Miri, Rabha, Garo.
Bihar	Asur, Baiga, Birhor, Birjia, Chero, Gond, Parhaiya, Santhals, Savar, Kharwar, Banjara, Oraon, Santal, Tharu.
Chhattisgarh	Agariya, Bhaina, Bhattra, Biar, Khond, Mawasi, Nagasia, Gond, Binjhwar, Halba, Halbi, Kawar, Sawar.
Goa	Dhodia, Dubia, Naikda, Siddi, Varli, Gawda.
Gujarat	Barda, Bamcha, Bhil, Charan, Dhodia, Gamta, Paradhi, Patelia, Dhanka, Dubla, Talavia, Halpati, Kokna, Naikda, Patelia, Rathawa, Siddi.
Himachal Pradesh	Gaddis, Gujjars, Khas, Lamba, Lahaulas, Pangwala, Swangla, Beta, Beda Bhot, Bodh, Khampa, Kanaura, Kinnara, Lahaula.
Jammu and Kashmir	Bakarwal, Balti, Beda, Gaddi, Garra, Mon, Purigpa, Sippi, Changpa, Gujjar, Brokpa, Drokpa, Dard, Shin.
Jharkhand	Birhors, Bhumij, Gonds, Kharia, Mundas, Santhals, Savar, Bedia, Ho, Kharwar, Lohra, Mahli, Parhaiya, Santal, Kol, Banjara.
Karnataka	Adiyan, Barda, Gond, Bhil, Iruliga, Koraga, Patelia, Yerava, Hasalaru, KoliDhor, Marati ,Meda, Naikda,

	Soligaru.
Kerala	Adiyan, Arandan, Eravallan, Kurumbas, Malaiarayan, Moplahs, Uralis, Irular, Kanikaran, Kattunayakan, Kurichchan, Muthuvan.
Madhya Pradesh	Baigas, Bhils, Bharia, Birhors, Gonds, Katkari, kharia, Khond, Kol, Murias, Korku, Mawasi, Pardhan, Sahariya.
Maharashtra	Bhaina, Bhunjia, Dhodia, Katkari, Khond, Rathawa, Warlis, Dhanka, Halba, Kathodi, Kokna, Koli Mahadev, Pardhi, Thakur.
Manipur	Naga, Kuki, Meitei, Aimol, Angami, Chiru, Maram, Monsang, Paite, Purum, Thadou, Anal, Mao, Tangkhul, Thadou, Poumai Naga.
Meghalaya	Chakma, Garos, Hajong, Jaintias Khasis, Lakher, Pawai, Raba, Mikir.
Mizoram	Chakma, Dimasa, Khasi, Kuki, Lakher, Pawi, Raba, Synteng, Lushai.
Nagaland	Angami, Garo, Kachari, Kuki, Mikir, Nagas, Sema, Ao, Chakhesang, Konyak, Lotha, Phom, Rengma, Sangtam.
Odisha	Gadaba, Ghara, Kharia, Khond, Matya, Oraons, Rajuar, Santhals, Bathudi, Bathuri, Bhottada, Bhumij, Gond, Juang, Kisan, Kolha, Kora, Khayara, Koya, Munda, Paroja, Saora, Shabar, Lodha.
Rajasthan	Bhils, Damaria, Dhanka, Meenas (Minas), Patelia, Sahariya, Naikda, Nayaka, Kathod, Bhilala, Pawra, Vasava, Garasia.
Sikkim	Bhutia, Khas, Lepchas, Limboo, Tamang.
Tamil Nadu	Adiyan, Aranadan, Eravallan, Irular, Kadar, Kanikar, Kotas, Todas, Kurumans, Malayali,
Telangana	Chenchus
Tripura	Bhil, Bhutia, Chaimal, Chakma, Halam, Khasia, Lushai, Mizel, Namte, Mag, Munda, Riang.
Uttarakhand	Bhotias, Buksa, Jannsari, Khas, Raji, Tharu.
Uttar Pradesh	Bhotia, Buksa, Jaunsari, Kol, Raji, Tharu, Gond, Kharwar, Saharya , Parahiya, Baiga, Agariya, Chero
West Bengal	Asur, Khond, Hajong, Ho, Parhaiya, Rabha, Santhals, Savar, Bhumij, Bhutia, ChikBaraik, Kisan, Kora, Lodha, Kheria, Khariam, Mahali, Mal Pahariya, Oraon.
Andaman and Nicobar	Oraons, Onges, Sentinelese, Shompens, Chariar, Kora, Jarawas.

Agriculture Methods	Features
Surface Irrigation	Water is distributed over the land by gravity, often through furrows, basins, or borders. It's the oldest and simplest method but can be inefficient due to water loss from runoff and evaporation.
Sprinkler Irrigation	Water is sprayed through sprinklers mounted on pipes or moving systems, simulating rainfall. It's more efficient than surface irrigation but can still lose water to evaporation and wind drift.
Drip Irrigation	Water is delivered slowly and directly to the plant root zone through emitters or drip lines. It's the most water-efficient method, minimizing waste and evaporation.
Subsurface Irrigation	Water is delivered below the soil surface through perforated pipes or ditches. It's highly efficient and minimizes evaporation, but requires careful design and management.
Center Pivot Irrigation	A long, rotating pipe with sprinklers delivers water in a circular pattern. It's efficient for large fields but can be expensive to install and operate.
Bubblers	Similar to sprinklers, apply water at a lower rate and closer to the ground, suitable for irrigating trees and shrubs.
Foggers	Create a fine mist that cools and humidifies the air around plants, often used in greenhouses or nurseries.
Graywater irrigation	Using recycled household wastewater for irrigation can be a sustainable option in some areas but requires proper treatment and management.
Precision Irrigation	Utilizes sensors, satellite imagery, and other data to precisely tailor water application to the specific needs of each plant or field area. This can involve variable rate irrigation (VRI) adjusting water based on real-time data, or fertigation, combining irrigation with fertilizer delivery.
Chemigation	This method combines irrigation with the application of fertilizers, pesticides, and other chemicals through the irrigation system. It can be efficient and precise but requires careful handling and adherence to safety regulations.
Tailwater reuse	Capturing and reusing runoff water from irrigation systems can significantly reduce water consumption. This can be achieved through ponds, ditches, or filtration systems.
Biochar irrigation	Adding biochar to soil can improve water retention and nutrient availability, potentially reducing irrigation needs. This method is still under research but holds promise for sustainable agriculture.
Fog harvesting	In areas with frequent fog, specialized nets can capture water droplets, providing a supplemental source for irrigation, particularly in arid regions.
Aquaponics	This integrated system combines aquaculture (fish farming) with hydroponics (growing plants without soil) in a closed loop. Wastewater from fish tanks provides nutrients for plants, while plants help filter the water for fish. This method conserves water and resources while producing both fish and vegetables.
Pressurized irrigation systems	Compared to open-ditch systems, pressurized systems like drip and sprinkler irrigation minimize water loss due to evaporation and leakage, offering improved efficiency.
Mulching	Covering the soil with organic materials like straw or wood chips helps retain moisture, suppress weeds, and moderate soil temperature, potentially reducing irrigation needs.
Biochar	This charcoal-like material is made from organic matter and can be added to soil to improve its fertility, water-holding capacity, and drainage.
Permaculture	This design system aims to create sustainable and productive ecosystems by mimicking natural patterns. It can be used to create gardens, farms, and even entire communities.
Desalination	This process removes salt from saltwater, making it suitable for irrigation and other uses. Desalination can be a valuable source of water in arid regions or areas facing water scarcity.
Fertigation	This technique combines irrigation with fertilization, delivering nutrients directly to the roots of plants. This can improve nutrient uptake and reduce fertilizer waste.
Intercropping	Growing two or more crops together in the same field can improve soil health, suppress weeds, and increase yields. For example, intercropping nitrogen-fixing legumes with other crops can provide natural nitrogen fertilization.
Integrated soil fertility management (ISFM)	This approach combines organic and inorganic amendments, such as compost and manure with mineral fertilizers, to improve soil health and fertility. ISFM can help to reduce reliance on synthetic fertilizers and promote sustainable soil management.
Bioremediation	This process uses living organisms to clean up contaminated soil and water. Bioremediation can be a more sustainable and environmentally friendly alternative to traditional remediation methods.
Plant phenotyping	This technique uses sensors and imaging technologies to capture detailed data about plant growth and development. This data can be used to select for desirable traits, such as increased yield or resistance to pests and diseases.
Regenerative agriculture	This approach focuses on improving soil health, biodiversity, and carbon sequestration through

	practices like cover cropping, no-till farming, and compost application, leading to more sustainable and resilient agricultural systems.
Agrivoltaics	This innovative practice combines solar energy production with agricultural activities, utilizing the same land area for both food and energy generation.

LIST OF TOWNS ASSOCIATED WITH IMPORTANT INDUSTRIES

Town	Industry	Town	Industry
Ahmedabad (Gujarat)	Cotton Textiles	**Jharia (Jharkhand)**	Coal mines
Agra (UP)	Leather, Marble	**Khetri (Rajasthan)**	Copper mines
Asen (Germany)	Iron and steel	**Johannesburg (South Africa)**	Gold mines
Baku (Russia)	Petroleum	**Kolar (Karnataka)**	Goldfields
Bangalore (Karnataka)	Aircraft, Telephones, and IT	**Kansas (USA)**	Agriculture, Beef production
Bhilai (Chhattisgarh)	Steel plant	**Kyiv (Ukraine)**	Engineering
Birmingham (U.K)	Manufacturing and Automotive industry	**Los Angeles (USA)**	Film production
Bangkok (Thailand)	Ship-building, Teak, and Wood	**Ludhiana (Punjab)**	Hosiery
Belfast (North Ireland)	Shipbuilding	**Lyons (France)**	Silk industry
Bhagalpur (Bihar)	Silk	**Chennai (Tamil Nadu)**	Leather, Integral Coach Factory
Mumbai (Maharashtra)	Film industries, Atomic rector	**Moradabad (UP)**	Brassware, Cutlery
Chelyabinsk (Russia)	Metallurgy, Military production	**Manchester (England)**	Cotton textile
Buenos Aires (Argentina)	Dairy products, Meat	**Milan (Italy)**	Silk, Fashion and clothing
Cadiz (Portugal)	Cork	**Multan (Pakistan)**	Handicrafts, Earthenware, Textile
Kolkata (West Bengal)	Jute, Paper, Leather works	**Munich (Germany)**	Contact lenses, Spectacle frames, Automobiles
Kobe (Japan)	Iron and steel, Ship building	**Nagoya (Japan)**	Ship building, Garments
Chittaranjan (West Bengal)	Locomotives	**Nagpur (Maharashtra)**	Oranges, Cotton Mills
Cochin (Kerala)	Ship-building	**Nepanagar (MP)**	Newsprint
Chicago (USA)	Agricultural equipment, Automobiles	**Osaka (Japan)**	Cotton textile, Machinery, Iron and steel
Coolgardie (Australia)	Gold mining	**Pittsburgh (USA)**	Iron and Steel, Coal, Petroleum
Dhaka (Bangladesh)	Jute	**Perambur (Tamil Nadu)**	Integral Coach Factory
Dalmianagar (Bihar)	Cement	**Plymouth (England)**	Mercantile shipping
Darjeeling (West Bengal)	Tea	**Raniganj (WB)**	Coal mines
Detroit (USA)	Motor car	**Sialkot (Pakistan)**	Sports goods
Dhariwal (Punjab)	Woollen goods	**Seattle (USA)**	Aerospace
Digboi (Assam)	Oil refinery	**Sindri (Jharkhand)**	Fertilizers and chemicals
Firozabad (UP)	Bangles, Glass refinery	**Sheffield (UK)**	Cutlery
Glasgow (Scottland)	Ship building, Textile	**Titagarh (West Bengal)**	Paper and Jute
Guntur (Andhra Pradesh)	Tobacco	**Venice (Italy)**	Ship-building
Havana (Cuba)	Sugar, Tobacco, cigars	**Vladivostok (Russia)**	Shipping, Food, Commercial fishing
Hollywood (USA)	Film industry	**Varanasi (UP)**	Silk, Brocade Industry
Jamshedpur (Jharkhand)	Steel	**Wellington (New Zealand)**	Dairy

IMPORTANT REPORTS (LITERACY/INDEXES/RATIOS)

Name of Reports	Published by
World Economic Outlook	International Monetary Fund (IMF)
Global Financial Stability Report	International Monetary Fund (IMF)
Ease of Doing Business	World Bank
World Development Report	World Bank
Monetary Policy (India)	Reserve Bank of India (RBI)
Report on Trends and Progress of Banking in India	Reserve Bank of India (RBI)
Environmental Performance Index	World Economic Forum
Global Competitive Index	World Economic Forum
Global Gender Gap Report	World Economic Forum
Global Information Technology Report	World Economic Forum
Human Capital Report	World Economic Forum
The Global Risk Report	World Economic Forum
Human Development Index	United Nations Development Programme (UNDP)
Sustainable development Goals	United Nations Development Programme (UNDP)
Gender Inequality Index	United Nations Development Programme (UNDP)
Global Hunger Index	Concern Worldwide and Welthungerhilfe
Global Innovation Index	World Intellectual Property Organization (WIPO)
World Economic Situation and Prospects	United Nations Organizations (UN)

Global Peace Index	Institute of Economics and Peace (IEP), Australia
World Trade Outlook Indicator	World Trade Organization (WTO)
The Programme for International Student Assessment (PISA)	Organization of Economic Development and Cooperation (OECD)
National Air Quality Indices	Central Pollution Control Board (CPCB)
India Innovation Index	NITI Aayog, Department of Industrial Policy and Promotion (DIPP),Confederation of Indian Industry
Red Data Book	Botanical Survey of India
The State of World's Children Reports	United Nations Children's Emergency Fund (UNICEF)
Global Report on Trafficking in Persons	United Nations Office on Drugs and Crime (UNODC)
The Trade and Development Report	United Nations Conference on Trade and Development (UNCTAD)
Global Assessment Report	United Nations Office for Disaster Risk Reduction (UNISDR)
World Cities Report	UN-Habitat
Global Environment Outlook	United Nations Environment Programme (UNEP)
Emission Gap Report	United Nations Environment Programme (UNEP)
World Happiness Report	Sustainable Development Solution Network (SDSN)
Corruption Perception Index	Transparency International
Global Hunger Index Report	International Food Policy Research Institute (IFPRI)
World Press Freedom Index	Reporters Without Borders
Death Penalty Report	Amnesty International
Climate Change Performance Index	German Watch
Global Money Laundering Report	Financial Action Task Force (FATF)
World Intellectual Property Report (WIPR)	World Intellectual Property Organization (WIPO)
Global Wage Report	International Labour Organization (ILO)

KEYWORDS

Keywords	Meaning	Keywords	Meaning
Abrasion	It is a geological process involving the wearing away of the Earth's surface by natural agents such as rivers, glaciers, the sea, or wind. These agents transport debris, including rocks and sediments, which act like sandpaper, gradually eroding and smoothing the landscape over time.	**Horst**	A horst is a raised block of the Earth's crust between two faults. It is associated with tectonic activity and is opposite to a graben. Block mountains may form as a result of horst structures.
Abrasion Platform	It is also known as a wave-cut platform, a flat, levelled area created by the abrasion or erosion of coastal rocks by the repetitive action of waves. As waves hit the rock surface, they carry and deposit debris, gradually shaping a platform that extends into the sea.	**Intrusion**	An intrusion refers to a body of igneous rock that has been injected into the Earth's crust from the mantle below. Common types include dykes, sills, and batholiths.
Agglomerate	It refers to a mass of coarse rock fragments or blocks of lava that are ejected during a volcanic eruption. These fragments can vary in size and are often deposited around the volcanic vent.	**Isohyet**	It is a line on a meteorological map joining places of equal rainfall. It helps visualize and analyze rainfall distribution across different geographical areas.
Alluvial Fan	It is a cone-shaped deposit of sediment formed at the base of a mountain or hill where a stream or river flows from a confined space into an open area. The sudden decrease in slope causes the water to deposit its sediment load, creating a fan-shaped landform.	**Kame**	A short ridge of sand and gravel deposited by the water of a melted glacier. It is a landform associated with glacial processes.
Alp	It is a gentle slope situated above the steep sides of a glaciated valley. It is often used for summer grazing. The term is closely related to transhumance, a practice where herders move their livestock between higher and lower elevations seasonally to find suitable grazing areas.	**Kettle Hole**	A kettle hole is a small depression or hollow in a glacial outwash plain. It is formed when a block of ice embedded in the outwash deposits melts, causing the sediment above to subside.
Archipelago	It refers to a group or chain of islands, usually clustered closely together in a body	**Lahar**	A type of landslide consisting of volcanic debris mixed with water. It typically flows

	of water.		down the sides of a volcano and can be triggered by heavy rain or the heat from the volcano melting snow and ice.
Attrition	Attrition is the geological process by which a river's load (sediment carried by the river) undergoes erosion through the repeated collision of particles. This erosion occurs as pebbles and boulders within the river collide with each other, leading to a gradual reduction in size and smoothing of the particles. It is one of the mechanisms contributing to the shaping of river landscapes and the transformation of sediment over time.	**Levée**	A levée is the bank of a river that is raised above the general level of the floodplain by sediment deposition during flooding. It is built up by coarse sediment deposited during recurrent flooding.
Backwash	It refers to the return movement of seawater off the beach after a wave has broken. It is the seaward movement of water down the beach slope following the completion of the swash (the onshore movement of water during wave impact). Backwash is a crucial component of coastal processes and contributes to the transport of sediment.	**Loess**	A very fine silt deposit, often of considerable thickness, is transported by the wind before deposition. When irrigated, loess can be very fertile, supporting high crop yields.
Barchan	It is a type of crescent-shaped dune commonly formed in desert regions where the wind direction remains relatively constant. It is caused by wind blowing around its edges, and the dune may advance downwind as sand particles are blown over its crest.	**Mesa**	A mesa is a flat-topped, isolated hill in arid regions. It has a protective cap of hard rock underlying softer, more erodible sedimentary rock.
Breakwater or Groyne	A breakwater or groyne is a wall built at right angles to a beach to prevent sand loss due to longshore drift. It helps control coastal erosion by interrupting the movement of sediment along the shoreline.	**Moraine**	A collective term for debris deposited on or by glaciers, including lateral moraine, medial moraine, englacial moraine, ground moraine, terminal moraine, and recessional moraine.
Business Park	A business park is an out-of-town site designed to accommodate offices, high-technology companies, and light industry. They are organized spaces that provide a suitable environment for various businesses and activities.	**Neap Tides**	Tides with the least difference between high and low water levels. They occur during the first and third quarters of the moon when the gravitational forces of the moon and the sun partially cancel each other out.
Cay	A cay is a small, low island or bank composed of sand and coral fragments. These features are commonly found in the Caribbean Sea	**Névé**	Névé is compact snow found in a corrie icefield. It is one of the layers recognized in the ice mass, situated between blue and white ice at the bottom and powder snow on the surface.
Chernozem	It is a deep, rich soil found in the plains of southern Russia. The upper horizons are rich in lime and other plant nutrients, and the soil is known for its fertility.	**Nivation**	The process of weathering by snow and ice, particularly through freeze-thaw action. It is particularly active in cold climates and high altitudes, such as on exposed slopes above a glacier.
Clint	A clint is a block of limestone, typically part of a limestone pavement. Limestone pavements consist of large blocks (clints) separated by deep fissures (grykes).	**Node**	A point representing the beginning or ending point of an edge or arc is often used in geographical network analysis.
Commuter Zone	A commuter zone is an area near the outskirts of an urban area, where commuters—often affluent and mobile individuals—reside. They can afford a physical separation between their homes and workplaces.	**Nuée Ardente**	A very hot and fast-moving cloud of gas, ash, and rock flows close to the ground after a violent ejection from a volcano. It is highly destructive.
Concordant Coastline	A concordant coastline runs parallel to inland mountain ranges. Changes in sea levels or land elevation can lead to valleys flooding and turning mountains into a line of islands.	**Nunatak**	A mountain peak that projects above the general level of the ice near the edge of an ice sheet.

Conurbation	A continuous built-up urban area formed by the merging of several formerly separate towns or cities. This can result from 20th-century urban sprawl.	**Peasant Agriculture**	Peasant agriculture involves the growing of crops or the raising of animals, partly for subsistence needs and partly for market sale. It represents an intermediate stage between subsistence and commercial farming.
Coombe	Another term for a dry valley is a valley without a river, often found in limestone areas.	**Peat**	Peat is partially decayed and compressed vegetative matter that accumulates in areas of high rainfall and/or poor drainage.
Crevasse	A crack or fissure in a glacier resulting from the stressing and fracturing of ice at a change in gradient or valley shape.	**Peneplain**	A peneplain is a region that has been eroded until it is almost level. More resistant rocks may stand above the general level of the land.
Culvert	An artificial drainage channel for quickly transporting water from one place to another.	**Previous Rock**	Pervious rock is rock that, even if non-porous, can allow water to pass through via interconnected joints, bedding planes, and fissures. An example is limestone.
Denudation	It refers to the overall process of wearing away the Earth's surface through the combined effects of weathering and erosion. It includes the breakdown of rocks (weathering) and the removal of the resulting material (erosion).	**Podzol**	Podzol is the characteristic soil of taiga coniferous forests, leached and greyish, with iron and lime, leached out of the upper horizons.
Depression	A depression is an area of low atmospheric pressure formed when warm and cold air masses come into contact. The passage of a depression is characterized by thickening clouds, rain, and dull and drizzly weather, followed by clearing skies with showers.	**Pyroclasts**	Pyroclasts are rocky debris emitted during a volcanic eruption, usually following a previous emission of gases and prior to the outpouring of lava. Many volcanic eruptions involve the expulsion of pyroclastic materials.
Dew Point	The dew point is the temperature at which the atmosphere, when cooled, becomes saturated with water vapour. At this point, the vapour condenses into dew, forming visible droplets on surfaces like grass or leaves.	**Quartz**	Quartz is one of the commonest minerals found in the Earth's crust, consisting of silica (silicon oxide). Most sandstones are predominantly composed of quartz.
Doldrums	The doldrums refer to an equatorial belt characterized by low atmospheric pressure, where the trade winds converge.	**Quartzite**	Quartzite is a very hard and resistant rock formed by the metamorphism of sandstone. It results from the alteration of sandstone through intense heat and pressure.
Dormitory Settlement	A dormitory settlement is a village located beyond the edge of a city but inhabited by residents who work in that city. It is often associated with a commuter zone, where individuals live outside the city but commute to work.	**Shanty Town**	A shanty town is an area of unplanned and random urban development, often found on the outskirts of a city. It is characterized by high-density/low-quality dwellings made from simple materials, and it usually lacks basic services like sewerage, water supply, and power supplies.
Dune	A dune is a mound or ridge of drifted sand that occurs on the seacoast or in deserts. Dunes are shaped by wind and can take various forms, playing a significant role in shaping coastal landscapes.	**Shapefiles**	Shapefiles are a common geospatial vector data format used for storing the location, shape, and attributes of geographic features. They are widely used in geographic information system (GIS) software.
Esker	An esker is a low, winding ridge composed of pebbles and finer sediment. It is typically found in glaciated lowland areas and formed by glacial deposition.	**Silage**	Silage is any fodder crop harvested while still green and kept succulent by partial fermentation in a silo. It is commonly used as animal feed during the winter.
Exfoliation	Exfoliation is a form of weathering whereby the outer layers of a rock or boulder shear off due to the alternate expansion and contraction caused by diurnal heating and cooling. This process is particularly active in desert regions.	**Striations**	Striations are grooves and scratches left on bare rock surfaces by the passage of a glacier. They are marks of glacial erosion.
Fjord	A fjord is a deep, generally straight inlet of the sea along a glaciated coast. Fjords are typically formerly glaciated valleys that have been submerged, either by a post-glacial rise in sea level or subsidence of the land.	**Urban Sprawl**	Urban sprawl is the growth in the extent of an urban area in response to improvements in transport and rising incomes. Factors such as increased mobility and higher incomes allow for a greater physical separation of home and work, contributing to the expansion of urban

			areas.
Freeze-Thaw	It is a type of physical weathering where rocks are denuded by the freezing of water in cracks and crevices on the rock face. Water expands on freezing, causing stress and fracture along lines of weakness in the rock.	**Wadi**	A wadi is a dry watercourse in an arid region. It remains dry for most of the year, but occasional rainstorms in the desert may cause a temporary stream to appear in a wadi.
Geosyncline	A geosyncline is a large basin (a type of syncline) in which thick marine sediments have accumulated over geological time. These basins are associated with the formation of sedimentary rocks.	**Yardang**	Yardangs are long, roughly parallel ridges of rock found in arid and semi-arid regions. They are undercut by wind erosion, and the corridors between them are swept clear of sand by the wind.
Hanging Valley	A hanging valley is a tributary valley entering a main valley at a much higher level, typically due to the deepening of the main valley, often caused by glacial erosion. It results in the tributary valley appearing elevated in comparison to the main valley.	**Zeugen**	Zeugen are pedestal rocks in arid regions. Wind erosion concentrates near the ground, leading to undercutting, and the pedestal profile emerges, creating these distinctive features.
Headland	A headland is a promontory or piece of land that extends into the sea, often composed of resistant rock. Headlands are typically associated with coastal landscapes and may exhibit features such as cliffs and erosion patterns.		

AGRICULTURAL SESSION AND CROPS

Cropping Season	Features	Sowing Period	Harvesting Period	CROPS
RABI	Tolerates cooler temperatures, requires moderate water	October-December	April- June	Wheat, Barley,Gram (Chickpea), Mustard, Peas, Linseed, Sunflower, Oat, Potato, Onion, Sugarcane
KHARIF	Requires high rainfall, vulnerable to flooding	June-July	September-October	Rice, Maize (Corn), Jowar (Sorghum), Bajra (Pearl Millet), Cotton, Sugarcane, Groundnut (Peanut), Sesame, Soybean,Arhar (Pigeon Pea), Urad (Black Gram), Moong (Green Gram)
ZAID	Short growing season, drought-tolerant	March-July	March-July	Vegetables (Cucumber, Tomato, Brinjal, Okra, etc.), Fruits (Watermelon, Muskmelon, Papaya, Mango, etc.), Fodder crops (Barseem, Cowpea, etc.)

VARIOUS TYPES OF CROPS

CROPS	Climatic Conditions	Top STATES	Top COUNTRIES
Rice	Deep clayey and loamy soil, 22-32°C temperature, 1500-2500 mm rainfall	West Bengal, Uttar Pradesh, Punjab, Tamil Nadu	China, India, Indonesia, Bangladesh, Vietnam
Wheat	Well-drained fertile loamy and clayey soil, 10-15°C (sowing), 21-26°C (ripening), 75-100 mm rainfall	Uttar Pradesh, Madhya Pradesh, Punjab, Haryana	China, India, Russia, United States, Turkey
Maize	Sandy loam soil, 20-28°C temperature, 750-1000 mm rainfall	Karnataka, Madhya Pradesh, Maharashtra, Rajasthan	United States, China, Brazil, Argentina, India
Millets	Sandy loam soil, drought-resistant, 27-32°C temperature, 50-100 mm rainfall	Karnataka, Maharashtra, Rajasthan, Andhra Pradesh, Tamil Nadu	India, Niger, China, Nigeria, Mali
Jowar	Well-drained black soil, drought-resistant, 20-30°C temperature, 400-800 mm rainfall	Maharashtra, Karnataka, Andhra Pradesh, Rajasthan, Telangana	India, Ethiopia, Niger, Sudan, Brazil
Pulses	Well-drained fertile soil, diverse climatic conditions, 18-25°C temperature, 600-800 mm rainfall	Madhya Pradesh, Maharashtra, Rajasthan, Karnataka, Uttar Pradesh	India, Myanmar, Canada, United States, Ethiopia
Bajra	Sandy loam soil, drought-resistant, 20-30°C temperature, 250-500 mm rainfall	Rajasthan, Gujarat, Maharashtra, Haryana, Uttar Pradesh	India, Niger, Nigeria, Chad, Burkina Faso
Sugarcane	Deep alluvial soil, 25-30°C temperature, 1500-2000 mm rainfall	Maharashtra, Uttar Pradesh, Karnataka, Tamil Nadu, Andhra	Brazil, India, Thailand, Pakistan, China

		Pradesh	
Jute	Alluvial soil with good drainage, warm and humid climate, 25-32°C temperature, 1500-2000 mm rainfall	West Bengal, Assam, Odisha, Bihar	India, Bangladesh, China, Thailand, Vietnam
Cotton	Warm, sunny climate, well-drained soil, 20-30°C temperature, 600-1000 mm rainfall	Gujarat, Maharashtra, Telangana, Andhra Pradesh, Karnataka	China, India, United States
Tea	Warm, humid climate, acidic soil, moderate rainfall, 15-25°C temperature, 1500-2500 mm rainfall	Assam, West Bengal, Tripura	China, India, Sri Lanka
Coffee	Warm, humid climate, well-drained soil, moderate rainfall, 15-25°C temperature, 1200-2000 mm rainfall	Karnataka, Kerala, Tamil Nadu	Brazil, Vietnam, Colombia
Rubber	Warm, humid climate, well-drained soil, high rainfall, 20-30°C temperature, 2000-3000 mm rainfall	Kerala, Tamil Nadu, Tripura, Assam	Thailand, Indonesia, Malaysia
Groundnut	Warm climate, well-drained sandy soil, 20-30°C temperature, 600-800 mm rainfall	Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra	China, India, United States
Coconut	Tropical climate, coastal areas, sandy soil, 20-30°C temperature, 2000-3000 mm rainfall	Karnataka, Tamil Nadu, Kerala	Indonesia, Philippines, India
Sunflower	Well-drained sandy loam soil, 20-30°C temperature, 500-750 mm rainfall	Karnataka, Haryana, Maharashtra	Russia, Ukraine, Argentina, China
Mustard	Well-drained loam or sandy loam soil, 15-25°C temperature, 600-800 mm rainfall	Rajasthan, Gujarat, Madhya Pradesh, Haryana	Russia, Myanmar, Ukraine, USA
Soybean	Well-drained loam soil, 20-28°C temperature, 750-1000 mm rainfall	Madhya Pradesh, Maharashtra, Rajasthan, Karnataka, Telangana.	United States, Brazil, Argentina, China, Paraguay
Sesame	Sandy loam soil, 20-35°C temperature, 400-600 mm rainfall	West Bengal, Madhya Pradesh, Rajasthan, Uttar Pradesh, Gujarat,	Myanmar, India, Tanzania, Ethiopia, Sudan
Rapeseed	Well-drained loam soil, 15-25°C temperature, 500-750 mm rainfall	Rajasthan, Haryana, Madhya Pradesh	Canada, India, China, Germany, France
Castor	Sandy loam soil, 20-35°C temperature, 800-1200 mm rainfall	Andhra Pradesh, Gujarat, Karnataka, Odisha, Rajasthan and Tamil Nadu.	India, Brazil, China, Thailand, Mozambique
Linseed	Sandy loam soil, 15-25°C temperature, 500-750 mm rainfall	Madhya Pradesh, Karnataka, Chhattisgarh, Jharkhand, Bihar	Canada, India, Ethiopia, China, Kazakhstan
Turmeric	Well-drained, loamy soil, 20-30°C, 1500-2000 mm rainfall	Maharashtra, Telangana, Karnataka and Tamil Nadu	India, Myanmar, Indonesia
Ginger	Well-drained, sandy loam soil, 20-25°C, 1500-2000 mm rainfall	Madhya Pradesh, Karnataka, Assam	India, Nigeria, China, Indonesia
Cashew Nuts	Well-drained, sandy loam soil, 20-30°C, 1000-2000 mm rainfall	Maharashtra, Andhra Pradesh, Odisha	Ivory Coast, India, Vietnam, Philippines
Pepper	Well-drained, loamy soil, 20-28°C, 1500-2000 mm rainfall	Kerala, Karnataka, Tamil Nadu	Vietnam, Brazil, Indonesia

AGRICULTURAL REVOLUTIONS IN INDIA

Name of the revolution	Products
Green revolution	Integration of ecological principles in technology development
Protein revolution	Higher Production (Technology-driven 2nd Green Revolution)
Yellow revolution	Oilseed Production (Especially Mustard and Sunflower)
Black revolution	Petroleum products
Blue revolution	Fish and aquarium products
Brown revolution	Leather / Cocoa / Non-Conventional Products
Golden fibre revolution	Jute products
Golden revolution	Fruits / Honey Production / Horticulture Development
Grey revolution	fertilisers
Pink revolution	Onion Production / Pharmaceuticals / Prawn Production
Silver revolution	Egg Production / Poultry Production
Silver fibre revolution	Cotton
Red revolution	Meat Production / Tomato Production
Round revolution	Potato
Green revolution	Food Grains
White revolution	Milk products

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3 SCIENCE & TECHNOLOGY

AWARDS: NOBEL PRIZE

- **Nobel Prize in Physics--Conferred by:** Royal Swedish Academy of Sciences;
- **Nobel Prize in Chemistry --Conferred by:** Royal Swedish Academy of Sciences;
- **Nobel Prize in Physiology or Medicine--Conferred by:** Nobel Assembly at the Karolinska Institute; **Nobel Prize in Literature--Conferred by:** Swedish Academy;
- **Nobel Peace Prize--Conferred by:** Norwegian Nobel Committee;
- **The SverigesRiksbank Prize in Economic--by:** Royal Swedish Academy of Sciences.

Nobel Prize Details:

- Instituted by Alfred Nobel's will in **1895**.First Nobel Prizes were awarded in **1901.**
- Consists of a **medal, diploma, and a monetary award**.Prize **cannot be shared among more than three individuals**. Can be awarded to organizations.
- Posthumous awards are allowed **if the recipient dies after the announcement.** Self-nomination not allowed; nomination by invitation only.

Notable Records:

- Linus Pauling: Only person awarded two **unshared** Nobel Prizes.
- International Committee of the Red Cross: Only organization with three Peace Prizes.
- The first woman to receive- Marie Curie- only person to win it in two sciences.

Indian Nobel Laureates:

- 9 Indians till now.Notable mentions: Mahatma Gandhi, Meghnad Saha, Satyendra Nath Bose, Chandrasekhara Raman, Homi Bhabha - **missed out.**

Selection Process:

- Designated institutions select laureates: Royal Swedish Academy of Sciences, Karolinska Institutet, Swedish Academy, and a committee elected by Norwegian Parliament for Nobel Peace Prize.SverigesRiksbank Prize in Economic Sciences selected by Royal Swedish Academy of Sciences since 1969.

OTHER IMPORTANT AWARDS:

Fields Medal: Mathematics, Every 4 years, International Mathematical Union.
Turing Award: Computer Science, Annually, Association for Computing Machinery (ACM).
Abel Prize: Mathematics, Annually, Norwegian Academy of Science and Letters.
Copley Medal: General Science, Irregular intervals, Royal Society.
Abel Wolman Award: Environmental Engineering, Annually, American Water Works Association.
Kyoto Prize in Advanced Technology: Advanced Technology, Annually, Inamori Foundation.
Max Planck Medal: Theoretical Physics, Annually, German Physical Society.
Goldman Environmental Prize: Environmentalism, Annually, Goldman Environmental Foundation.
Marconi Prize: Telecommunications, Annually, Marconi Society.
Shaw Prize in Astronomy: Astronomy, Annually, The Shaw Prize Foundation.
Crafoord Prize: Biosciences, Geosciences, Polyarthritis Research, Annually, Royal Swedish Academy of Sciences.
Kavli Prize in Astrophysics: Astrophysics, Biennial, The Kavli Foundation and Norwegian Academy of Science and Letters.
Carl Sagan Memorial Award: Science Communication, Annually, Council of Scientific Society Presidents.

2023 Nobel Prize

- **Physiology or Medicine**: For work in the field of mRNA vaccines; **Nobel Prize in Physics:** For experimental methods generating attosecond pulses of light.
- **Nobel Prize in Chemistry:** For the discovery and synthesis of quantum dots.

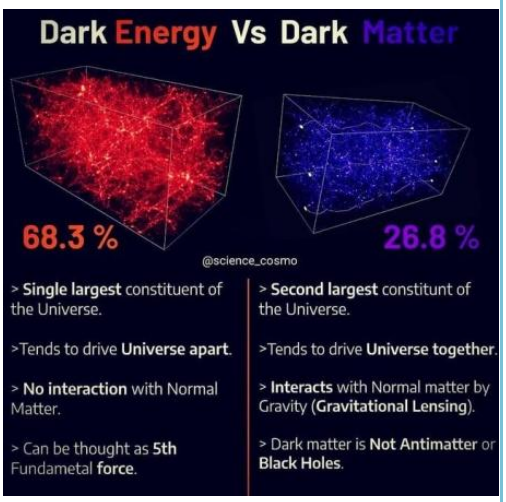
INDIA AND WORLD COLLABORATION IN SCIENCE PROJECTS

- **LIGO (Laser Interferometer Gravitational-Wave Observatory):** India collaborates with the international LIGO project for detecting gravitational waves.
- **Square Kilometre Array (SKA) Project**: India partners in the SKA project, aiming to build the world's largest radio telescope.
- **International Thermonuclear Experimental Reactor:** India participates in the ITER project, a collaborative effort to build the world's largest fusion reactor.
- **Global Initiative on Sharing All Influenza Data:** India contributes genomic data to GISAID, a global platform for sharing influenza data.
- **International Solar Alliance (ISA):** India initiates ISA to promote solar energy collaboration among solar-rich countries.
- **European Organization for Nuclear Research:** India collaborates with CERN on Large Hadron Collider (LHC).
- **India-UK Joint Clean Energy Research Center (JCERC); Indo-US Vaccine Action Program (VAP);**
- **South Asian Nitrogen Hub:** Regional collaboration involving India to address nitrogen-related environmental issues.
- **Human Frontier Science Program--** India participates in HFSP, supporting research on the complex mechanisms of living organisms.
- **Global Initiative to Combat Nuclear Terrorism (GICNT):**India participates in GICNT, a global effort to prevent nuclear terrorism.

- **International Centre for Genetic Engineering and Biotechnology:** India is a member of ICGEB, collaborating on research in biotechnology.
- **International Partnership for Blue Carbon**:India collaborates in the global effort to conserve and restore coastal and marine ecosystems.

SPACE SCIENCE CONCEPTS

Concept	Details
Gravitational Waves	Ripples in spacetime **from accelerating massive objects**, as predicted by Einstein's General Relativity.Stem from events like black hole mergers, traveling at **light speed** through the universe.**Weakly interact with matter**, posing detection challenges.Detected using laser interferometry in ground-based detectors like LIGO and Virgo.**LISA Mission**: Upcoming ESA observatory for lower-frequency gravitational waves.Revolutionizes cosmology, astrophysics, and fundamental physics.
Gravitational Lensing	Phenomenon in which the **gravitational field of a massive object, like a galaxy or a black hole, bends and distorts the light from a background object.**Einstein's Prediction in General Relativity: Gravity acts as a lens, bending the path of light. **Strong Lensing:** Produces distinct, magnified, or multiple images. **Weak Lensing**: Causes subtle distortions in background object shapes. **Einstein Ring:** Circular arrangement when a massive object aligns with a background source. **Microlensing:** Small objects induce temporary brightness changes. **Applications:** Studying dark matter, galactic structures, and cosmological phenomena. **Galactic Lensing:** Galaxies act as lenses, altering light from background objects. **Gravitational Wave Lensing**: Waves induce lensing effects, expanding cosmic study.
Exoplanets	Exoplanets are **planets outside our solar system**, orbiting stars other than the Sun. Discovered through methods like radial velocity, transit photometry, and gravitational microlensing.Kepler Space Telescope played a key role in exoplanet discoveries. Proxima Centauri b is the closest known exoplanet, located in the habitable zone. **TESS** (Transiting Exoplanet Survey Satellite) is a recent mission focused on finding exoplanets. Techniques like **spectroscopy** help study exoplanet atmospheres.
Composition of Universe	**Dark Matter:** Hypothetical, non-luminous matter with weak interactions, influencing gravitational effects. **Dark Energy:** Mysterious force driving accelerated expansion, dominating the universe's energy density. **Visible (Baryonic) Matter:** Ordinary matter composed of atoms, forming stars, galaxies, and observable cosmic structures.
Nebulae	Vast clouds of gas and dust in space, mainly composed of hydrogen and helium. Form in regions with concentrated interstellar matter. Gravity causes collapse, leading to star formation. Serve as stellar nurseries, initiating the birth of stars.
Dark Matter VS Dark Energy	*Dark Matter:* Hypothetical, non-luminous matter that does not emit, absorb, or reflect light. **Not composed of atoms or subatomic particles** in the Standard Model. **Doesn't interact with electromagnetic forces**, making it challenging to detect directly. Inferred from gravitational effects on visible matter, galaxy rotation curves, and cosmic microwave background. **Characterized by slow-moving particles** and stable structures at large scales. Thought to form halos around galaxies, providing additional gravitational influence. Influences the large-scale structure of the universe and galaxy formation. Non-baryonic: it is **not made up of the same particles as protons and neutrons.** *Dark Energy:* Mysterious **force driving accelerated expansion of the universe**. Exhibits negative pressure, causing a repulsive force against gravitational attraction. Proposed as a **constant energy density filling space homogeneously**. Inferred from observations of distant supernovae, revealing unexpected cosmic acceleration. Imprints of dark energy evident in the cosmic microwave background**. Constitutes a significant fraction of the total energy density in the universe.** Does not interact with matter or electromagnetic forces, influencing cosmic expansion. Influences the fate of the universe, with potential scenarios including **ever-accelerating expansion or a "big rip."** Poses a fine-tuning challenge, with its **observed value much smaller than predicted.** Dark energy raises fundamental questions about the



	nature of the vacuum, spacetime structure, and the universe's ultimate destiny.
Black Holes	Black holes are cosmic objects characterized by their **immense gravitational pull**, so strong that nothing, not even light, can escape from them. Result from the **gravitational collapse of massive stars or mergers of smaller black holes. Singularity:** Core with infinite density where gravitational forces become infinitely strong.; **Event Horizon**: Boundary beyond which escape is impossible due to gravitational pull.; **No Escape**: Anything, including light, within the event horizon is trapped; **Accretion Disk:** Surrounding matter forms a rotating disk, emitting radiation before entering the black hole.; **Hawking Radiation:** Theoretical radiation causing black holes to lose mass over time. **Types:** Primordial black holes from the early universe, stellar and supermassive black holes found at the centers of galaxies.
Pulsars	Rapidly rotating neutron stars emitting beams of radiation. Detected through regular pulses of radio waves. Formed from the remnants of massive stars undergoing supernova explosions. Have extremely strong magnetic fields and high rotational speeds. Valuable tools for studying celestial phenomena, including gravitational waves.
Quasar	Extremely bright found at the centers of distant galaxies. Emit large amounts of energy across the electromagnetic spectrum. Powered by supermassive black holes accreting mass. Serve as beacons for studying the early universe due to their **high luminosity**.**Exhibit redshifts** indicating their immense distances from Earth.Provide insights into galaxy formation and the evolution of the universe.
Gamma-Ray Bursts (GRBs)	Gamma-Ray Bursts (GRBs) are brief, intense flashes of gamma-ray radiation, lasting mere seconds but surpassing the Sun's lifetime energy output. Categorized as long or short bursts, they originate from distinct events—long GRBs from massive star collapses, short GRBs from neutron star mergers. Detection relies on space-based observatories like the Swift satellite, swiftly locating and studying GRBs. These bursts offer crucial insights into high-energy astrophysics, black hole formation, and early universe conditions, often linked to the cosmos's most energetic events, such as supernovae and black hole mergers.
Neutrinos	Neutrinos, **nearly massless and electrically neutral subatomic particles**, come in three types: **electron, muon, and tau neutrinos**. Due to weak interactions, they can **pass through matter undetected.** Special detectors like Super-Kamiokande and IceCube capture neutrino interactions. Neutrinos are produced in nuclear reactions in the Sun, supernovae explosions, and cosmic ray interactions with the Earth's atmosphere. Neutrinos oscillate between Flavors as they travel through space, indicating they have mass, challenging earlier assumptions.
Cosmic Microwave Background Radiation	Cosmic Microwave Background (CMB) radiation, discovered in 1965, is **residual heat from the Big Bang**, representing the universe's initial hot and dense state. **With a nearly uniform temperature of 2.7 Kelvin,** it is observed in the microwave spectrum. Tiny temperature fluctuations in the CMBoffer insights into the **early universe's structure**. Polarization in the CMB provides information about cosmic conditions. Small anisotropies in CMB temperature reveal regions contributing to galaxy formation and cosmic structures.
Asteroids and Meteoroids	**Asteroids:** These are rocky objects that orbit the Sun, primarily found in the asteroid belt between Mars and Jupiter. They vary in size, shape, and composition, ranging from a few meters to hundreds of kilometers in diameter. **Meteoroids:** Smaller than asteroids, meteoroids are rocky or metallic fragments that travel through space. They can originate from asteroids or comets. When a meteoroid enters the Earth's atmosphere, it is called a meteor. **Compositions:** Asteroids are composed of metals and rocky materials, while meteoroids can be composed of a variety of materials, including rock, metal, or a mix of both. **Orbits:** Asteroids follow orbits around the Sun, with the majority residing in the asteroid belt. Meteoroids travel through space, and when they enter Earth's atmosphere, they become meteors. **Observation:** Telescopes and space missions, such as NASA's OSIRIS-REx and JAXA's Hayabusa2, have been used to study and collect samples from asteroids, providing insights into the early solar system.
Solar Wind	Solar wind, a continuous stream of **charged particles from the Sun's corona**, comprises **protons, electrons, and other ions**. With speeds from **300 to 800 km/s,** it shapes planetary magnetospheres and influences space weather. Interacting with the interstellar medium it defines the heliosphere. Solar wind intensity varies with the Sun's activity, impacting Earth's magnetosphere and causing geomagnetic storms. It has implications for space weather and Earth's technological systems.
Antimatter	Antimatter, comprising particles with charges opposite to regular matter, undergoes annihilation when it encounters matter, converting mass into energy per Einstein's equation $E=mc^2$, releasing immense energy. Created in high-energy environments like particle accelerators, antimatter is rare in the observable universe and less stable than regular matter. Despite challenges, antimatter **has practical applications, such as positron emission tomography (PET) in medical imaging**. Its scarcity today, compared to its presumed **equal existence with matter in the early universe,** remains a cosmological puzzle. Astrophysical phenomena, like certain gamma-ray bursts, suggest the **creation and annihilation of antimatter, providing insights into the universe's early conditions**.

Five-hundred-meter Aperture Spherical radio Telescope	FAST is the world's largest single-dish radio telescope located in a karst depression in Guizhou, China, with a receiving area equivalent to 30 football fields. Its objectives include detecting neutral hydrogen at the universe's edge to reconstruct images of the early universe, detecting pulsars for pulsar timing array and navigation, potentially detecting gravitational waves, leading the International Very-Long-Baseline Interferometry Network, and searching for interstellar communication signals. Pulsars, highly magnetized rotating neutron stars that emit beams of electromagnetic radiation, are studied using FAST, as they are formed from the remnants of massive stars that undergo supernova explosions. Supernova remnants, bright clouds of gas and dust formed when massive stars explode, play a vital role in enriching interstellar space with heavy elements and triggering the formation of new stars.
HAPS	High-altitude pseudo satellite vehicles (HAPS) are unmanned aerial vehicles (UAVs) that operate in the stratosphere for extended periods, serving purposes like Earth observation and telecommunications at a lower cost than traditional satellites. Powered by solar panels, HAPS offer rapid deployment and long loiter times over specific areas, making them useful for remote or inaccessible locations.
Ergosphere	The ergosphere is a region outside a black hole's event horizon where spacetime is dragged along with the black hole's rotation. Objects in this region are forced to rotate with the black hole and cannot remain stationary. This effect, known as frame-dragging, is a prediction of general relativity. The ergosphere plays a role in processes like the Penrose process, where energy can be extracted from a rotating black hole. Its size depends on the black hole's spin, with faster-spinning black holes having larger ergospheres.
Zodiacal Light	Zodiacal light is a faint, diffuse glow that appears in the night sky, most visible after sunset and before sunrise, along the ecliptic plane. It is caused by sunlight scattering off dust particles in the plane of the Solar System. This phenomenon is often mistaken for the glow of the Milky Way or light pollution but is distinct in its appearance and location. Zodiacal light is best seen from dark locations with little light pollution and is more prominent in the months around the spring and autumn equinoxes.
TESS	NASA's Transiting Exoplanet Survey Satellite (TESS) is on a mission to discover and analyze potentially habitable zone planets like TOI-715b. Launched on April 18, 2018, TESS succeeded NASA's Kepler space telescope and scans bright stars visible from Earth
HDM, WDM and CDM	Hot dark matter (HDM), warm dark matter (WDM), and cold dark matter (CDM) are theoretical categories of dark matter based on their speeds and behavior. HDM consists of fast-moving particles like neutrinos, which would not clump together strongly and could affect large-scale structures in the universe. WDM, with particles moving at intermediate speeds, could potentially address some small-scale structure formation issues seen in CDM models. CDM, made up of slow-moving particles like WIMPs or axions, clumps together under gravity to form structures like galaxies and galaxy clusters. Understanding the nature of dark matter and which category it falls into is crucial for explaining the large-scale structure and evolution of the universe.

Random Topics in News:

Maillard Effect-Chemical reaction between amino acids & reducing sugars in the presence of heat. It is the Browning Process observed in baking.

Newspaper Ink: Soybean Oil, Paraffin, Carbon Black, Cadmium Yellow, Titanium White.

Air Fryer-convection to fry food.

Boron Nitride Nanotubes:stronger than steel; high thermal & chemical stability.

Xenotransplantation: The process of transplanting organs or tissues from one species to another.

Xenobots: Bioengineered organisms created from living cells.Perform tasks like targeted drug delivery.

Phthalates: Synthetic chemicals used to improve the durability, and softness of plastics. Colorless, odorless liquids that do not evaporate easily. Found in perfumes, laundry detergents, air fresheners. Cause Endocrine Disruption, Reproductive & Developmental Effects.

MUST READ:
List of Banned and Restricted Pesticides in India: QR CODE:

TYPES OF EARTH'S ORBITS

Low Earth Orbit (LEO):

- **Altitude:** Up to 2,000 kilometers (km) above Earth's surface.
- **Characteristics:** Closest to Earth; used for Earth observation, communication, and scientific satellites. **Examples:** International Space Station (ISS), many Earth observation satellites.

Medium Earth Orbit (MEO):

- **Altitude:** 2,000 km to 35,786 km. **Characteristics:** Intermediate orbit used for navigation and communication satellites. **Examples:** Navigation satellites like GPS satellites.

Geostationary Orbit (GEO):

- **Altitude:** Approximately 35,786 km. **Characteristics:** Orbits directly above the equator, appears stationary relative to Earth's surface; used for communication and weather satellites.
- **Examples:** Communication satellites like Intelsat, weather satellites like GOES series.

Highly Elliptical Orbit (HEO):

- **Altitude:** Varies, with highly elongated orbits. **Characteristics:** Oval-shaped orbits with one end closer to Earth than the other; used for specific communication and scientific missions. **Examples:** Some communication satellites.

Sun-Synchronous Orbit (SSO):

- **Altitude:** Usually around 600 km to 800 km. **Characteristics:** Orbits that maintain a constant angle with respect to the Sun, providing consistent lighting conditions for Earth observation. **Examples:** Earth observation satellites like those in the Landsat series.

Polar Orbit:

- **Altitude:** Variable. **Characteristics:** Passes over Earth's polar regions; used for Earth observation and mapping. **Examples:** Satellites in polar orbits for global mapping and environmental monitoring.

Molniya Orbit:

- **Altitude:** Highly elliptical with perigee (closest point to Earth) around 500 km and apogee (farthest point) around 39,000 km. **Characteristics:** Designed to provide extended coverage over high latitudes; used for communication with high-latitude regions. **Examples:** Early Soviet communication satellites.

Molniya-Synchronous Orbit:

- **Altitude:** Similar to Molniya orbit. **Characteristics:** Modified Molniya orbit for communication purposes,
- providing coverage over specific regions.
- **Examples:** Communication satellites for high-latitude regions.

Initiatives to Tackle Space Debris:

Inter-Agency Space Debris Coordination Committee (IADC): Founded in 1993, IADC is an inter-governmental forum.

NORAD (North American Aerospace Defense Command): U.S. and Canada initiative sharing selective debris data with multiple countries to enhance space situational awareness.

ClearSpace-1 Mission (2025): A robotic "chaser" with four arms designed to retrieve and de-orbit the 2013 VESPA craft, for space debris reduction.

ELSA-d Mission: ELSA-d focuses on testing technologies to capture objects in low-Earth orbit, moving them to lower altitudes for safe atmospheric burn-up.

Space X Starship: A passenger-carrying spacecraft, is envisioned to collect and de-orbit space debris in addition to its space travel capabilities.

NEO-01 (China): A low Earth orbit robot, uses a net to capture space debris, burning it with an electric propulsion system, and observes celestial bodies.

Space Liability Convention of 1972: It defines responsibilities for space objects causing harm, stating that launching states are liable for damages, but no law addresses space junk re-entering Earth.

ISRO's Efforts - Project NETRA: It detects debris and hazards to Indian satellites.

ISRO's GSLV and Communication Satellites: It employs passivation of the Cryogenic Upper Stage, and ISRO's communication satellites are designed for safe re-orbiting at their end of life.

INSAT-2C: It illustrates ISRO's success in managing space debris by designing satellites for safe disposal at the end of their useful life.

ISRO's SATELLITE LAUNCH VEHICLES

Launch Vehicle	Details
SLV (Satellite Launch Vehicle-3)	- First experimental satellite launch vehicle. - All solid, four-stage vehicle. - Weight: 17 tonnes, Height: 22m. - Capable of placing 40 kg class payloads in Low Earth Orbit (LEO). - Successfully launched on July 18, 1980, placing Rohini satellite (RS-1) into orbit.
ASLV (Augmented Satellite Launch Vehicle)	- Small-lift launch vehicle with five-stage solid-fuel rocket. - Developed to place 150 kg satellites into 400 km circular Low Earth Orbit (LEO). - Payload capacity three times that of SLV-3 for LEO. - Operated until 1990.
PSLV (Polar Satellite Launch Vehicle)	- Third-generation launch vehicle. - Equipped with liquid stages. - Expendable medium-lift launch vehicle. - Developed to launch Indian Remote Sensing (IRS) satellites into sun-synchronous orbits. - Capable of launching small size satellites into Geostationary Transfer Orbit - Notable payloads include Chandrayaan-1, Mars Orbiter Mission, and Astrosat.

GSLV (Geosynchronous Satellite Launch Vehicle)	- Space launch vehicle for Geosynchronous Transfer Orbits. - Three-stage launcher with strap-on motors. - Capable of carrying heavier payloads than PSLV. - First Stage (GS1): Solid rocket motor with four liquid engine strap-on motors (4700 kN). - Second Stage (GS2): Liquid rocket engine (Vikas engine) generating maximum thrust of 800 kN. - Third Stage (CUS): Cryogenic engine using liquefied oxygen and hydrogen as fuel. - Capability: Payload to GTO - 4,000 kg, Payload to LEO - 8,000 kg.
SSLV (Small Satellite Launch Vehicle)	- Small-lift launch vehicle - Payload capacity: 600 kg to Low Earth Orbit or 300 kg to Sun-synchronous orbit. - Aimed at launching small satellites commercially at a reduced price with a higher launch rate. - Intended to carry an indigenous earth observation satellite EOS-03 into space.
Reusable Rockets	- In reusable rockets, only a small part is destroyed during the mission. - Majority re-enters Earth's atmosphere, lands like an airplane, and can be reused. - Aims to reduce costs, energy consumption, and space debris. - ISRO's Reusable Launch Vehicle Technology Demonstrator (RLV-TD) had a successful test flight in 2016.

COMPUTER AND INFORMATION TECHNOLOGY

Concept	Details
Internet of Things (IoT)	IoT is a network connecting physical devices with sensors and connectivity, enabling **automated data exchange.** Sensors collect data, which is transmitted for cloud or edge processing, triggering actions. It finds applications in smart homes, healthcare, industries, cities, agriculture, and wearables.
Cryptography	Cryptography is the practice and study of secure communication techniques that protect information from unauthorized access or alteration. Cryptography safeguards communication through encryption (converting data to secure code) and includes **symmetric key, asymmetric key (public-key), and hash function methods**. Common algorithms include AES, RSA, and SHA-256.
Explainable AI (XAI)	Explainable AI (XAI) makes artificial intelligence understandable by providing transparent explanations for decisions. XAI finds applications in healthcare, finance, and autonomous vehicles, contributing to safer and more accountable AI.
Edge AI	Edge AI refers to the deployment of AI algorithms directly on edge devices (such as IoT devices, sensors, or local servers) rather than relying on centralized cloud servers. This enables real-time data processing and decision-making at the source. Key Characteristics: **Decentralized Processing, Low Latency, Bandwidth Efficiency, Privacy and Security.**
Digital Twin Technology	Digital Twin Technology involves creating a virtual representation or duplicate of a physical object, system, or process. Applications span manufacturing, healthcare, smart cities, aerospace, and energy management. Benefits include **improved efficiency, cost savings, and remote monitoring.**
Neuromorphic computing	Neuromorphic computing mimics the brain's structure and function for efficient, low-power AI. Key features include neural network replication, low-power design, and adaptive learning. Applications range from **cognitive computing to robotics and brain-computer interfaces**. Benefits include enhanced efficiency and real-time processing.
Big Data Analytics	Big Data Analytics involves uncovering insights from large datasets. Key components include data collection, storage, processing, analysis, and visualization. Applications range from business intelligence to predictive analytics and healthcare analysis. Technologies like **Hadoop, Spark, NoSQL databases**, and machine learning algorithms support these processes.
Swarm Intelligence Algorithms	Swarm Intelligence Algorithms, drawing inspiration from nature, **employ decentralized and self-organized methods for problem-solving.** Ant Colony Optimization and Particle Swarm Optimization emulate animal behaviors for optimizing tasks in various fields like **routing, robotics, finance**, and **traffic management,** demonstrating adaptability and robust performance.
VR and AR	Virtual Reality (VR) **immerses users in computer-generated environments**, providing a fully immersive experience through headsets. Augmented Reality (AR), on the other hand, **overlays digital information onto the real world**, enhancing user perception without replacing it. While VR is prominent in gaming and simulations, AR finds applications in everyday tasks, training, and navigation.
Machine Learning (ML)	Machine Learning (ML) is a subset of Artificial Intelligence focused on creating algorithms that enable computers to learn patterns from data and make predictions without explicit programming. It

	encompasses supervised and unsupervised learning, reinforcement learning, and deep learning. ML applications include image recognition, predictive analytics, healthcare diagnostics, and more.
AutoML	Automated Machine Learning (AutoML) automates the entire machine learning process, from model selection to optimization, enhancing efficiency and accessibility. It finds applications in predictive analytics, classification, and image processing.
Quantum Mechanics	Quantum Mechanics is a foundational branch of physics exploring the behavior of matter and energy at the smallest scales. It introduces principles such as **wave-particle duality, superposition, and quantum entanglement**. Quantum states, described by wavefunctions and quantum numbers, underpin applications like quantum computing, cryptography, and sensors.
Quantum Principles	**Wave-Particle Duality:** Particles exhibit both wave and particle properties. **Superposition:** Particles can exist in multiple states simultaneously. **Quantum Entanglement:** Particles can become correlated, with the state of one affecting the other instantaneously. **Quantum Uncertainty:** The Heisenberg Uncertainty Principle states that certain pairs of properties (like position and momentum) cannot be precisely known simultaneously.
Quantum Concepts	**Qubits:** Quantum bits representing 0, 1, or both states simultaneously. **Superposition:** Qubits' ability to exist in multiple states at once. **Entanglement:** Quantum entanglement links qubits, influencing each other's states. **Quantum Gates:** Operations manipulating qubit states during computation. **Quantum Supremacy:** Demonstrating a quantum computer's ability to outperform classical computers in specific tasks.
Bits Vs Quantum Bits (Qubits)	Traditional bits (classical computing), exist in 0 or 1 states. In contrast, quantum bits (qubits) in quantum computing leverage quantum mechanics. Qubits can exist in multiple states simultaneously due to superposition, representing 0, 1, or both. They can also be entangled, with one qubit's state influencing another instantly, irrespective of distance. This unique capability enables quantum computers to process information in parallel, solving complex problems at unprecedented speeds compared to classical computers.
Quantum Gates	Quantum gates are fundamental operations in quantum computing that manipulate qubits, the basic units of quantum information. Analogous to classical logic gates, quantum gates perform operations such as state preparation, logic operations, and measurement. Common types include the Pauli-X, Y, and Z gates for state manipulation, the Hadamard gate for superposition, and the CNOT gate for entanglement. Quantum gates are crucial in quantum algorithms and circuit design, enabling quantum computers to perform complex computations.
Quantum Mechanics Applications	In quantum computing, superposition allows parallel computations, surpassing classical speeds. Quantum cryptography uses entanglement for secure communication. Quantum sensors apply quantum states for precise measurements.
Blockchain	Blockchain is a decentralized digital ledger system that securely records transactions across a network. Comprising blocks of information linked in a tamper-resistant chain, it ensures transparency, decentralization, and immutability. Originally powering cryptocurrencies like Bitcoin, blockchain has evolved into a versatile technology. It enables smart contracts, transparent supply chain management, secure identity verification, and more.
Cloud computing	Cloud computing revolutionizes computing by providing on-demand services over the internet, eliminating the need for local infrastructure. It encompasses Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Users can access resources like storage and applications from public, private, or hybrid clouds. With characteristics like on-demand self-service, broad network access, and rapid elasticity, cloud computing offers cost efficiency, scalability, and flexibility.
IaaS (Infrastructure as a Service), **PaaS (Platform as a Service)** **&** **SaaS (Software as a Service)**	**IaaS (Infrastructure as a Service):** Provides virtualized computing resources, Users have more control over infrastructure, Users manage applications, data, runtime, middleware, and OS, Easily scales up or down based on demand.**Examples:** AWS EC2, Google Compute Engine. Ideal for users needing control over infrastructure and flexible configurations. **PaaS (Platform as a Service):** Offers a platform for application development, Users have less control, focusing on application development, Platform provider manages runtime, middleware, and OS, and Automatic scaling of the platform. **Examples:** Heroku, Google App Engine. Suited for developers concentrating on application development. **SaaS (Software as a Service):** Delivers software applications over the internet, Little to no control over infrastructure, Provider handles all aspects, including maintenance, Scales effortlessly based on user demand.**Examples:** Salesforce,

	Microsoft 365, Dropbox. Best for end-users seeking ready-to-use applications.
Wireless Backhaul	Wireless Backhaul refers to the communication links that connect the core network or central hub to smaller network nodes, such as base stations, cell sites, or access points. It plays a crucial role in transporting data traffic from the edge of the network to the core, enabling the seamless functioning of wireless communication systems.
Zigbee	Low-power, low-data-rate wireless communication standard designed for short-range communication in applications like home automation and sensor networks.
Sigfox	Low-power, wide-area network (LPWAN) technology for long-range communication in IoT devices, providing connectivity with low energy consumption.
Li-Fi (Light Fidelity):	Communication technology that uses visible light for high-speed data transmission, offering an alternative to traditional wireless communication.
CBRS	Citizens Broadband Radio Service is a wireless communication spectrum in the 3.5 GHz band, providing shared access for various applications, such as private LTE networks and industrial IoT.
Open Radio Access Network	Unlike traditional single-vendor proprietary architectures, ORAN features an open, multi-vendor approach for deploying mobile networks, overcoming the limitations of vendor lock-in and offering increased flexibility for network operators. By leveraging software-defined networking (SDN), ORAN enables effective collaboration among hardware from different manufacturers. The key principle behind Open RAN is to open up protocols and interfaces among various RAN components, promoting interoperability and innovation.

RFID (Radio-Frequency Identification): RFID is a technology that uses radio waves for identifying and tracking objects or people. It consists of a tag containing a unique identifier and a reader that communicates with the tag wirelessly. RFID finds applications in inventory management, access control, and supply chain logistics, providing a convenient and efficient way to monitor and trace items in various industries.

Visible Light Communication (VLC): VLC is a wireless communication method using visible light to transmit data through modulated light signals. By leveraging light-emitting diodes (LEDs), VLC offers high-speed data transmission, energy efficiency, and immunity to electromagnetic interference. Applications range from indoor positioning to smart lighting systems, showcasing the versatility of this technology in various domains.

Web 1.0:
Nature: Static and read-only.
Interaction: Passive consumption of content.
Content Creation: Limited to webmasters and professionals.
Collaboration: Limited user engagement and collaboration.
Examples: Early websites with basic HTML.

Web 2.0:
Nature: Dynamic and Interactive.
Interaction: Active user participation, and social interaction.
Content Creation: User-generated content, blogging, social media.
Collaboration: Extensive collaboration, sharing, and commenting.
Examples: Social media platforms, blogs, wikis.

Web 3.0:
Nature: Intelligent, Semantic, Context-Aware.
Interaction: Predictive, Proactive, Personalized.
Content Creation: Intelligent agents, automated content generation.
Collaboration: Advanced collaboration and integration of technologies.
Examples: Semantic web, AI-driven platforms, advanced machine learning applications.

WIRELESS NETWORK

Comparison	2G	3G	4G	5G
Introduced in year	1993	2001	2009	2018
Technology	GSM	WCDMA	LTE, WiMAX	MIMO, mm Waves
Access system	TDMA, CDMA	CDMA	CDMA	OFDM, BDMA
Switching type	Circuit switching for voice and packet switching for data	Packet switching except for air interference	Packet switching	Packet switching
Internet service	Narrowband	Broadband	Ultra broadband	Wireless World Wide Web
Bandwidth	25 MHz	25 MHz	100 MHz	30 GHz to 300 GHz
Advantage	Multimedia features (SMS, MMS), internet access and SIM introduced	High security, international roaming	Speed, high speed handoffs, global mobility	Extremely high speeds, low latency
Applications	Voice calls, short messages	Video conferencing, mobile TV, GPS	High speed applications, mobile TV, wearable devices	High resolution video streaming, remote control of vehicles, robots, and medical procedures

MOBILE COMMUNICATION TECHNOLOGIES OVERVIEW: GSM, CDMA, UMTS, CDMA2000, LTE AND WIMAX

Technology	Overview	Technology	Overview
GSM (Global System for Mobile Communications):	Developed in the 1980s, widely used globally. Uses Time Division Multiple Access (TDMA). Supports voice calls, text messaging (SMS), and basic data services. Improved spectrum efficiency and international roaming capabilities.	**CDMA2000:**	Evolved from CDMA for 3G services. Multiple iterations (1x, EV-DO) for voice and data services. Improved data rates, support for multimedia services. Provided a pathway to higher-speed mobile data services.
CDMA (Code Division Multiple Access):	Introduced in the late 1980s. Utilizes Code Division Multiple Access. Efficient use of bandwidth, higher capacity, better call quality. Evolved into CDMA2000 for 3G services.	**LTE (Long-Term Evolution):**	Early 2010s, 4G standard. High-Speed Packet Access (HSPA) for mobile broadband. Higher data rates, low latency, all-IP network. Improved spectral efficiency, enhanced mobile broadband.
UMTS (Universal Mobile Telecommunications System):	Early 2000s, part of the 3G evolution. Uses WCDMA (Wideband Code Division Multiple Access). Enhanced data speeds, mobile internet access, video calling. Part of the transition to 3G technologies.	**WiMAX (Worldwide Interoperability for Microwave Access):**	Mid-2000s, wireless broadband technology. Uses Orthogonal Frequency Division Multiple Access (OFDMA). Broad coverage, high data rates for wireless internet access. for wireless broadband, especially in fixed wireless access.

Key Differentiators:

- **Access Method:** GSM and UMTS use TDMA, while CDMA and CDMA2000 use CDMA access methods. LTE and WiMAX use OFDMA.
- **Evolution:** Technologies like GSM evolved into UMTS and later LTE for 3G and 4G services. CDMA evolved into CDMA2000 for 3G. LTE and WiMAX are 4G technologies. **Data Speeds:** Each generation introduces improvements in data speeds, with LTE and WiMAX offering high-speed mobile broadband.

Current Landscape:

- **GSM and CDMA:** Older technologies, with GSM being more prevalent globally. **UMTS and CDMA2000:** Fading out with the adoption of 4G and 5G technologies.**LTE:** Dominant 4G technology, widely used for mobile broadband. **WiMAX:** Limited adoption, overshadowed by LTE and 5G advancements.
- **5G Transition:**5G, the fifth generation, builds on LTE advancements, offering ultra-fast speeds, low latency, and massive device connectivity, marking the next phase of mobile communication evolution.
  - ✓ **TDMA (Time Division Multiple Access):** A digital communication method that divides a radio frequency into time slots, enabling multiple users to share the same frequency efficiently. Each user has designated time intervals for data transmission, optimizing bandwidth usage in mobile and satellite communication systems.
  - ✓ **CDMA (Code Division Multiple Access):** A digital communication technology that allows multiple users to share the same frequency simultaneously by assigning unique codes to each user. CDMA enhances spectral efficiency, providing robust and secure wireless communication commonly used in mobile networks.
  - ✓ **OFDMA (Orthogonal Frequency Division Multiple Access):** A communication technology that efficiently divides a frequency spectrum into orthogonal subcarriers, enabling multiple users to transmit data simultaneously. Commonly used in 4G and 5G wireless networks, OFDMA enhances spectral efficiency, improves data rates, and supports multiple connections with reduced interference.

TECHNOLOGY BEHIND 5G

Basics of Concepts

Millimeter Waves (mmWave):

- Millimeter waves, operating within the high-frequency **range of 30 to 300 gigahertz**, are pivotal in 5G networks for high-speed data transmission. With short wavelengths, they facilitate **high-capacity, short-range wireless communication**, ideal for

applications like point-to-point links and localized networks. 5G utilizes **higher frequency bands, especially millimeter waves (24 GHz and above).**Provides **high data transfer rates and increased network capacity**.

Massive MIMO (Multiple Input, Multiple Output)

- Massive MIMO (Multiple Input, Multiple Output) is an advanced wireless communication technology that **utilizes a large number of antennas at both ends of the communication link**. This approach **allows for simultaneous communication with multiple users, enhancing network capacity, spectral efficiency, and coverage.**Improves data transfer rates, enhances network efficiency, and **allows multiple connections simultaneously.**

Beamforming

- Beamforming is a signal processing technique in wireless communication that focuses radio frequency signals toward specific directions, improving transmission efficiency. By adjusting signal phases and amplitudes, it **enhances signal strength, reduces interference, and allows for the simultaneous transmission of multiple data streams**. Beamforming finds applications in cellular networks, Wi-Fi routers, and radar systems.

Small Cell Technology

- Small Cell Technology involves deploying compact and low-powered cellular base stations to enhance wireless network coverage and capacity, **particularly in densely populated urban areas and indoor spaces**. It includes various types such as femtocells, picocells, and microcells, each serving specific coverage needs.

Network Slicing

- Network Slicing in 5G involves partitioning a single physical network into customized virtual networks, known as slices, each serving specific use cases. These slices operate independently with tailored characteristics such as latency, bandwidth, and security to meet the diverse requirements of applications **like high-speed internet (eMBB), ultra-reliable low latency communications (URLLC), and massive machine type communications (mMTC).** Implemented through technologies like Software-Defined Networking (SDN) and Network Function Virtualization (NFV), network slicing optimizes resource usage, enhances flexibility, and supports the scalability of 5G networks.

Edge Computing:

- Shifts computing closer to the source of data generation.
- **Reduces latency, improves response times**, and enhances the efficiency of data-intensive applications.
- Supports real-time applications, augmented reality, and IoT devices.

Full Duplex Communication:

- Allows devices to send and receive data simultaneously on the same frequency.
- Increases spectrum efficiency and overall data transfer rates.
- Enhances the performance of communication between devices.

Concept	Details
NFC	Near Field Communication is a short-range wireless technology facilitating data exchange within a few centimeters. Operating at 13.56 MHz, NFC supports active and passive communication modes and is renowned for secure transactions due to its limited range. Common applications include contactless payments, data transfer between devices, access control systems, and smart device connectivity.
QR Code	**A Quick Response (QR) code** is a two-dimensional barcode that stores information horizontally and vertically. Created by encoding data in black squares on a white square grid, QR codes can contain various types of information, such as URLs, text, or other data.
Wireless Fidelity	Wi-Fi, enables wireless data exchange between devices using radio waves in the **2.4 GHz and 5 GHz bands**. Key components include access points, wireless routers, and adapters, following evolving **IEEE standards like 802.11ax (Wi-Fi 6).** Security protocols such as WPA2/WPA3 protect data, while features like beamforming and MU-MIMO enhance efficiency. The **6 GHz band expansion (Wi-Fi 6E)** offers more channels, reducing interference.
Bluetooth Technology	Bluetooth technology facilitates short-range wireless communication between devices, operating on the 2.4 GHz frequency band. Employing low-power radio waves, Bluetooth enables seamless data exchange and connectivity for various devices, such as smartphones, headphones, and smartwatches.
Infrared communication	Infrared communication utilizes infrared light to transmit data wirelessly between devices over short distances. Infrared communication is line-of-sight, requiring a direct, unobstructed path between the transmitting and receiving devices.
Fiber Optic Communication	It involves transmitting **data using pulses of light through thin, flexible glass or plastic fibres**. These fibres, which carry signals over long distances with **minimal signal loss, form the backbone of high-speed internet**. Fiber optics offer advantages such as **high bandwidth, immunity to electromagnetic interference, and enhanced security** due to the difficulty of tapping into the optical signals.
Optical Fibre Components	The core components include the core (central region for light transmission), cladding (outer layer reflecting light inward), and coating (protective layer). The transmitter converts electrical signals into optical signals, and the optical fibre carries these signals. Optical amplifiers, such as **erbium-doped fibre amplifiers**, boost the signal along the fibre. At the receiving end, **photodetectors convert the optical signals back into**

	electrical ones. **Wavelength-division multiplexing (WDM) components** enable the transmission of multiple signals simultaneously, increasing data capacity.
Contactless Payments	Contactless payments utilize near-field communication (NFC) technology to enable secure and efficient transactions without physical contact between the payment device and the terminal.
Smart Contracts	Smart Contracts are self-executing contracts with the terms of the agreement directly written into code. Utilizing blockchain technology, smart contracts automatically enforce and execute contractual clauses when predefined conditions are met.
VoIP	Voice over Internet Protocol (VoIP) is a technology that enables the **transmission of voice and multimedia content over the internet, converting analog audio signals into digital data packets. VoIP allows users to make voice and video calls, as well as send messages, using internet-connected devices.** This communication method often offers **cost savings compared to traditional telephone services**, as it utilizes existing internet infrastructure. VoIP systems can include features like **call forwarding, video conferencing, and voicemail.**
Quantum Key Distribution	QKD is a cryptographic method using quantum mechanics to establish secure communication keys between two parties, typically Alice and Bob. It leverages the principles that measuring **quantum particles, like photons, disturbs the system, allowing detection of eavesdropping attempts.** QKD offers a secure key exchange, addressing concerns about potential quantum computing-based attacks on conventional encryption methods.
Smart Grid Communication	Smart Grid Communication involves advanced two-way communication technologies in electrical grids, connecting utilities with components like smart meters and sensors. This **bidirectional communication** enhances real-time monitoring, control, and optimization, supporting the integration of renewables and improving overall grid efficiency and reliability.
AMI	Advanced Metering Infrastructure is a modernized utility metering system utilizing smart meters for two-way communication between providers and consumers. AMI enables real-time data collection, accurate billing, and improved grid management, contributing to enhanced energy efficiency and the development of smart grids.
UAV Communication Systems	UAV communication systems enable **real-time data exchange between unmanned aerial vehicles (UAVs) and ground control stations**. These systems utilize radio frequency links for command, control, telemetry, and video streaming, with some UAVs employing satellite communication for beyond-line-of-sight operations.
VPN	A Virtual Private Network (VPN) establishes secure and encrypted connections over the internet, ensuring private communication. Two prominent VPN types are **SSL VPN (Secure Socket Layer VPN),** operating through web browsers for user-friendly remote access, and IPsec VPN (Internet Protocol Security VPN), commonly used for secure site-to-site connections. VPN Tunneling encapsulates data for secure transmission, employing protocols like PPTP, L2TP, and OpenVPN. VPN security involves encryption (e.g., AES), authentication, integrity checks, and security protocols like IKE and TLS. Additionally, VPNs work with firewalls to enhance overall network security, providing a critical solution for safeguarding privacy and data integrity in various communication scenarios.
Dark Web and TOR	The Dark Web refers to a part of the internet that is intentionally hidden and inaccessible through standard web browsers. It operates on overlay networks that require specific software, configurations, or authorization to access. Unlike the surface web, which is indexed and searchable by conventional search engines, the dark web remains intentionally obscured, often associated with anonymity and privacy. The Tor (The Onion Router) network is a common **tool for accessing the dark web, allowing users to browse anonymously**.
Public Key Infrastructure (PKI)	Public Key Infrastructure (PKI) is a framework that **manages digital keys and certificates for secure online communication.** It involves the use of public and private key pairs, with digital certificates issued by Certificate Authorities (CAs) to verify the identity of users. PKI supports **secure processes like digital signatures and encryption**, playing a crucial role in establishing trust, protecting information, and ensuring the security of digital communications.
Fog Computing	Fog computing is a decentralized computing paradigm that extends cloud computing capabilities to the edge of the network. In fog computing, processing tasks, data storage, and applications are distributed across devices closer to the data source, reducing latency and enhancing efficiency.
Mesh Networking	Mesh Networking is a decentralized communication model where devices collaborate to relay data, providing reliability, scalability, and adaptability. Each node acts as both a sender and a relay, creating multiple paths for data transmission. This architecture, common in IoT and wireless sensor networks, offers resilience to failures, self-healing capabilities, and adaptability, making it well-suited for dynamic environments and urban wireless communication.

White Spaces Technology	White Spaces Technology utilizes an unoccupied Radio Frequency Spectrum, known as white spaces, for wireless communication between TV channels. Employing Dynamic Spectrum Access, it **avoids interference with licensed services,** offering potential solutions for broadband internet access and IoT connectivity, particularly in underserved areas.
Dynamic wireless charging technology	Dynamic wireless charging technologyis a method of charging EVs while they are in motion. This technology enables EVs to charge while driving over specially equipped roads or surfaces, eliminating the need for frequent stops to recharge. The system works by transferring energy wirelessly from a charging pad embedded in the road to a receiver pad on the EV. This continuous charging capability has the potential to significantly extend the range of EVs and reduce the need for large, heavy batteries.

BIOLOGY, GENETICS AND BIOTECHNOLOGY

Microorganism	Cell Type	Cell Wall	Cell Membrane	Nucleus	Additional Features
Bacteria	Prokaryotic	Peptidoglycan	Phospholipid bilayer	Lack a true nucleus	Flagella, pili, capsule
Archaea	Prokaryotic	Pseudopeptidoglycan, S-layers. Absence of peptidoglycan	Ether linked	Lack a true nucleus	Unique membrane lipids
Protists	Eukaryotic	Cellulose in plant-like protists, silica in diatoms, and chitin in certain fungi-like protists.	Phospholipid bilayer	A true nucleus enclosed in a nuclear envelope.	Cilia, flagella, pseudopodia
Fungi	Eukaryotic	Chitin, a complex polysaccharide.	Phospholipid bilayer	A true nucleus enclosed in a nuclear envelope.	Hyphae, mycelium, spores
Algae	Eukaryotic	Cellulose, sometimes supplemented with additional polysaccharides like agar or carrageenan.	Phospholipid bilayer	A true nucleus enclosed in a nuclear envelope.	Chloroplasts, pigments, flagella
Viruses	Not classified	Lack cell walls; instead, they have a protein coat (capsid) surrounding their genetic material, which can be DNA or RNA.	Protein Coat	Do not have a true nucleus.	Genetic material (DNA or RNA)
Protozoa	Eukaryotic	Variable cell wall compositions, including cellulose, pellicle, or a proteinaceous layer, depending on the species.	Phospholipid bilayer	A true nucleus enclosed in a nuclear envelope.	Pseudopodia, cilia, flagella

GENE EDITING TECHNIQUES

CRISPR-Cas9	**Uses guide RNA to target specific DNA sequences, with the Cas9 enzyme introducing cuts.**
TALENs (Transcription Activator-Like Effector Nucleases)	Customizable proteins engineered to recognize specific DNA sequences, cutting at the target site.
ZFNs (Zinc Finger Nucleases)	Fusion proteins of zinc finger proteins and the FokI endonuclease for DNA cleavage.
Prime Editing	RNA-guided method for precise insertion, deletion, or substitution of DNA sequences.
Homologous Recombination	Introduces desired DNA sequences into a host cell for targeted gene insertion or replacement.
Microhomology-Mediated End Joining (MMEJ)	Relies on microhomology regions for repairing double-strand breaks, causing deletions or insertions.
Base Editing	Allows direct conversion of one DNA base pair into another without double-strand breaks.
RNA Editing	Modifies nucleotide sequences of RNA molecules, potentially for treating genetic disorders

PEG-mediated Gene Transfer	Uses polyethylene glycol (PEG) to introduce foreign DNA into cells by facilitating membrane fusion. -
Electroporation	Applies electric pulses to cells, creating temporary pores for foreign DNA uptake.
Crispr-associated Transposases (CAST):	Uses CRISPR-associated transposases for targeted integration of DNA into the genome.
Golden Gate Assembly	Modular DNA assembly method using Type IIS restriction enzymes for seamless assembly of DNA fragments.

GENETIC DISORDERS

Disorder	Features
Down Syndrome (Trisomy 21):	Caused by an extra copy of chromosome 21, leading to intellectual disabilities, distinctive facial features, and various health issues.
Cystic Fibrosis:	Results from mutations in the CFTR gene, leading to the production of thick and sticky mucus, causing respiratory and digestive problems.
Sickle Cell Anemia:	A genetic disorder of hemoglobin, causing red blood cells to become misshapen and leading to pain, anemia, and organ damage..
Huntington's Disease:	Caused by a mutation in the HTT gene, leading to progressive degeneration of nerve cells in the brain, resulting in motor dysfunction and cognitive decline.
Duchenne Muscular Dystrophy:	Affects muscle function due to mutations in the DMD gene, leading to progressive muscle weakness and loss of motor function.
Hemophilia:	Characterized by impaired blood clotting due to mutations in genes responsible for blood clotting factors. There are different types (A, B, and C) based on the specific factor affected.
Fragile X Syndrome:	Results from a mutation in the FMR1 gene, leading to intellectual disabilities, behavioral and learning challenges, and physical features.
Phenylketonuria (PKU):	Caused by a deficiency of the enzyme phenylalanine hydroxylase, leading to the accumulation of phenylalanine and intellectual disabilities if not treated early.
Turner Syndrome:	Affects males with an extra X chromosome (XXY), leading to physical and developmental differences, including infertility.
Klinefelter Syndrome:	Applies electric pulses to cells, creating temporary pores for foreign DNA uptake.
Crispr-associated Transposases (CAST):	Uses CRISPR-associated transposases for targeted integration of DNA into the genome.
Golden Gate Assembly	Modular DNA assembly method using Type IIS restriction enzymes for seamless assembly of DNA fragments.
Williams Syndrome:	Caused by a deletion in chromosome 7, resulting in intellectual disabilities, unique facial features, and a friendly personality.
Neurofibromatosis Type 1 (NF1):	Characterized by the growth of tumors on nerve tissue, causing skin changes, bone deformities, and potential neurological complications.
Marfan Syndrome:	A connective tissue disorder caused by mutations in the FBN1 gene, leading to tall stature, long limbs, and cardiovascular issues.
Albinism:	A group of genetic disorders characterized by the absence or reduction of melanin production, resulting in a lack of pigmentation in the skin, hair, and eyes.
Tay-Sachs Disease:	A neurodegenerative disorder caused by a deficiency of the enzyme hexosaminidase A, leading to the accumulation of lipids in the brain and neurological deterioration.
Prader-Willi Syndrome:	Caused by the loss of specific genes on chromosome 15, leading to intellectual disabilities, hyperphagia (overeating), and obesity.
Angelman Syndrome:	Results from the loss of function of specific genes on chromosome 15, leading to developmental delays, seizures, and a happy, excitable demeanor.
Muscular Dystrophy:	A group of genetic disorders affecting muscle function, including Duchenne Muscular Dystrophy, Becker Muscular Dystrophy, and others.
Sotos Syndrome:	Characterized by excessive growth in early childhood, distinctive facial features, and developmental delays.
Rett Syndrome:	A neurodevelopmental disorder primarily affecting females, leading to loss of purposeful hand skills, motor abnormalities, and cognitive impairment.
DRESS syndrome	Drug Reaction with Eosinophilia and Systemic Symptoms, is a severe and rare reaction to certain medications. It is characterized by a widespread rash, fever, swollen lymph nodes, and inflammation of internal organs such as the liver, kidneys, lungs, or heart. DRESS syndrome is typically caused by an adverse reaction to medications such as anticonvulsants, antibiotics, or

	sulfa drugs.
Lyfgenia	Lyfgenia is a revolutionary cell-based gene therapy for the treatment of sickle cell disease. Approved for individuals aged 12 years and older, the therapy involves extracting stem cells from the patient's bone marrow, genetically modifying them to produce HbAT87Q, a form of haemoglobin that mimics the function of normal adult haemoglobin. This modified stem cell infusion is a one-time procedure, offering hope for a more effective and lasting treatment for sickle cell disease.
Casgevy	Casgevy is a groundbreaking CRISPR Cas9-based gene-editing therapy developed for the treatment of Sickle cell disease and Thalassaemia. It is a one-time treatment that involves removing stem cells from the patient's bone marrow, editing the faulty gene using CRISPR technology in a laboratory, and then infusing the edited cells back into the patient. This therapy targets the BCL11A gene, which is crucial for switching from foetal to adult haemoglobin, thereby increasing the production of foetal haemoglobin and alleviating the symptoms of the two conditions.
Pompe Disease	Pompe disease, also known as glycogen storage disease type II, is a rare genetic disorder that affects the muscles and their ability to function. It is caused by mutations in the GAA gene, which leads to a deficiency of the enzyme acid alpha-glucosidase (GAA). This enzyme is responsible for breaking down glycogen, a stored form of sugar, into glucose, which the body uses for energy. In Pompe disease, glycogen builds up in the muscles and other tissues, leading to muscle weakness and damage.Treatment for Pompe disease typically involves enzyme replacement therapy (ERT) to replace the missing enzyme and manage symptoms.

CONCEPTS IN NEWS

Concept	Feature
DNA Barcoding	Usage of short, DNA sequences to identify and classify species. Applications: Biodiversity studies, species discovery, food safety, forensic analysis, and monitoring of endangered species.
Epigenetics	**Heritable changes in gene function <u>without alterations</u>** to the underlying DNA sequence. **Epigenetic Modifications:** *DNA Methylation:* Addition of a methyl group to the DNA molecule. *Histone Modifications:* Chemical changes to histone proteins, which affect chromatin structure. **<u>Applications:</u>** Personalized Medicine, Cancer Prognosis, Improving Crop Yield, Age of tissues, drug development etc. (**<u>Note:</u>** *DNA Methylation and Histone Modifications are* common in cancer cells.)
Polygenic Inheritance:	Inheritance pattern where a trait is controlled by multiple genes, each with a small effect.
Genetic Drift:	Changes in the frequency of gene variants within a population due to random events rather than natural selection.
Genomic Imprinting:	Parent-of-origin-specific gene expression, where the activity of a gene depends on whether it is inherited from the mother or the father.
Genetic Markers:	Specific genes or DNA sequences used to identify and map other genes of interest.
Optogenetics:	Use of light to control and manipulate genetically modified cells, particularly neurons, for studying and treating neurological disorders.
Directed Evolution:	A technique that mimics natural selection to evolve proteins or organisms with desired traits.
Phage Display Technology:	Use of bacteriophages to display foreign proteins on their surfaces, often employed in the discovery of new drugs or antibodies.
Gene Drives	Genetic systems that bias the inheritance of particular genes to rapidly spread traits through populations.
Organoids:	Three-dimensional miniature organs grown in vitro from stem cells, providing realistic models for drug testing and disease study.

Genetic Testing Technologies

Polymerase Chain Reaction (PCR):
Amplifies a specific segment of DNA, making it easier to analyze or detect mutations.
Applications: DNA sequencing, genotyping, and identification of genetic disorders.
Sanger Sequencing:
Traditional DNA sequencing method involving chain termination during DNA replication.
Applications: Determining the sequence of a specific DNA fragment.

Next-Generation Sequencing (NGS):
High-throughput sequencing technologies that parallelize the sequencing process.
Applications: Whole-genome sequencing, exome sequencing, and targeted sequencing for various genetic analyses.
Fluorescence In Situ Hybridization (FISH):
Uses fluorescent probes to bind to specific DNA sequences in cells, enabling visualization under a microscope.
Applications: Chromosome analysis, identifying chromosomal abnormalities.
Quantitative Polymerase Chain Reaction (qPCR):
Measures the amount of DNA or RNA in a sample in real-time during the amplification process.
Exome Sequencing:
Focuses on sequencing the protein-coding regions (exons) of the genome.
Molecular Karyotyping:
Detects chromosomal abnormalities by analyzing variations in DNA copy number across the genome.

ALL ABOUT STEM CELLS

- Stem cells are undifferentiated cells with the unique ability to differentiate into specialized cell types and self-renew.
- They play a critical role in development, tissue repair, and the maintenance of the body's homeostasis.

Types of Stem Cells:

Embryonic Stem Cells (ESCs):

- Derived from embryos during the blastocyst stage.
- Pluripotent, with the potential to differentiate into cells of all three germ layers.

Adult or Somatic Stem Cells (ASCs):

- Present in various tissues throughout the body, including bone marrow, skin, and brain.
- Multipotent or unipotent, with a more limited differentiation potential compared to embryonic stem
- cells.

Induced Pluripotent Stem Cells (iPSCs):

- Generated by reprogramming adult cells, such as skin cells, to exhibit pluripotent characteristics.
- Similar to embryonic stem cells in terms of differentiation potential.

Characteristics:

- Self-Renewal: Ability to divide and maintain an undifferentiated state.
- Pluripotency: Capability to differentiate into various cell types.
- Differentiation: Process of becoming a specialized cell.

Applications:

- Regenerative Medicine: Repair or replace damaged tissues and organs.
- Disease Modeling: Study mechanisms of genetic disorders.
- Drug Discovery: Test new drugs for safety and efficacy.
- Transplantation: Treat various blood disorders and cancers.
- Tissue Engineering: Create artificial organs or tissues

BLOOD CELLS

Red Blood Cells (RBCs) - Erythrocytes:

- Structure: Biconcave disc-shaped cells without a nucleus, containing hemoglobin.
- Function: Hemoglobin binds oxygen in the lungs and releases it in tissues, helping in oxygen transport.

White Blood Cells (WBCs) - Leukocytes:

- Structure: Larger than RBCs, with a nucleus and various types of granules.
- Function: Defend the body against infections and foreign substances.
- Subtypes:
- Neutrophils: Phagocytize pathogens and debris, important in the initial immune response.
- Eosinophils: Combat parasites and modulate allergic reactions by releasing toxins and enzymes.
- Basophils: Release histamine and other chemicals involved in inflammation and allergic responses.
- Lymphocytes: Include B cells, T cells, and NK cells; important in adaptive immunity.
- Monocytes: Precursors to macrophages, involved in phagocytosis and antigen presentation.

Platelets - Thrombocytes:

- Structure: Small, irregularly shaped cell fragments.
- Function: Assist in blood clotting by aggregating at the site of injury and forming a plug.
- These cells work together to maintain homeostasis, defend against pathogens, and ensure proper oxygen transport and blood clotting.

DISEASES IN NEWS

- **Nipah Virus Infection**: A zoonotic virus transmitted from animals to humans, causing severe disease in both animals and humans.
- **Zika Virus Disease**: An emerging mosquito-borne disease that can cause birth defects in infants born to infected mothers.
- **Chikungunya**: A viral disease transmitted to humans by infected mosquitoes, leading to symptoms such as fever and joint pain.
- **Hepatitis**: Inflammation of the liver, often caused by viral infections (hepatitis A, B, C, etc.) or other factors like alcohol or autoimmune diseases.
- **Cholera**: An acute diarrheal infection caused by ingestion of food or water contaminated with the bacterium Vibrio cholerae.
- **Typhoid Fever**: A bacterial infection caused by Salmonella typhi, typically spread through contaminated food or water.
- **Japanese Encephalitis**: A viral infection transmitted by mosquitoes, leading to inflammation of the brain.
- **Chronic Kidney Disease (CKD)**: A long-term condition where the kidneys do not function properly, leading to a gradual loss of kidney function.
- **Leptospirosis**: A bacterial infection spread by animals, particularly rodents, causing symptoms such as fever and muscle pain.
- **Yellow Fever**: A viral disease transmitted by mosquitoes, causing jaundice, fever, and potentially fatal complications.
- **Swine Flu (H1N1 Influenza)**: A respiratory disease caused by the H1N1 influenza virus, commonly found in pigs but can spread to humans.
- **Leprosy**: A chronic infectious disease that primarily affects the skin, nerves, and mucous membranes.
- **Rabies**: A viral disease transmitted through the saliva of infected animals, usually through bites, leading to inflammation of the brain.
- **Pneumonia**: An inflammatory condition of the lung affecting primarily the air sacs, causing cough, fever, and difficulty breathing.
- **MERS-CoV (Middle East Respiratory Syndrome Coronavirus)**: A viral respiratory illness caused by a coronavirus, first identified in Saudi Arabia in 2012.
- **SARS (Severe Acute Respiratory Syndrome)**: A viral respiratory illness caused by a coronavirus, first reported in Asia in 2003.
- **Hantavirus Pulmonary Syndrome (HPS)**: A rare but serious respiratory disease caused by exposure to hantavirus-infected rodents.
- **Lassa Fever**: A viral hemorrhagic fever caused by the Lassa virus, primarily found in West Africa.
- **Typhus**: A group of infectious diseases caused by bacteria transmitted by lice, fleas, or mites, leading to fever and rash.
- **Leptospirosis**: A bacterial infection spread by animals, particularly rodents, causing symptoms such as fever and muscle pain.

ANIMAL DISEASES

- **Avian Influenza (Bird Flu)**: A viral infection that primarily affects birds but can also infect humans and other animals.
- **African Swine Fever**: A viral disease that affects domestic and wild pigs, causing high fever, loss of appetite, and death in severe cases.
- **Foot-and-Mouth Disease (FMD)**: A highly contagious viral disease that affects cloven-hoofed animals, such as cattle, pigs, sheep, and goats.
- **Rinderpest**: A viral disease that affects cattle and other cloven-hoofed animals, causing fever, oral lesions, and high mortality rates.
- **Bovine Tuberculosis**: A bacterial disease that primarily affects cattle but can also infect other animals and humans.
- **Brucellosis**: A bacterial disease that primarily affects livestock, causing reproductive problems and flu-like symptoms in humans.
- **Blue Tongue Disease**: A viral disease that affects ruminant animals, such as sheep, causing fever, swelling, and blueness of the tongue.
- **Equine Influenza**: A viral respiratory disease that affects horses, causing coughing, nasal discharge, and fever.
- **Scrapie**: A transmissible spongiform encephalopathy (TSE) that affects sheep and goats, causing neurodegenerative symptoms.
- **West Nile Virus**: A viral infection that primarily affects birds but can also infect humans and other animals through mosquito bites.
- **Newcastle Disease**: A viral infection that affects birds, particularly poultry, causing respiratory and nervous system symptoms.
- **White Nose Syndrome**: A fungal disease that affects bats, causing white fungus growth on the nose and wings, leading to death.
- **Chronic Wasting Disease (CWD)**: A prion disease that affects deer, elk, and moose, causing neurodegenerative symptoms.
- **Swine Vesicular Disease**: A viral disease that affects pigs, causing blisters on the feet and mouth.
- **Bluetongue Disease**: A viral disease that affects ruminant animals, such as sheep and cattle, transmitted by biting midges.
- **Heartwater Disease**: A bacterial disease that affects ruminant animals, particularly cattle, causing fever and neurological symptoms.
- **Bovine Spongiform Encephalopathy (BSE)**: A prion disease that affects cattle, causing neurodegenerative symptoms.

- **Salmonellosis**: A bacterial disease that affects a wide range of animals, including birds, reptiles, and mammals, causing gastrointestinal symptoms.
- **Avian Botulism**: A bacterial disease that affects birds, particularly waterfowl, causing paralysis and death.
- **African Horse Sickness**: A viral disease that affects horses and other equids, transmitted by biting midges, causing respiratory and circulatory symptoms.

DNA AND RNA

Genomic DNA: The complete set of genetic material in an organism, containing the instructions for the development, functioning, and reproduction of an organism.
Mitochondrial DNA (mtDNA): DNA found in the mitochondria, responsible for energy production within the cell, inherited maternally, and used in evolutionary studies.
Chloroplast DNA (cpDNA): DNA found in chloroplasts, crucial for photosynthesis in plants, and used in plant evolutionary studies.
Messenger RNA (mRNA): Carries genetic information from DNA to the ribosome for protein synthesis, crucial for gene expression regulation.
Transfer RNA (tRNA): Transfers amino acids to the ribosome during protein synthesis, essential for translating the genetic code into proteins.
Ribosomal RNA (rRNA): Forms part of the ribosome and plays a vital role in protein synthesis.
Small Nuclear RNA (snRNA): Involved in RNA splicing, which is the process of removing introns from pre-mRNA to form mature mRNA.
MicroRNA (miRNA): Regulates gene expression by targeting specific mRNAs for degradation or by inhibiting their translation.
Long Non-Coding RNA (lncRNA): Regulates gene expression and various cellular processes without encoding proteins, implicated in diseases and development.

IMMUNITY

Immunity is the body's ability to resist or eliminate potentially harmful pathogens, such as bacteria, viruses, parasites, and fungi, as well as tumor cells and other foreign substances. It is a complex and vital system that involves various organs, cells, proteins, and tissues working together to protect the body.
There are two main types of immunity:
Innate Immunity:

- Innate immunity is the body's first line of defense against pathogens.
- It includes physical barriers, such as the skin and mucous membranes, as well as cellular defenses like neutrophils, macrophages, and natural killer cells.
- Innate immunity provides immediate, nonspecific protection against a wide range of pathogens.

Adaptive Immunity:

- Adaptive immunity is a more specific and targeted response that develops over time.
- It involves specialized immune cells called lymphocytes, including B cells and T cells, that recognize and remember specific pathogens.
- Adaptive immunity provides long-lasting protection against specific pathogens and is the basis for immunological memory, which allows the body to respond more effectively to future infections.

Both innate and adaptive immunity work together to protect the body from pathogens. When the body is exposed to a pathogen, the immune system mounts a response that involves various cells and molecules:

- **Antigens**: Substances on the surface of pathogens that the immune system recognizes as foreign and triggers an immune response.
- **Antibodies**: Proteins produced by B cells that bind to specific antigens and help neutralize or eliminate pathogens.
- **Cytokines**: Signaling molecules that regulate the immune response and help coordinate the activities of immune cells.
- **Memory Cells**: B and T cells that "remember" specific pathogens and allow for a faster and more effective immune response upon re-exposure.

Immune Disorders:

- **Immunodeficiency Disorders:** Conditions that weaken the immune system, such as HIV/AIDS and primary immunodeficiency disorders.
- **Autoimmune Disorders:** Conditions in which the immune system mistakenly attacks the body's own tissues, such as rheumatoid arthritis and lupus.
- **Allergies:** Immune reactions to harmless substances, such as pollen or food, which can trigger symptoms like sneezing, itching, and swelling.

MATERIALS IN NEWS

Polyurethane	**Polyurethane's unique carbamate-based structure creates air pockets, making it lightweight and ideal for footwear.** Other uses:**Insulation, furniture, automotive parts, medical devices, industrial applications.**
Shape memory alloys (SMAs)	SMAs are a class of materials that can "remember" their original shape and return to it after being deformed. SMAs are typically made of an alloy of **nickel and titanium (NiTi)**, although other metals like copper, zinc, and iron can also be used.SMAs can undergo significant deformation at low temperatures and then return to their original shape when heated above a critical temperature, known as the transformation temperature.SMAs also exhibit superelasticity.
Piezoelectric Materials	Materials that generate an electric charge in response to mechanical stress or pressure, and conversely, they deform when subjected to an electric field. Can be natural, like quartz, or synthetic, such as lead zirconate titanate (PZT) and polyvinylidene fluoride (PVDF). Occurs due to the asymmetry in the material's crystal structure, which causes positive and negative charges to separate when the material is stressed, leading to an electric potential across the material.
Superhard Materials	Superhard materials are materials with extremely high hardness values, often **exceeding that of diamond**. They are used in cutting tools, wear-resistant coatings, and abrasives.
Perovskite materials	A group of materials with a specific crystal structure that was first discovered in the mineral calcium titanate (CaTiO3). Used in in solar cells, LEDs, sensors, and catalysis due to their unique optoelectronic, semiconducting.
Polystyrene	Polystyrene is a synthetic polymer used in rigid and foam forms for packaging, insulation, and disposable tableware. While versatile and lightweight, its non-biodegradable nature raises environmental concerns
Silica Aerogel	Silica aerogel is a highly porous and lightweight material derived from silica gel. It is often referred to as "frozen smoke" or "blue smoke" due to its translucent appearance and low density. Silica aerogel has one of the lowest thermal conductivities of any solid material, making it ideal for applications requiring high thermal insulation, such as aerospace, construction, and energy-efficient windows. Silica aerogel is fragile and expensive to produce.
MXenes	MXenes are a class of two-dimensional ceramic nanomaterialslayered materials, akin to graphite, but distinct in composition with a transition metal (M) layer sandwiched between two carbon or nitrogen layers (X). Properties: metallic conductivity, hydrophilicity, and mechanical flexibility. MXenes find applications in energy storage (e.g., batteries, supercapacitors), electromagnetic shielding (e.g., radar absorption), water purification (e.g., desalination membranes), and composites (e.g., polymer reinforcement).
Metamaterial	Metamaterials are engineered materials with properties not found in nature. They're made of nanostructures that interact with waves, enabling unique properties like negative refractive index, which allows them to bend light in unusual ways. They can also have properties like superlensing (resolving details smaller than the wavelength of light), cloaking (making objects invisible to certain wavelengths), and absorption of specific wavelengths. They have applications in optics, acoustics, and electronics.
Samarium Hexaboride (SmB6)	A compound with topological insulator properties, used in quantum computing and as a novel electronic material.
Gallium nitride (GaN)	It is a wide bandgap semiconductor with high efficiency and power density, used in LEDs, power electronics, and RF devices, though its adoption is hindered by cost and manufacturing complexity.
Nitinol	Nitinol is a nickel-titanium alloy known for its shape memory and superelasticity, making it valuable in applications like medical stents and orthodontic wires.
Smart Materials	Smart materials exhibit changes in their properties in response to external stimuli, such as temperature, light, or stress.They are used in diverse applications such as aerospace, biomedical devices, and consumer electronics.
Solid-State Batteries	Solid-state batteries are a type of battery that uses solid electrodes and a solid electrolyte instead of the liquid or gel electrolytes found in traditional lithium-ion batteries. These batteries offer several potential advantages over conventional batteries, including higher energy density, longer lifespan, improved safety, and faster charging times. Solid-state batteries are considered a promising technology for electric vehicles (EVs), portable electronics, and grid energy storage due to their potential to address key limitations of current lithium-ion batteries. However, challenges such as manufacturing scalability and cost need to be overcome before solid-state batteries can be widely adopted.
E-Ink	E-ink displays, like those in Amazon Kindle e-readers, mimic the experience of reading on paper. They use microcapsules filled with charged particles suspended in fluid to create text and images. Advantages include low power consumption, long battery life, and reduced eye strain. However, they have limitations

	such as slow refresh rates and limited color and resolution. E-ink displays are used in e-readers and other applications like bus stop displays and menu boards, but their cost limits larger uses.
Nuclear Batteries	Nuclear batteries, also known as atomic batteries or radioisotope thermoelectric generators (RTGs), are devices that use the heat produced by the decay of a radioactive isotope to generate electricity.
LK 99	LK99 is a compound made up of powdered lead, oxygen, sulfur, and phosphorus.

IMPORTANT ACTS AND POLICIESIN NEWS

Indian Patents Act, 1970	• Patentable Inventions**: Covers new processes, machines, compositions, or improvements.** • Non-Patentable**: Excludes inventions against public order, scientific principles, and agricultural methods.** • Term**: Patents last 20 years from filing.** • Rights**: Patentees have exclusive rights to use and sell their inventions.** • Compulsory Licensing**: Allows third-party use under specific conditions.** • Revocation**: Patents can be revoked if granted incorrectly.** • Infringement**: Unauthorized use is infringement, subject to legal action.** • International Treaties**: Adheres to international patent treaties, like the Patent Cooperation Treaty and the Agreement on Trade-Related Aspects of Intellectual Property Rights.** **Other:** • **Patents are territorial rights, valid only in the country where they are granted.** • **Penalties for patent infringement include fines and imprisonment.**
Digital Personal Data Protection Act, 2023	• Applies to all data, including offline data later digitized, within and outside India. • Applies to processing personal data beyond India's borders. • Personal data processing requires explicit consent. • Data principals have rights to information, correction, erasure, grievance redressal, and nomination of a representative after death or incapacity. • SDFs must appoint a Data Protection Officer (DPO) and adhere to heightened compliance obligations. • International data transfers are permitted but subject to government restrictions. • Establishment of a **Data Protection Board**: Impartial body for privacy-related grievance resolution and enforcement.Authority to impose penalties for non-compliance. • Data fiduciaries can offer voluntary commitments related to compliance. • Breach of voluntary undertakings may lead to penalties. • Penalties for non-compliance include fines up to INR 2.5 billion. • Penalties for breach of duty, failure to notify data breaches, and other violations. • Exemptions for notified agencies in the interest of security, research, startups, legal rights enforcement, judicial functions, and more.
Information Technology Amendment Rules, 2023	• Not allow harmful unapproved online games or false information about the Indian government. • Make efforts to not host fake or misleading content related to the Central Government. • Ensure that online games do not involve gambling or betting elements and comply with legal requirements. • Take down information marked as fake by a fact-check unit or risk losing safe harbor protection.
Pharmacy (Amendment) Bill 2023	• The Pharmacy (Amendment) Bill 2023 specifies that pharmacists registered under the Jammu and Kashmir Pharmacy Act, 2011, or possessing qualifications prescribed under the Act
National Nursing and Midwifery Commission Act, 2023	• The Bill proposes the constitution of the National Nursing and Midwifery Commission comprising 29 members. • The chairperson must have a postgraduate degree in nursing and midwifery with at least 20 years of field experience. • Ex-officio members include representatives from various healthcare departments and services. • Other members include professionals and representatives from charitable institutions. • The Bill suggests the formation of three autonomous boards under the National Commission: (i) Nursing and Midwifery Undergraduate and Postgraduate Education Board, (ii) Nursing and Midwifery Assessment and Rating Board, and (iii) Nursing and Midwifery Ethics and Registration Board, to regulate education, assessment, ethics, and registration in the profession. • States must constitute State Nursing and Midwifery Commissions if not existing, consisting of 10 members. • Their functions include enforcing professional conduct, maintaining state registers, issuing specialization certificates, and conducting skill-based examinations.

	• Permission from the Assessment and Rating Board is required to establish new institutions, increase seats, or start new courses. Appeals can be made to the National Commission and Central Government in case of disapproval. • The Ethics and Registration Board will maintain an online register of qualified professionals. Practicing without enrollment may lead to imprisonment of up to one year, a fine of up to five lakh rupees, or both.
National Dental Commission Act 2023	• The Act establishes the National Dental Commission and mandates the formation of State Dental Councils or Joint Dental Councils. This structure aims to decentralize authority and enhance effective regulation. • The Act willempower three distinct Autonomous Boards: the Under-Graduate and Post-Graduate Dental Education Board, the Dental Assessment and Rating Board (DARB), and the Ethics and Dental Registration Board (EDRB). These boards will carry out specific functions, contributing to a comprehensive regulatory framework. • The Act will introduce a fixed tenure for the Chairperson, Members, and Secretary of the Commission**, with no possibility of reappointment.** The NDC will emphasize promotive and preventive dental care services and will focus on fostering the soft skills necessary for career advancement among dentists and dental auxiliaries. • The Act willprovide for maintaining an online and live National Register of licensed dentists and dental auxiliaries. Furthermore, it establishes a Dental Advisory Council with representation from all States/Union Territories to ensure comprehensive insights and guidance. • Under the Act, the NDC will be led by a 'selected' Regulator. This entails the appointment of the NDC Chairman and Members through a merit-based selection process conducted by a Search–cum-Committee chaired by the Cabinet Secretary. • The Act will empower the Commission to frame guidelines for fee determination for fifty percent of seats in private dental colleges and deemed Universities. Additionally, within a year of the Act's commencement, all State governments will establish State Dental Councils or Joint Dental Councils.
National Commission for Allied and Healthcare Professions Act	• The National Commission for Allied and Healthcare Professions Act, 2021 defines and categorizes "Allied health professionals" and "healthcare professionals" in India into various groups, including Medical Laboratory and Life Sciences, Trauma, Burn Care and Surgical/Anesthesia-related technology, and others. • The Act does not include Dentistry, Medicine, Nursing, and Pharmacy, as these are regulated by other bodies. • The Commission for Allied and Healthcare Professions (ICAHP) released the first draft curriculum, rules, and regulations for Physiotherapy on January 4, 2024. • The new curriculum mandates the NEET exam for admission into Physiotherapy courses. • New institutions must be named 'College of Physiotherapy' and located within NMC-certified Medical Colleges. • Old institutions must establish new buildings meeting specified criteria. • The duration of the BPT course (undergrad) is set **at 5 years, including a 1-year mandatory rotatory clinical internship.** • The curriculum grants complete autonomy in the diagnosis, investigation, examination, interpretation, prognosis, and treatment of illnesses affecting the body's functionality or movement.
Assisted Reproductive Technology (Regulation) Act, 2021	• ART services will be provided through ART clinics, which offer treatments and procedures, and ART banks, which collect, screen, and store gametes. • A National Registry will maintain details of all ART clinics and banks in the country, and appropriate authorities will be appointed by the central and state governments to support registration services. • The National and State Boards under the Surrogacy Act 2021 will also regulate ART services. • The central government will appoint Appropriate Assisted Reproductive Technology and Surrogacy Authorities to regulate the registration of clinics for both surrogacy and ART services, at national and state levels. • Single women or married couples where the woman **is between 21 and 50 years and the man is between 21 and 55 years,** and the married couples must be infertile, are eligible to commission ART services. Foreigners are not prohibited from availing ART services. • Donors must be within specified age ranges, with females donating eggs only once in their life and not more than seven eggs per donation. Gametes of a single donor must not be supplied to more than one commissioning party. • ART procedures require written consent from commissioning parties and donors. Clinics must screen for genetic diseases before implantation and are prohibited from providing sex-selective services.

	• Parties seeking ART services must provide insurance coverage for oocyte donors. • A child born through ART will be considered the biological child of the commissioning couple, and donors will not have parental rights. • Clinics and banks must share information with the National Registry and maintain donation records for at least 10 years. • The Act also regulates surrogacy to protect the rights of surrogate mothers.
Medical Termination of Pregnancy (MTP) Amendment Act, 2021	• Allows **termination of pregnancy up to 20 weeks** for married women and unmarried women in case of contraceptive failure. • Requires the opinion of one Registered Medical Practitioner (RMP) **for termination up to 20 weeks** and two RMPs for termination between 20-24 weeks. • Requires the opinion of the State-level medical board for termination after 24 weeks in case of substantial foetal abnormalities. • Increases the **upper gestation limit to 24 weeks for special categories of women**, including survivors of rape, victims of incest, and other vulnerable women. • Ensures confidentiality of women undergoing termination, with their details not to be revealed except to authorized persons under existing laws.
Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act	• The Act aims to prohibit the production, trade, storage, and advertisement of electronic cigarettes in India. • The Act defines electronic cigarettes (e-cigarettes) as electronic devices that heat a substance, which may contain nicotine and other chemicals, to create vapor for inhalation. This includes all forms of electronic nicotine delivery systems, heat-not-burn products, e-hookahs, and similar devices. • The Act prohibits the production, manufacture, import, export, transport, sale, distribution, and advertisement of e-cigarettes in India. Violators may face **imprisonment of up to one year, a fine of up to one lakh rupees, or both for the first offence.** Subsequent offences can result in imprisonment of up to three years and a fine of up to five lakh rupees. • The Act prohibits the use of any place for the storage of any stock of e-cigarettes. Violators may face imprisonment of up to six months, a fine of up to Rs 50,000, or both. Owners of existing stocks of e-cigarettes must declare and deposit them at the nearest office of an authorised officer. • Authorised officers can search any place where trade, production, storage, or advertising of e-cigarettes is being undertaken if they believe a provision of the Act has been contravened. They can seize any record or property connected to e-cigarettes found during the search and may take the person connected with the offence into custody. If the property or records cannot be seized, the authorised officer can make an order to attach such property, stocks, or records.
National Medical Commission Act, 2019	• It replaced the Indian Medical Council Act of 1956. • The main objective of the act is to ensure the availability of adequate and high-quality medical professionals, adoption of the latest medical research by medical professionals, periodic assessment of medical institutions, and an effective grievance redressal mechanism. • The act established the National Medical Commission (NMC) and mandates state governments to establish State Medical Councils at the state level. • The NMC **consists of 25 members appointed by the central government.** • The NMC is responsible for framing policies for regulating medical institutions and professionals, assessing healthcare-related human resources and infrastructure requirements, ensuring compliance by State Medical Councils with regulations, and framing guidelines for fee determination in private medical institutions and deemed universities. • The act established four autonomous boards under the supervision of the NMC: the Undergraduate Medical Education Board (UGMEB), the Post-Graduate Medical Education Board (PGMEB), the Medical Assessment and Rating Board (MARB), and the Ethics and Medical Registration Board. • Each autonomous board formulates standards, curriculum, and guidelines, grants recognition to medical qualifications at its respective level, and performs other related functions. • The Ethics and Medical Registration Board maintains a National Register of all licensed medical practitioners, and only those included in the Register are allowed to practice medicine. • The NMC may grant a limited license to certain mid-level practitioners to practice medicine under the supervision of a registered medical practitioner, with restrictions on prescribing specified medicines. • The act mandates a uniform NEET for admission to undergraduate and post-graduate super-speciality medical education in all regulated medical institutions. • The act introduces a **National Exit Test for final-year undergraduate students** to obtain a license for practice and as a basis for admission into post-graduate courses at medical institutions regulated under the act.

Indian Medical Council (Amendment) Act 2019.	• The Act reduces the period for supersession of the Medical Council of India (MCI) from three years to two years, • The central government must constitute a Board of Governors to exercise the MCI's powers. • It increases the strength of the central government-appointed Board from seven members to 12 members.
National Rare Disease Policy 2021	• **Rare diseases are classified into three groups:** o Group 1: Disorders amenable to one-time curative treatment. o Group 2: Diseases requiring long-term or lifelong treatment. o Group 3: Diseases with definitive treatment but facing challenges like patient selection, high cost, and lifelong therapy. • **Financial Support:** o Patients with rare diseases in Group 1 are eligible for financial support of up to Rs. 20 lakh under Rashtriya Arogya Nidhi.Rashtriya Arogya Nidhi provides financial assistance to patients below the poverty line suffering from major life-threatening diseases. • **Beneficiaries:** o Financial assistance extends to about **40% of the population eligible under Pradhan Mantri Jan Arogya Yojana**, for treatment in Government tertiary hospitals. • **Alternate Funding:** o Voluntary crowdfunding treatment through a digital platform for individual and corporate contributions towards rare disease treatment costs. • **Centres of Excellence:** o Eight health facilities designated as 'Centres of Excellence' for strengthening tertiary health care facilities for rare disease prevention and treatment.These centres receive one-time financial support of up to Rs. 5 crore for upgrading diagnostics facilities. • **National Registry:** o Creation of a national hospital-based registry of rare diseases to ensure adequate data and comprehensive definitions for research and development purposes.
National Medical Devices Policy, 2023.	• Objectives: Accelerate growth of medical devices sector, become global leader in manufacturing and innovation, grow sector to $50 Bn by 2030. • Key Features: o Regulatory Streamlining: Single Window Clearance System, coordination between stakeholder departments, enhance role of Indian Standards, coherent pricing regulation. o Enabling Infrastructure: Develop medical device parks and clusters, align with National Industrial Corridor Program and National Logistics Policy 2021. o Facilitating R&D and Innovation: Establish Centres of Excellence, innovation hubs, support start-ups. o Attracting Investments: Encourage private investments, funding from Venture Capitalists, PPP. o Human Resources Development: Skilling, reskilling, upskilling of professionals, support multidisciplinary courses. o Brand Positioning and Awareness Creation: Create Export Promotion Council, deal with market access issues
Revised rules under Schedule M of the Drugs and Cosmetics Rules, 1945	• **New Categories of Drugs:** The updated rules introduce five new categories of pharmaceutical products that contain hazardous substances. These include sex hormones, anabolic and androgenic steroids, cytotoxic substances used in cancer treatment, biological products, and radiopharmaceuticals used in nuclear medicine. • **Additional Sections in Schedule M:** The revised Schedule M now includes sections on important aspects of pharmaceutical manufacturing. This includes the introduction of a pharmaceutical quality system (PQS), quality risk management (QRM), product quality review (PQR), qualification and validation of equipment, and the requirement for a computerized storage system for all drug products. • **Revised Guidelines for Manufacturers:** The updated rules place greater responsibility on drug manufacturers. They are now obligated to ensure the quality of pharmaceutical products, comply with license requirements, and prevent any risks to patients arising from inadequate safety, quality, or efficacy of the products. Manufacturers are also required to market finished products only after obtaining 'satisfactory results' from ingredient tests. • **Retention of Product Samples:**Guideline mandates that manufacturers retain sufficient samples of intermediate and final products. These samples are to be retained for potential retesting or batch verification purposes. • **Implementation and Compliance:** The implementation of these rules varies based on the annual turnover of the companies. Small and medium manufacturers (with annual turnover less than Rs.

	250 crore) are required to comply within 12 months of publication, while large manufacturers (with annual turnover more than Rs. 250 crore) have a six-month deadline for compliance. • **Schedule M Background:** Schedule M of the Drugs and Cosmetics Rules, 1945, originally emerged from the recommendations of the Hathi Committee in 1975. The committee proposed making Good Manufacturing Practices (GMP) mandatory for all drug manufacturers to ensure quality and safety of pharmaceutical products.

NATIONAL ESSENTIAL DIAGNOSTICS LIST (NEDL)

The Indian Council of Medical Research (ICMR) has finalized India's first National Essential Diagnostics List (NEDL), **making India the first country globally to create such a list.** NEDL will guide the government in determining the necessary diagnostic tests for various healthcare facilities in villages and remote areas.The World Health Organization (WHO) released the first Essential Diagnostics List (EDL) in May 2018, serving as a reference point for national EDL development. India's NEDL has been customized to align with the country's healthcare priorities.

Diagnostics in India are regulated under the **Medical Device Rules, 2017,** following a framework based on drug regulations under the **Drugs and Cosmetics Act, 1940, and Drugs and Cosmetics Rules, 1945.**

NEDL covers all levels of healthcare, including village, primary, secondary, and tertiary care. It expands on the Free Diagnostics Service Initiative (FDI) and other diagnostic programs to offer a wider range of tests across the public health system. FDI, launched in July 2015, supports states in providing essential diagnostics free of cost at public health facilities.NEDL includes general laboratory tests for routine care and the diagnosis of communicable and non-communicable diseases. It also includes tests for specific **diseases based on disease burden, such as vector-borne diseases, tuberculosis, hepatitis, HIV, and syphilis.**Certain tests are considered desirable for regions with a high disease burden. NEDL also covers tests relevant to new programs like **Health and Wellness Centers under the Pradhan Mantri Jan Arogya Yojana. The list includes corresponding In Vitro Diagnostics (IVD) products.**The NEDL guidance document includes recommendations for human resources, such as ASHA workers, lab technicians, and pathologists, based on the proposed list of diagnostics.

NEWS IN FOCUS

Generic Drugs Made Available For Rare Diseases

- The Union Health Ministry has made generic drugs available for rare diseases for the first time, including Tyrosinemia-Type 1, Gaucher's Disease, Wilson's Disease, and Dravet-Lennox Gastaut Syndrome. Phenylketonuria and Hyperammonemia will be added soon.
  - Tyrosinemia-Type 1: An inherited metabolic disorder where the body lacks an enzyme (FAH) needed to break down the amino acid tyrosine.
  - Gaucher's Disease: Results from a buildup of certain fatty substances in organs, particularly the spleen and liver.
  - Wilson's Disease: Rare inherited disorder caused by abnormal copper accumulation in the liver, brain, and other vital organs.
  - Dravet-Lennox Gastaut Syndrome: Rare drug-resistant epileptic conditions characterized by seizures.

National Health Claim Exchange (NHCX):

- **Developed by:** National Health Authority. **Purpose:** A digital health claims platform facilitating the exchange of claims-related information among healthcare and health insurance stakeholders.**Significance:** Enhances efficiency and transparency in health claims processing.

National Health Authority (NHA):

- **Established in:** 2019. **Nodal Ministry:** Attached office of the Ministry of Health and Family Welfare with full functional autonomy.. **Replaced:** National Health Agency. **Mandate:** Implementing Ayushman Bharat Pradhan Mantri Jan Arogya Yojana and overseeing the design and implementation of the National Digital Health Mission. **Governing Board Chairman:** Union Minister for Health and Family Welfare.

30 Critical Minerals For India

- Government has released a list of 30 critical minerals for India. These minerals are 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.

Lecanemab, Aducanumab, Alzheimer's Disease, Monoclonal Antibodies

- **Lecanemab**, a drug currently undergoing clinical trials for Alzheimer's disease treatment falls into the category of **monoclonal antibodies**, which target beta-amyloid, a protein deposition found in Alzheimer's patients that disrupts cell function.The US Food and Drug Administration (FDA) has approved a new drug called **Aducanumab** for treating Alzheimer's disease.Aducanumab is a monoclonal antibody drug designed to slow the progression of Alzheimer's disease by reducing the deterioration of brain function. Monoclonal antibodies are synthetic proteins that mimic human antibodies in the immune system. They are produced by cloning a specific type of white blood cell. The drug works by reducing the levels of amyloid-beta, a protein that forms plaques in the brain.

- Alzheimer's disease is a progressive neurological disorder characterized by brain shrinkage (atrophy) and the death of brain cells. It is the leading cause of dementia, a condition marked by a gradual decline in cognitive, behavioral, and social abilities that impairs independent functioning. The disease is believed to result from the abnormal accumulation of proteins in and around brain cells. One of these proteins, amyloid, forms plaques around brain cells, while the other, tau, forms tangles within brain cells.
- **Monoclonal antibodies** are laboratory-produced proteins that mimic the immune system's ability to fight pathogens. They are made by cloning specific white blood cells and are used in treating diseases like cancer, autoimmune disorders, and infectious diseases. Monoclonal antibodies work by binding to specific targets, helping the immune system recognize and destroy them. They have been used in COVID-19 treatment and show promise in treating Alzheimer's.

WHO Guidelines for the Clinical Management of Diphtheria

- Diphtheria is a severe bacterial infection of the nose and throat caused by ***Corynebacterium diphtheriae***, leading to the formation of a thick, gray membrane in the throat, sore throat, hoarseness, swollen glands, and difficulty breathing. It is primarily spread through respiratory droplets from coughing or sneezing, or by touching infected sores. WHO recommends treatment with **macrolide antibiotics (such as azithromycin, erythromycin) instead of penicillin**, and the use of Diphtheria Antitoxin (DAT) to neutralize toxins. WHO recommends against routine sensitivity testing before administering DAT, adjusting DAT dosage based on disease severity, and promptly administering antibiotics alongside DAT to prevent complications like airway obstruction and myocarditis.

Coal Gasification

- Coal gasification is a process that converts coal into a fuel gas using air, oxygen, steam, or carbon dioxide. This gas can then be used for energy production. Underground Coal Gasification is a technique where coal is converted into gas in the seam and extracted through wells, avoiding direct burning. This process transforms all of coal's carbon into electricity, hydrogen, and other energy forms through partial oxidation. Advantages include chemical energy production for iron, methanol, and urea, green energy production for ammonia and hydrogen economy, and cost-effectiveness for Indian industries by using syngas instead of imported coking coal. However, it has disadvantages such as environmental issues due to emissions and being a costly and water-intensive process.

Micellar Water

- Micellar water is a gentle skincare solution containing mild detergent and tiny oil molecules called micelles, which effectively remove oil and impurities from the skin. These micelles are formed by surfactant molecules with hydrophilic (water-loving) and hydrophobic (water-hating) properties. The outer layer of the micelles is water-friendly, allowing them to mix easily with water. When applied to a cotton pad, the hydrophilic part of the micelles is attracted to the wet cotton, while the hydrophobic part sticks out and attaches to makeup, sunscreen, oils, and dirt on the skin. As the cotton pad is wiped across the skin, these substances are removed, leaving the skin clean and refreshed.

Bubonic Plague

- A recent case of bubonic plague, also known as the Black Death, has been identified in the US, likely transmitted by a pet cat. This severe bacterial infection is caused by ***Yersinia pestis***, typically found in small mammals and their fleas, posing a risk to both humans and animals. Named for the swollen lymph nodes (buboes) it causes, bubonic plague has a high fatality rate of 30% to 60%. Symptoms include sudden fever, chills, abdominal and limb pain, headaches, and pus-filled lumps in the lymph nodes. Transmission occurs through flea bites, direct contact with infected tissues, or inhaling infected respiratory droplets, with an incubation period of 2 to 8 days. Fortunately, bubonic plague can be cured with antibiotics such as Ciprofloxacin, levofloxacin, moxifloxacin, Gentamicin, and Doxycycline. Other types of plague include septicemic plague, which infects the blood, and pneumonic plague, affecting the lungs.

Ultracold Atoms

- Ultracold atoms are atoms with temperatures near absolute zero, where they exhibit quantum mechanical behavior rather than classical physics.

Infexntm

- InfexnTM is a cutting-edge targeted next-generation sequencing test. It aims to detect bacterial and fungal infections, including relevant antimicrobial resistance genes, within 24 hours. It is a kit-cum-software solution designed for use within hospitals hailed as a "Made in India, Made for the World" test.

Havisure

- Havisure is India's first domestically developed vaccine for Hepatitis A. It is a two-dose vaccine, with the first dose administered to those above 12 months of age and the second dose given at least six months later.Hepatitis A is a viral infection that causes inflammation of the liver. It is transmitted through the consumption of contaminated food or water or close contact with an infected person, and symptoms include fever, fatigue, nausea, abdominal pain, and jaundice. Treatment primarily focuses on relieving symptoms, as there is no specific treatment for Hepatitis A according to the World Health Organization.

Mpemba Effect

- The Mpemba effect is a phenomenon where hot water can freeze faster than cold water. Named after Tanzanian student ErastoMpemba, who observed it in the 1960s, the exact cause is still debated. Factors like evaporation, dissolved gases, and convection currents may contribute.

Aneel (Advanced Nuclear Energy For Enriched Life) & High Assay Low Enriched Uranium (HALEU)

- Clean Core Thorium Energy, based in Chicago, has developed ANEEL (Advanced Nuclear Energy for Enriched Life), a fuel that combines Thorium and High Assay Low Enriched Uranium (HALEU), named after India's scientist, Dr. Anil Kakodkar. HALEU is uranium enriched to greater than 5% and less than 20% of the U-235 isotope, necessary for many advanced nuclear reactor designs. ANEEL offers an easier and quicker alternative for deploying thorium, especially in nations lacking infrastructure for other green energy sources. It reduces operational costs and nuclear waste, burns more efficiently, and its spent fuel cannot be used for weapons. India, with the world's largest thorium reserves, can ensure green energy security by leveraging Thorium in nuclear reactors using ANEEL, potentially achieving net-zero emissions by 2070.

Meissner Effect

- The Meissner effect is the expulsion of a magnetic field when a material transitions to the superconducting state below the critical temperature, useful in technologies like magnetic levitation and superconducting magnets.

Direct-To-Mobile (D2M) Technology

- Direct-to-Mobile (D2M) technology involves sending messages, ads, or content directly to mobile devices, bypassing traditional media. It uses mobile apps, SMS, MMS, and push notifications to engage consumers, aiming to increase brand awareness and drive sales.

Polymer Electrolyte Membrane Fuel Cell (PEMFC)

- ISRO successfully tested a 100 W Polymer Electrolyte Membrane Fuel Cell Power System (FCPS) on the orbital platform POEM3, which was launched onboard PSLV-C58 . A Polymer Electrolyte Membrane Fuel Cell (PEMFC) is a type of fuel cell that uses a polymer electrolyte membrane to convert hydrogen and oxygen into electricity. Operating at around 80°C, it is suitable for various applications, including transportation and stationary power generation. The PEMFC's components include the membrane electrode assembly (MEA), where hydrogen splits into protons and electrons at the anode. The protons pass through the membrane to the cathode, generating electricity, while the electrons travel through an external circuit. At the cathode, the protons, electrons, and oxygen combine to form water and heat.

Square Kilometre Array (SKA)

- The Square Kilometre Array (SKA) is a massive radio telescope project spanning Australia and South Africa, featuring thousands of antennas and dishes covering about one square kilometer. Its goals include exploring the universe's origins, studying dark matter and energy, and searching for extraterrestrial life, promising groundbreaking discoveries in radio astronomy.

Pslv-C58 X-Ray Polarimeter Satellite (Xposat) Mission

- On January 1, 2024, the Indian Space Research Organisation (ISRO) successfully launched the PSLV-C58 X-ray Polarimeter Satellite (XPoSat) mission. XPoSat is ISRO's first scientific satellite dedicated to space-based polarization measurements of X-ray emissions from celestial sources. It carries two main payloads: POLIX, which measures polarization parameters in the medium X-ray energy range, and XSPECT, which provides spectroscopic information on various X-ray sources. XPoSat is India's first and the world's second polarimetry mission, following NASA's Imaging X-ray Polarimetry Explorer (IXPE). Additionally, ISRO utilized the PSLV Orbital Experimental Module (POEM) platform to deploy 10 other payloads, including the Fuel cell Power System (FCPS) with potential applications in India's proposed space station.

Huntington's Disease

- Huntington's disease is caused by a mutation in the HTT gene, which provides instructions for making a protein called huntingtin. The mutation leads to the production of an abnormal form of the huntingtin protein, which accumulates in neurons, disrupting their function and eventually causing cell death. This process particularly affects regions of the brain involved in movement, cognition, and behavior, leading to the characteristic symptoms of the disease.

Astrosat

- AstroSat is India's first dedicated multi-wavelength space observatory. It was launched by the Indian Space Research Organisation (ISRO) on September 28, 2015. AstroSat observes the universe in optical, ultraviolet, and X-ray wavelengths, allowing scientists to study a wide range of celestial objects such as stars, galaxies, and black holes.

Hydrogen Cyanide (HCN)

- Hydrogen cyanide (HCN) is a highly poisonous and colorless chemical compound with a faint, bitter, almond-like odor. It is produced naturally in some plants and is used in various industries, including the production of synthetic fibers, plastics, dyes, and pesticides. HCN is also used in chemical warfare. It is considered a highly toxic substance and can be lethal if ingested, inhaled, or absorbed through the skin.

Noma, Neglected Tropical Diseases (NTDS) And London Declaration

- Noma, also known as cancrumoris or gangrenous stomatitis, has been officially recognized by the World Health Organization (WHO) as a neglected tropical

disease (NTD). This severe gangrenous disease primarily affects children aged 2 to 6 years old, particularly those who are malnourished, living in poverty, or have weakened immune systems. Caused by the bacteria Borrelia vincenti, Noma starts as inflammation of the gums but rapidly progresses, leading to extensive tissue destruction and exposing facial bones. If not treated early, it can be fatal, with a mortality rate of around 90%. Treatment involves immediate action with antibiotics, rehydration, correcting electrolyte imbalances, and providing nutritional supplements. Preventive measures include improving living conditions, ensuring proper nutrition, immunization, oral hygiene, and sanitation practices, especially for vulnerable populations. The disease's neglected status is attributed to its impact on marginalized children.

- Neglected Tropical Diseases (NTDs) are infections common in tropical regions, often affecting marginalized communities due to limited access to clean water and sanitation. They are caused by various pathogens and receive less funding than other diseases. Examples include snakebite envenomation, scabies, yaws, trachoma, Leishmaniasis, and Chagas disease, affecting over a billion people but being preventable and treatable. The London Declaration aimed to control 10 NTDs by 2020, but not all goals were met. The new WHO roadmap for 2021-2030 targets a 90% reduction in people needing NTD treatment, elimination of at least one NTD in over 100 countries, and complete eradication of dracunculiasis (guinea worm) and yaws, focusing on impact measurement, collaboration, and country-led programs.

Criticality

- The fourth unit of the Kakrapar Atomic Power Project (KAPP-4) in Gujarat has achieved criticality, marking a significant milestone in nuclear energy generation. Criticality is the self-sustaining chain reaction of nuclear fission in a reactor, essential for power generation.Nuclear energy contributes around 2.8% to India's total energy production, with NPCIL operating 23 reactors and plans to increase capacity to 22,480 MW by 2031.

Aktocyte Tablets

- AKTOCYTE Tablets, developed by the Department of Atomic Energy minimize radiotherapy side effects in cancer treatment. They show impressive recovery in pelvic cancer, serving as an adjuvant to cancer radiotherapy, a regenerative nutraceutical, an immunomodulator, and an antioxidant. Approved by the FSSAI, AKTOCYTE Tablets debut in January 2024, promising to revolutionize cancer treatment protocols.

Green Hydrogen Electrolyzer

- A green hydrogen electrolyzer is a device that uses electricity to split water (H2O) into hydrogen (H2) and oxygen (O2) without producing carbon emissions. It is considered "green" when the electricity used in the process comes from renewable sources like solar or wind power, making the hydrogen production process environmentally friendly.

Kyasanur Forest Disease (KFD)

- Kyasanur Forest Disease (KFD), also known as monkey fever, is a viral hemorrhagic fever caused by the Kyasanur Forest Disease Virus (KFDV), a member of the Flavivirus genus. It was first identified in 1957 when it caused an outbreak in the Kyasanur Forest area of Karnataka, India. The virus is primarily transmitted to humans through the bite of infected ticks, especially the species Haemaphysalisspinigera. KFD primarily affects monkeys, especially the black-faced langur, but can also infect humans who venture into forested areas where infected ticks are present. Symptoms of KFD in humans include fever, headache, muscle pain, and vomiting, and in severe cases, it can lead to hemorrhage and shock. There is no specific treatment for KFD, but a vaccine is available and has been used to control outbreaks in endemic areas.

Tantalum

- Tantalum, a rare metal with atomic number 73, was discovered in 1802 and named after the Greek mythological figure Tantalus. It is corrosion-resistant, ductile, and has an extraordinarily high melting point. Tantalum is used in capacitors for electronics, as a substitute for platinum, in chemical and nuclear plants, aircraft, missiles, surgical equipment, and for its hardness in cutting tools.

Ixchiq

- The United States has approved Ixchiq, the world's first vaccine for chikungunya, a mosquito-borne viral disease. Ixchiq contains a live, weakened version of the chikungunya virus and is administered in a single dose via injection into the muscle. Common side effects include headache, fatigue, and muscle pain. This approval is significant for countries with high chikungunya prevalence, such as Brazil, Paraguay, and India.

PicocystisSalinarum

- A young researcher has uncovered the survival strategy of ***PicocystisSalinarum***, one of the smallest green algae, thriving in the extreme conditions of hypersaline soda lake Sambhar, Rajasthan. This algae, first spotted in India in Sambhar Lake, has cells with a spherical or oval shape and a cell wall primarily made of polyarabinose, a polymer of the monosaccharide arabinose. These findings shed light on how this algae adapts to harsh environments.

White Hole

- A white hole is a hypothetical region of spacetime which cannot be entered from the outside, but from which matter and light have the ability to escape. In essence, it is the reverse of a black hole

Environmental DNA

- Environmental DNA (eDNA) is genetic material obtained directly from environmental samples such as soil, water, or air, rather than from an individual organism. This genetic material can be used to identify the presence of species in the environment without directly observing them.

Global TB Report 2023

- The Global TB Report 2023 reveals a concerning rise in tuberculosis (TB) cases globally, reaching 7.5 million in 2022, the highest since monitoring began. The TB incidence rate increased by 3.9% between 2020 and 2022, reversing previous declines. Despite a slight decrease in deaths to 1.30 million in 2022, the burden remains high, with 30 countries accounting for 87% of cases. India, contributing 27% of global cases, reported 2.8 million cases in 2022, with 1.1 lakh being multidrug-resistant (MDR) TB cases and 3,42,000 deaths.

Carbon Nanoflorets

- Carbon nanoflorets are carbon nanostructures shaped like flowers, with tiny petals or branches radiating from a central core. They have high surface areas and are useful in energy storage, catalysis, sensors, and biomedicine due to their unique properties.

'Reference' Grade Petrol And Diesel

- India has initiated the production of 'reference' grade petrol and diesel, specialized fuels used for testing vehicles by automotive manufacturers and testing institutions. These fuels have higher octane numbers (97) compared to regular (87) and premium (91) fuels, which is crucial for accurate vehicle testing. The domestic production of 'reference' fuel will significantly reduce costs, with the imported fuel priced at around Rs 800-850 per litre, while the domestically produced fuel is expected to cost about Rs 450 per litre, providing a cost advantage for testing purposes.

Thallium

- Thallium, is a highly toxic element known as the "Poisoner's Poison." It does not occur freely in nature and is found in small amounts in the earth's crust. Thallium is extremely toxic when ingested or inhaled, leading to nervous and gastrointestinal disorders as well as rapid hair loss. Treatment involves the use of Prussian blue to remove thallium from the body. It is primarily used in manufacturing electronic devices and switches, with limited applications in special glass and certain medical procedures. Its use as a rodent and ant killer has been prohibited in the United States since 1972.

Niemann-Pick Disease

- Niemann-Pick disease is a rare inherited metabolic disorder that causes the abnormal accumulation of fatty substances in organs like the liver, spleen, and brain. It comes in several types, each with different symptoms and caused by mutations in different genes. Treatment focuses on symptom management and improving quality of life.

Lymphatic Filariasis

- The Lao People's Democratic Republic has achieved the elimination of lymphatic filariasis (LF), becoming the second country after Bangladesh to do so in 2023. LF, also known as elephantiasis, is caused by filarial parasites transmitted through mosquitoes. The infection can lead to lymphoedema, elephantiasis, and hydrocele.India also aims to eliminate LF by 2027.

White Phosphorus

- White phosphorus is a highly combustible chemical with various military applications, including creating smokescreens to conceal troop movements. It can be deployed through artillery shells, bombs, rockets or grenades. Despite its potential to cause severe burns and organ damage in humans, it is not considered a chemical weapon under international conventions. The 1980 Convention on Certain Conventional Weapons prohibits the use of incendiary substances against civilian populations, but white phosphorus's dual use for illumination and signaling allows for its continued deployment.

Hemochromatosis

- Hemochromatosis is a genetic disorder characterized by excessive absorption and storage of iron in the body. This condition leads to iron overload, which can damage organs such as the liver, heart, and pancreas. Hemochromatosis is usually inherited and can cause symptoms such as fatigue, joint pain, and abdominal pain. Treatment often involves regular removal of blood to reduce iron levels in the body.

R21/Matrix-M

- R21/Matrix-M is a malaria vaccine developed by the Jenner Institute at Oxford University and the Serum Institute of India. It contains the R21 antigen, specific to the malaria parasite, and Novavax's Matrix-M adjuvant, which enhances the immune response. The vaccine has shown high efficacy in reducing symptomatic malaria cases by 75% when given before the high transmission season. It is cost-effective, with a price range of $2 to $4 per dose, and has been deemed safe in clinical trials. This vaccine is the second malaria vaccine recommended by the WHO, following the RTS,S/AS01 vaccine.

Salt Intake

- The estimated mean daily salt intake in India is 8 g, which exceeds the World Health Organization's recommended limit of up to 5 g per day.

Vanadium

- Vanadium is a relatively rare, soft, ductile metal that is often used as an alloying element in steel production. It is primarily mined from three sources: titaniferous magnetite ore, phosphate rock, and uranium ore.

Vanadium has several important applications, including in the production of high-strength steel, which is used in infrastructure, aerospace, and automotive industries. It is also used in the production of certain types of batteries, such as vanadium redox flow batteries, which are used for grid energy storage. Additionally, vanadium compounds are used in the production of ceramics, pigments, and catalysts. Due to its scarcity and criticality in certain industries, vanadium is considered a strategic and valuable metal.

Aditya L1

- Aditya L1 is India's first mission to study the Sun from a halo orbit around the Lagrange point 1 (L1) of the Sun-Earth system, 1.5 million km away. It carries seven payloads to observe the Sun's photosphere, chromosphere, and corona, providing real-time monitoring of solar activities and their impact on space weather. Initially placed in a Low Earth Orbit, Aditya L1 will adjust its orbit, exit Earth's gravitational Sphere of Influence, and enter its halo orbit around L1 to study solar dynamics and space weather.

Pragyan Rover

- Pragyan Rover is a lunar rover deployed by ISRO as part of the Chandrayaan-3 mission. Task: Conducting a chemical analysis of the lunar surface near the Moon's south pole. Equipped with two payloads, APXS and LIBS, it aims to determine the elemental composition of lunar soil and rocks. The rover also features two Navigation cameras for path planning and obstacle avoidance. Short lifespan of approximately 1 lunar day, about 14 Earth days.

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Acoustic Side-Channel Attacks

- Acoustic side-channel attacks exploit sound emitted by electronic devices to extract sensitive information. Attackers analyze these emissions to infer device operations and steal data such as encryption keys and passwords. Mitigation involves physical sound insulation and software countermeasures.

Cell-Free DNA

- Cell-free DNA (cfDNA) refers to DNA that circulates freely in the bloodstream or other body fluids, outside of cells. It is released from cells through processes such as apoptosis (cell death) or necrosis (cell damage). CfDNA can originate from various cells in the body and can provide valuable information about genetic and molecular characteristics. In medicine, cfDNA is studied for its potential use in non-invasive prenatal testing, cancer detection, and monitoring of transplant rejection, among other applications.

Akira Ransomware

- Akira ransomware encrypts files on a victim's computer and demands payment for decryption. It spreads through phishing emails and malicious attachments. Protect against it with antivirus software and backups.

Transcranial Magnetic Stimulation (TMS)

- Transcranial magnetic stimulation (TMS) is a non-invasive procedure that uses magnetic fields to stimulate specific areas of the brain. It is primarily used to treat depression and is being studied for other neurological and psychiatric conditions.

Leptospirosis

- Leptospirosis is a bacterial infection transmitted through contaminated water or soil. Symptoms include fever, muscle aches, and jaundice, and severe cases can lead to kidney and liver damage. Treatment involves antibiotics, and prevention focuses on avoiding contact with infected animals or water sources.

Dimethyl Ether (DME)

- Dimethyl ether (DME) is a colorless, flammable gas with a faint ethereal odor. It is commonly used as a propellant in aerosol products, as a refrigerant, and as a fuel in industrial applications and transportation. DME is considered an environmentally friendly alternative to traditional fuels because it produces lower emissions of pollutants such as particulate matter and sulfur oxides. It can be produced from natural gas, coal, biomass, or renewable resources, making it a versatile and sustainable fuel option.

Amphetamine-Based Drugs

- Amphetamine-based drugs are stimulants used to treat conditions like ADHD and narcolepsy. They increase brain neurotransmitter levels, improving focus and alertness. Common examples include Adderall and Vyvanse.

Taurine

- Taurine is a naturally occurring amino sulfonic acid found in meat, fish, and eggs, with vital functions in the heart and brain, supporting nerve growth and potentially benefiting those with heart failure. It is also popular as a supplement among bodybuilders and athletes for its perceived ability to help control body temperature and reduce muscular fatigue during exercise.

Formation Water

- Formation water is natural water found in rock pores where oil and gas are located. It contains high salts and

minerals and is important in the oil and gas industry for reservoir management.

IMPORTANT SCHEMES, INITIATIVES AND PROGRAMS IN NEWS

Scheme/Initiative/Program	Features
IMPRINT (IMPacting Research, INnovation and Technology):	▪ Initiated by the Government of India through the Ministry of Human Resource Development (MHRD). ▪ Aim: To translate research knowledge into viable technology (products and processes). ▪ Maiden version launched in November 2015, followed by IMPRINT II in April 2018, a joint effort of MHRD and Department of Science & Technology (DST). IMPRINT IIC (Societal Mission Projects): ▪ Aims to address challenges like pollution, waste utilization, potable water, cyber-physical systems, alternative energy resources, etc., to make a significant impact on millions of lives in India. ▪ Implemented in two categories: Regular (IMPRINT IIC.1) with a budget limit of Rs 2 crore and Consortium mode (IMPRINT IIC.2) with a budget of up to Rs 20 crore for industry/community scale solutions. Implementation and Structure: ▪ Nodal agency: Science and Engineering Research Board (SERB) in the Department of Science & Technology (DST). SERB created a vertical under its setup for the selection, funding, and management of research projects under IMPRINT II. ▪ UchhatarAvishkar Yojana scheme subsumed within IMPRINT II, with no further call for proposals under UAY.
Reproductive Maternal Newborn Child Adolescent Health Plus Nutrition (RMNCAH+N) strategy	▪ Implemented under National Health Mission. ▪ **Objective:** Address anemia and malnutrition among women and children nationwide. **Key Programs:** ▪ Mothers' Absolute Affection (MAA): Improve breastfeeding coverage. ▪ Nutrition Rehabilitation Centres (NRCs): Provide in-patient care to children under 5 with Severe Acute Malnutrition (SAM). ▪ Anemia Mukt Bharat (AMB): Reduce anemia among six beneficiary groups through six interventions. ▪ National Deworming Day (NDD): Administer albendazole tablets to reduce helminth infestation among children and adolescents. ▪ Monthly Village Health, Sanitation and Nutrition Day (VHSND): Outreach activity at Anganwadi centers for maternal and child care. ▪ MCP Card and Safe Motherhood Booklet: Distributed to pregnant women for education on pregnancy care and benefit schemes.
Digital India Programme:	▪ Initiated by the Prime Minister in 2015Objective: To transform India into a knowledge-based economy and digitally empowered society by ensuring digital services, access, inclusion, empowerment, and bridging the digital divide. Managed by the Ministry of Electronics & Information Technology (MeitY) with collaboration from Central and State Government ministries and departments. **Key Initiatives:** ▪ **Aadhaar:** Offers lifelong, online, and authenticable 12-digit biometric and demographic-based identity ▪ **Common Services Centres (CSCs):** Deliver government and business services digitally in rural areas through Village Level Entrepreneurs (VLEs) ▪ **DigiLocker:** Provides a collection of repositories and gateways for issuers to upload digital documents ▪ **Unified Mobile Application for New-age Governance (UMANG):** Provides government services to citizens through mobile ▪ **MyGov:** A citizen engagement platform for participatory governance. ▪ **CO-WIN:** An open platform for managing registration, scheduling, and vaccination certificates for Covid-19 ▪ **Jeevan Pramaan:** Digitizes the process of securing life certificates for pensioners. ▪ **National Knowledge Network:** A high-speed data communication network connecting institutions of higher learning and research. ▪ **Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA):** Aims to promote digital literacy in rural India by covering 6 Crore rural households

	▪ **Future Skills Prime:** A collaborative initiative between MeitY and NASSCOM aimed at re-skilling/up-skilling IT professionals in new/emerging technologies like Augmented/Virtual Reality, Internet of Things, Big Data Analytics, Artificial Intelligence, among others.
Operation AMRITH:	**Launched by:** Kerala Drug Control Department to reduce antibiotic use. **Objective:** Conduct unexpected inspections at pharmacies to detect over-the-counter antibiotic sales. **Pharmacy Requirements:** Maintain accurate antibiotic sales records, comply with prescription regulations, and display a poster stating 'antibiotics not sold without doctor's prescription'. **Steps Taken by the Indian Government to Control AMR:** ▪ **National Action Plan For AMR:** Implemented to combat antimicrobial resistance. ▪ **Delhi Declaration on AMR:** Inter-ministerial consensus to support AMR containment. ▪ **Antibiotic Stewardship Program:** Launched by the Indian Council Of Medical Research(ICMR) to prevent antibiotic overuse in hospitals. ▪ **Ban on Colistin Use:** Prohibited colistin use as a growth promoter. ▪ **Advancing 'One Health' Concept:** Integrated approach balancing human, animal, and environmental health.
National List of Essential Medicines (NLEM).	• 26, including ranitidine and sucralfate, have been excluded from India's National List of Essential Medicines. • Essential medicines, as per WHO, satisfy priority health care needs (first released by WHO in 1977); India's NLEM includes 384 drugs, categorized into 27 therapeutic categories. • Drugs in NLEM are in the schedule category with regulated prices by the National Pharmaceutical Pricing Authority. The **first NLEM was compiled in 1996 and revised thrice in 2003, 2011, and 2015**. • Drugs are deleted from NLEM if banned, safety concerns reported, better alternatives available, disease burden no longer a concern, or if resistance renders them ineffective. • The new list includes patented drugs like **bedaquiline, delamind, dolutegravir, and daclatasvir.** • **No COVID-19-specific drugs** are included due to inconclusive clinical trial data. • Several antibiotics, vaccines, and anti-cancer drugs are set to become more affordable with their addition to the list.New additions include endocrine medicines, contraceptives, respiratory tract drugs, ophthalmological drugs, cardiovascular medicines, and palliative care medicines. *Complete List: https://main.mohfw.gov.in/?q=newshighlights-104*
SMART 2.0 Program	• Launched by the Central Council for Research in Ayurvedic Sciences (CCRAS) and the National Commission for Indian System of Medicine (NCISM) to promote clinical studies in priority areas of Ayurveda. • Previous: SMART 1.0 covered 10 diseases with participation from teaching professionals in 38 colleges. • **CCRAS:** Apex body under Ministry of Ayush for Ayurveda research coordination.**NCISM: Statutory body** under NCISM Act, 2020, promoting quality Ayurveda education and healthcare access.
Ayushman Arogya Mandir	▪ The Union Government has decided to rename the existing Ayushman Bharat Health and Wellness Centres (AB-HWCs) as 'Ayushman Arogya Mandir' with the tagline 'ArogyamParmamDhanam'. **Ayushman Bharat** Also known as Pradhan Mantri Jan Arogya Yojana, it is a flagship health insurancescheme launched in 2018. ▪ **Objective:** To provide financial protection to 50 crore beneficiaries against hospitalization expenses. ▪ **Key Components:** o **Health and Wellness Centres (HWCs):** To provide comprehensive primary healthcare services, including non-communicable diseases and maternal and child health services. o **Pradhan Mantri Arogya Mitra (PMAM):** Dedicated staff to assist patients at hospitals empanelled under PMJAY. o **National Health Authority (NHA):** Implementing agency responsible for the management of PMJAY. ▪ Offers coverage of up to **Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization.** ▪ Implemented as a **centrally sponsored scheme**, with states given the flexibility to implement

	through insurance companies or directly through trust/society mode. ▪ Provides **cashless and paperless access** to services for the beneficiary in any of the impanelled hospitals.
IndiaAI	▪ Initiated in 2020 by the Ministry of Electronics and IT, National e-Governance Division, and NASSCOM. ▪ Serves as India's National AI Portal, offering a platform for AI-related knowledge, research, and collaboration. **Key Features:** ▪ Provides news, articles, and information on AI.Offers insights into the global and Indian AI landscape. ▪ Provides resources and career guidance for AI enthusiasts.
Take Home Rations (THR) Programme:	▪ **Part of:** Integrated Child Development Services (ICDS) Supplementary Nutrition Programme (SNP). ▪ **Beneficiaries:** Children aged 6 to 36 months, pregnant, and lactating women. ▪ **Objective:** Provides fortified rations for home use to bridge nutrition gap.
Development of NavIC based IST traceable Primary Reference Time Clock for Telecom Sector	▪ Centre for Development of Telematics (C-DOT) and CSIR-National Physical laboratory has signed an agreement for 'Development of NavIC based IST traceable Primary Reference Time Clock (PRTC) for Telecom Sector. ▪ **Purpose:** Development of NavIC based IST traceable Primary Reference Time Clock (PRTC) for Telecom Sector. ▪ **Scheme:** Under the Telecom Technology Development Fund (TTDF) scheme. **TTDF Scheme:** ▪ Launched by Universal Service Obligation Fund (USOF) under the Department of Telecommunications in 2022. ▪ **Aim:** To fund R&D in rural-specific communication technology applications and promote technology ownership and indigenous manufacturing. ▪ **Eligibility:** Domestic companies, start-ups, MSMEs, academic institutions, and R&D institutions. ▪ **Technology Domains:** Includes 5G development, 6G & Beyond, IoT & M2M development.
Graphene-Aurora Program' Launch	▪ **Launched by**: Ministry of Electronics & Information Technology(MeitY) Secretary at Maker Village Kochi, Kerala.**Implementation:** By Digital University Kerala with joint funding from MeitY, and Industry partners. **Graphene:** ▪ **Properties:** Extraordinary electrical and electronic properties, stronger than steel, very stretchable, and highly thermally conductive. ▪ **Applications:** Touch screens, light panels, solar cells, anti-corrosion coatings, sensors, electronics, displays, DNA sequencing, drug delivery, etc.
National Sickle Cell Anaemia Elimination Mission (NSCEM)	▪ **Announcement:** Made in Union Budget 2023. ▪ **Aim**: To address health challenges posed by sickle cell disease among tribal population. ▪ **Implementation:** Part of National Health Mission (NHM), implemented in 278 districts of 17 states. ▪ **Target:** To eliminate sickle cell disease as a public health problem by 2047. ▪ **Features:** Focus on awareness creation. Universal screening of approximately seven crore people in 0-40 years age group. Counseling through collaborative efforts of central ministries and state governments.
eSanjeevani:	▪ **Developed by:** Ministry of Health and Family Welfare, Govt. of India. ▪ **Type:** Cloud-based integrated telemedicine solution. ▪ **Features:** Provides doctor-to-doctor and doctor-to-patient telecommunication. ▪ **Developed by:** Centre for Development and Advanced Computing (C-DAC), Mohali.
SUPREME Initiative	▪ **Nodal Ministry:** Ministry of Science and Technology ▪ **Full Form:** Support for Up-gradation Preventive Repair and Maintenance of Equipment ▪ **Aim:** To provide financial support for the upgradation and maintenance of analytical instrumentation facilities (AIFs).**Eligibility:** Facilities created under DST projects and various universities are eligible. ▪ **Duration:** Support for a period not exceeding 3 years. ▪ **Funding Pattern:** 75:25 for private and government-owned institutions.
National Quantum Mission (NQM)	▪ **Aim:** Seed, nurture, and scale up scientific and industrial R&D in Quantum Technology. ▪ **Duration**: 2023-24 to 2030-31Targets: Develop satellite-based secure communications, lay

	communication lines within Indian cities, conduct long-distance quantum communication tests, develop quantum computers with 50-1000 qubits.**Thematic Hubs:** Four Thematic Hubs in Quantum Computing, Quantum Communication, Quantum Sensing & Metrology, and Quantum Materials & Devices. ▪ **Progress:** Call for pre-proposals launched for setting up Thematic Hubs. ▪ **Secretariat:** Governing Body chaired by a renowned scientist or entrepreneur, Technology Research Council headed by Principal Scientific Advisor. ▪ **Significance:** Benefits communication, health, financial, and energy sectors, supports national priorities like Digital India, Make in India, Skill India, and more.
Pradhan Mantri National Dialysis Programme (PMNDP):	▪ Launch Year: 2016-17. Nodal Ministry: Ministry of Health and Family Welfare ▪ Nodal Mission: National Health Mission. Aim: Provide free dialysis services to Below Poverty Line (BPL) beneficiaries at district hospitals.**Financing:** 100% of expenses are covered for BPL patients, non-BPL patients pay the same rates as BPL patients. **Dialysis:** Dialysis is a procedure that removes waste and excess fluids from the body, maintaining balance in patients with kidney failure. There are two main types: 1. **Hemodialysis (HD):** Blood is filtered through a machine acting as an artificial kidney. It's done at a dialysis center, about 3 times a week for 3-4 hours each time. 2. **Peritoneal dialysis (PD):** The abdomen lining filters blood with a solution. It can be done manually (CAPD) 3-5 times a day, or with a machine (APD) during sleep.
SWATI PORTAL	The 'SWATI' (Science for Women-A Technology & Innovation) portal, is an initiative of the Inter Academy Panel (IAP) on Women in STEMM. It aims to create a database profiling Indian women in Science, Technology, Engineering, Mathematics, and Medicine (STEMM), featuring profiles of iconic women scientists. The portal addresses gender gap challenges, encourages women and girls to pursue STEMM careers.
PRITHviVIgyan (PRITHVI) Scheme	▪ It is a comprehensive initiative by the Ministry of Earth Sciences aimed at advancing the understanding of the Earth system. It encompasses five components, focusing on monitoring indicators of Earth system dynamics, developing modeling systems for weather and climate predictions, exploring polar and high seas regions, and utilizing technology for sustainable oceanic resource exploration. Implemented from 2021-26, PRITHVI subsumes existing schemes of the Ministry, including ACROSS, O-SMART, PACER, SAGE, and REACHOUT, with the goal of delivering reliable services for societal, environmental, and economic benefit.
eSoil	▪ eSoil is a digital platform developed by the Indian Space Research Organisation that provides comprehensive soil health information and services to farmers. The platform utilizes satellite data and geospatial technology to assess soil health parameters such as soil moisture, soil organic carbon, and nutrient content.
UPI TAP AND PAY FEATURE	▪ The UPI Tap and Pay feature utilizes NFC technology instead of a camera to capture the payee's UPI ID or VPA, and is available on NFC-enabled devices. Users can finalize transactions by tapping their device on the UPI Smart Tag or Smart QR after selecting the 'Tap & Pay' option in their UPI app. For transactions below Rs. 500 with UPI LITE accounts, no UPI PIN is required, while transactions exceeding Rs. 500 will need a UPI PIN. This feature is currently active on BHIM and limitedly on Paytm, supporting both Android and iOS platforms.
MEDTECH MITRA	▪ MedTech Mitra is a web platform supporting the development of affordable indigenous medical devices and diagnostics. It offers strategic guidance to innovators, assisting with clinical viability, regulatory processes, and product adoption. The platform provides personalized advice and addresses queries in consultation with regulators and stakeholders, promoting the advancement of medical technology in India.
National Geoscience Data Repository Portal	▪ The National Geoscience Data Repository Portal (NGDR) is an online platform developed by the Geological Survey of India (GSI) and the Bhaskaracharya Institute of Space Applications and Geoinformatics (BISAG-N) to provide centralized access to diverse geospatial information. It offers geological maps, mineral resources, seismic data, and environmental information, all available in the public domain.
Dare to Dream Scheme	▪ The annual Dare to Dream Contest, initiated by the Defence Research and Development Organisation (DRDO) in memory of former President Dr APJ Abdul Kalam, promotes innovations in defence and aerospace technologies among Indian citizens above 18 years and startups registered with the Department for Promotion of Industry & Internal Trade. Now in its 4th edition since 2019, the contest awards cash prizes of up to 10 lakhs for startups and 5 lakhs for individuals, along with eligibility for funding through DRDO's TDF scheme for prototype realization, contingent on merit and feasibility. Entries are evaluated by an

	independent expert committee based on criteria such as novelty, applicability, implement ability, technical merit, and maturity.
New Delhi Declaration	▪ The New Delhi Declaration, adopted at the Global Partnership on Artificial Intelligence (GPAI) Summit hosted by India, focuses on responsible development and application of artificial intelligence (AI). GPAI, with 29 member countries, aims to ensure transparency, accountability, fairness, and non-discrimination in AI systems. The declaration emphasizes a global framework rooted in democratic values and human rights, inclusive AI for equitable access, and addressing concerns such as unemployment and data protection. India will lead GPAI in 2024, with a commitment to making agriculture a priority in the AI agenda.

TECHNOLOGIES ASSOCIATED WITH EVERYDAY USE

Thermometer	Principle: Thermal expansion. Mercury or colored alcohol is used. Zeroth Law is the basis for the functioning of thermometers. The Zeroth Law: Systems in thermal equilibrium with a third system are in equilibrium with each other.
X Ray Machine	X-rays are created when fast electrons hit a metal target, a process called Bremsstrahlung radiation, producing X-rays of various energies.
Microwave	Microwaves cause water molecules in the food to vibrate, creating heat through friction.
Ceiling Fan:	Ceiling fans work on the principle of convection.
LED Display	Use light-emitting diodes to create images.
Smart watches	Detect heart rate using a technology called photoplethysmography (PPG).The smartwatch emits green light onto the skin, which is partially absorbed by the blood vessels. As the heart beats, blood flow causes the vessels to expand and contract, changing the amount of light absorbed. The sensor detects this and calculates your heart rate based on the changes in light absorption, corresponding to each heartbeat.
Barcodes	Barcodes are made up of lines of different widths that represent numbers or characters. When scanned, a barcode reader detects the pattern of light and dark lines, converts it into electrical signals, and decodes the information.
Pulse Oximeter	A pulse oximeter measures oxygen saturation and heart rate by emitting light through the skin and analyzing the absorption of light by oxygenated and deoxygenated blood.
Refrigerators:	Use thermostats to control temperature, activating heating or cooling based on user-set temperatures.
Keyless Entry Systems	Radio Frequency Identification (RFID) keyless entry systems use electronic tags and readers to grant access without physical keys. Tags transmit unique identifiers to readers, which verify them against a database for access.
Blood Glucose Meter	Measures glucose levels by reacting a blood sample with an enzyme called glucose oxidase on a test strip. The meter then calculates the glucose concentration and displays the result.
Induction Cooker	When powered, a coil beneath the ceramic surface generates a magnetic field (uses electromagnetic induction) that induces heat in compatible ferromagnetic cookware placed on top.
MRI (Magnetic Resonance Imaging)	Use strong magnets and radio waves to create detailed images of the body's internal structures by aligning hydrogen atoms in their body and detecting the signals they produce.
Air Purifier	Uses UV-C light and ionizers to kill bacteria and viruses.

APPLICATION BASED SCENARIOS

SCENARIO	PHENOMENON
Metal feel colder to the touch than wood at the same temperature	Specific Heat
Balloon deflate when placed in a cold environment	Boyles's Law (pressure of a given amount of gas is inversely proportional to its volume when the temperature is held constant.)
A sealed plastic bottle of soda expands when left in the sun	Charles's Law (Volume of a gas is directly proportional to its absolute temperature, provided that the pressure remains constant).
A diesel engine compress air adiabatically to ignite fuel	Adiabatic Process (A process in which there is no heat exchange between a system and its surroundings.)
Ice melt faster in water than in air	Latent Heat (water conducts heat more efficiently than air, allowing the ice to absorb heat faster.)
Food cook faster in a microwave oven compared to a	Radiation (microwaves penetrate the food and directly heat the

conventional oven	molecules inside, whereas a conventional oven heats the food from the outside.)
Hot air balloon rises in the sky	Convection
Thermos flask maintain the temperature of its contents	Thermodynamic Equilibrium:The state in which all parts of a system are at the same temperature and there is no heat transfer.

SPACE ORGANIZATIONS AND THEIR MISSIONS

Space Organization	Missions
NASA	• **Mercury Program**: NASA's first human spaceflight program that aimed to put astronauts into orbit around Earth. • **Gemini Program**: NASA's second human spaceflight program that focused on developing techniques for space travel and rendezvous. • **Apollo Program**: NASA's third human spaceflight program that aimed to land humans on the Moon and bring them safely back to Earth. • **Skylab**: NASA's first space station that orbited Earth and conducted scientific research. • **Space Shuttle Program**: NASA's reusable spacecraft system that carried astronauts and cargo to and from space. • **Hubble Space Telescope**: A space telescope launched into orbit around Earth to observe distant galaxies, stars, and planets. • **Mars Exploration Rover Mission**: NASA's mission to send rovers to Mars to study the planet's geology and climate. • **Cassini-Huygens Mission**: A collaboration between NASA, ESA, and the Italian Space Agency to study Saturn and its moons. • **Voyager Program**: NASA's mission to study the outer planets of the solar system using the Voyager 1 and Voyager 2 spacecraft. • **New Horizons**: NASA's mission to study Pluto and the Kuiper Belt. • **James Webb Space Telescope**: NASA's next-generation space telescope that will study the universe in infrared wavelengths. • **Artemis Program**: NASA's program to return humans to the Moon, including the first woman and the next man, by 2024. • **Chandra X-ray Observatory**: NASA's telescope that observes X-rays from high-energy regions of the universe. • **Spitzer Space Telescope**: NASA's infrared space telescope that studied the early universe, stars, and galaxies. • **Kepler Space Telescope**: NASA's space observatory that discovered thousands of exoplanets by monitoring the brightness of stars. • **TESS (Transiting Exoplanet Survey Satellite)**: NASA's mission to search for exoplanets using the transit method. • **InSight Mars Lander**: NASA's mission to study the interior of Mars and monitor seismic activity. • **OSIRIS-REx**: NASA's mission to study the asteroid Bennu and return a sample to Earth. • **Parker Solar Probe**: NASA's mission to study the Sun's outer atmosphere and solar wind. • **Juno**: NASA's mission to study Jupiter's composition, gravity field, magnetic field, and polar magnetosphere. • **Curiosity Mars Rover**: NASA's rover exploring the surface of Mars to study its geology and climate. • **Perseverance Mars Rover**: NASA's rover launched in 2020 to search for signs of ancient life on Mars and collect samples for return to Earth. • **GRACE (Gravity Recovery and Climate Experiment)**: A NASA mission to track changes in Earth's gravity field caused by the movement of water and ice. • **LRO (Lunar Reconnaissance Orbiter)**: A NASA mission to map the Moon's surface and study its composition and environment. • **TIMED (Thermosphere Ionosphere Mesosphere Energetics and Dynamics)**: A NASA mission to study Earth's upper atmosphere. • **TDRS (Tracking and Data Relay Satellite System)**: A NASA system of satellites that provide communication links to spacecraft in low Earth orbit. • **ICESat-2 (Ice, Cloud, and land Elevation Satellite-2)**: A NASA mission to measure ice sheet thickness and sea ice freeboard. • **Aqua**: A NASA mission to study Earth's water cycle, including water vapor, clouds, precipitation, and

	ice. • **TROPICS (Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats)**: A NASA mission to study tropical cyclones. • **GPM (Global Precipitation Measurement)**: A NASA mission to study rainfall and snowfall around the world. • **CYGNSS (Cyclone Global Navigation Satellite System)**: A NASA mission to study tropical cyclones using a constellation of small satellites. • **Europa Clipper**: A mission to study Jupiter's moon Europa and assess its potential for hosting life. • **Dragonfly**: A mission to send a drone-like rotorcraft to explore Saturn's moon Titan. • **Psyche**: A mission to explore the metal-rich asteroid 16 Psyche. • **SPHEREx (Spectro-Photometer for the History of the Universe, Epoch of Reionization, and Ices Explorer)**: A mission to study the early universe and the origins of galaxies. • **VERITAS (Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy)**: A mission to study the geology and atmosphere of Venus. • **DAVINCI+ (Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging Plus)**: A mission to study the atmosphere of Venus. • **Lucy**: A mission to study Jupiter's Trojan asteroids, which are remnants from the early solar system. • **NEOCam (Near-Earth Object Camera)**: A mission to discover and characterize near-Earth asteroids. • **SPARROW (Steam Propelled Autonomous Retrieval Robot for Ocean Worlds)**: A concept mission to explore icy moons using a steam-powered hopper. • **Lunar Gateway**: A planned space station in lunar orbit as part of NASA's Artemis program to return humans to the Moon.
ESA (European Space Agency)	• **Rosetta**: Launched in 2004 to study the comet 67P/Churyumov–Gerasimenko, achieving the first landing on a comet in 2014. • **Gaia**: Launched in 2013, mapping the Milky Way in unprecedented detail, including positions and motions of over a billion stars. • **Hubble Space Telescope**: ESA is a major partner in this mission, providing stunning images and valuable scientific data since its 1990 launch. • **Mars Express**: Launched in 2003, studying Mars' atmosphere, surface, and subsurface, including the search for water. • **ExoMars**: A joint project with Russia, searching for signs of past or present life on Mars. • **BepiColombo**: Launched in 2018, a joint mission with JAXA to study Mercury's composition, geophysics, atmosphere, and magnetosphere. • **Solar Orbiter**: Launched in 2020, studying the Sun's outer atmosphere and solar wind to understand space weather. • **Cluster**: Launched in 2000, consisting of four identical spacecraft studying the Earth's magnetosphere and its interaction with the solar wind. • **Integral**: Launched in 2002, studying gamma-ray sources in the universe, including black holes, neutron stars, and supernovae. • **Planck**: Launched in 2009, mapped the cosmic microwave background radiation, providing insights into the early universe and galaxy formation. • **JUICE (JUpiterICy moons Explorer)**: Scheduled for launch in 2022, JUICE will study Jupiter and its moons, focusing on Ganymede, Callisto, and Europa. • **CHEOPS (CHaracterisingExOPlanet Satellite)**: Launched in 2019, CHEOPS is studying known exoplanets to better understand their size, structure, and formation. • **LISA Pathfinder**: Launched in 2015, LISA Pathfinder tested technologies for the future space-based gravitational wave detector, LISA (Laser Interferometer Space Antenna). • **Cluster II**: A follow-up to the original Cluster mission, launched in 2000, to continue studying Earth's magnetosphere. • **Herschel Space Observatory**: Launched in 2009, Herschel studied the universe in far-infrared and submillimeter wavelengths, providing insights into star formation and galaxy evolution. • **Aeolus**: Launched in 2018, Aeolus is studying Earth's winds to improve weather forecasting and understanding of atmospheric dynamics. • **CHEOPS (Characterising ExOPlanet Satellite)**: Launched in 2019, CHEOPS is studying known exoplanets to better understand their size, structure, and formation. • **LISA Pathfinder**: Launched in 2015, LISA Pathfinder tested technologies for the future space-based gravitational wave detector, LISA (Laser Interferometer Space Antenna). • **Cluster II**: A follow-up to the original Cluster mission, launched in 2000, to continue studying Earth's magnetosphere. • **Herschel Space Observatory**: Launched in 2009, Herschel studied the universe in far-infrared and

	submillimeter wavelengths, providing insights into star formation and galaxy evolution. • **Aeolus**: Launched in 2018, Aeolus is studying Earth's winds to improve weather forecasting and understanding of atmospheric dynamics. • **Euclid**: Euclid will investigate dark matter and dark energy to understand the evolution of the universe. • **Solar Orbiter**: Launched in 2020, Solar Orbiter is studying the Sun's atmosphere and magnetic fields to better understand solar activity.
	▪ **Chandrayaan-1**: ISRO's first lunar probe, launched in 2008, which made India the fourth country to reach the Moon. ▪ **Mangalyaan (Mars Orbiter Mission)**: Launched in 2013, Mangalyaan made India the first Asian nation to reach Martian orbit and the first nation in the world to do so on its maiden attempt. ▪ **Chandrayaan-2**: Launched in 2019, Chandrayaan-2 aimed to explore the Moon's south polar region, but the lander lost communication during the descent. ▪ **Astrosat**: India's first dedicated multi-wavelength space observatory, launched in 2015, to study celestial sources in different wavelengths. ▪ **GSAT series**: A series of communication satellites launched to provide various communication services including telecommunication, broadcasting, and broadband. ▪ **IRNSS (NavIC)**: Indian Regional Navigation Satellite System, launched to provide accurate position information services to users in India and the surrounding region. ▪ **RISAT series**: Radar Imaging Satellite series launched for earth observation, particularly for agriculture, forestry, and disaster management. ▪ **Cartosat series**: Series of earth observation satellites providing high-resolution imagery for cartographic applications, urban and rural planning, and infrastructure development. ▪ **INSAT series**: A series of multipurpose geostationary satellites providing services in telecommunications, broadcasting, meteorology, and search and rescue operations. ▪ **Gaganyaan**: India's first manned mission to space, planned for launch in the near future, aiming to send Indian astronauts to low Earth orbit. ▪ **RISAT-2B**: Radar Imaging Satellite launched in 2019 for applications in agriculture, forestry, and disaster management. ▪ **GSAT-6A**: Communication satellite launched in 2018 to provide mobile communication services through multi-beam coverage. ▪ **PSLV-C37**: Mission in 2017 where a single rocket launched 104 satellites into space, setting a world record for the most satellites launched in a single mission. ▪ **Astrosat**: India's first dedicated multi-wavelength space observatory, launched in 2015, to study celestial sources in different wavelengths. ▪ **Mars Orbiter Mission (Mangalyaan)**: Launched in 2013, Mangalyaan made India the first Asian nation to reach Martian orbit and the first nation in the world to do so on its maiden attempt. ▪ **GSAT-14**: Communication satellite launched in 2014 to augment telecommunication, broadcasting, and DTH services in India. ▪ **IRNSS-1G**: Seventh satellite in the Indian Regional Navigation Satellite System (IRNSS) constellation, launched in 2016 to provide accurate position information services to users in India and the surrounding region. ▪ **GSAT-12**: Communication satellite launched in 2011 to replace INSAT-3B and augment telecommunication, broadcasting, and DTH services in India. ▪ **RISAT-1**: Radar Imaging Satellite launched in 2012 for all-weather, day-and-night earth observation. ▪ **GSAT-10**: Communication satellite launched in 2012 to augment telecommunication, broadcasting, and DTH services in India. ▪ **Chandryaan-3**: Demonstrated end-to-end capability in safe landing and roving on the lunar surface. It consists of Lander and Rover configuration ▪ **Aditya-L1**: India's first mission to study the Sun, aiming to observe the solar corona. ▪ **Gaganyaan**: India's first manned mission to space, planned for launch in the near future, aiming to send Indian astronauts to low Earth orbit. ▪ **NavIC (Navigation with Indian Constellation)**: India's regional satellite navigation system, providing accurate positioning services over India and the surrounding region. ▪ **PSLV-C51/RISAT-2B**: Launched in 2021, this mission carried the RISAT-2B radar imaging satellite into orbit for earth observation. ▪ **PSLV-C49/EOS-01**: Launched in 2020, this mission carried the EOS-01 earth observation satellite along with several international co-passenger satellites. ▪ **Cartosat-3**: Launched in November 2019, this mission carried the Cartosat-3 satellite, along with 13 commercial nanosatellites, for high-resolution earth observation.

Roscosmos (Russian Federal Space Agency)	▪ **Soyuz Program**: A series of manned space missions using the Soyuz spacecraft, which has been in operation since the 1960s and is still used to transport astronauts to the International Space Station (ISS). ▪ **Luna Program**: A series of unmanned missions to the Moon, including the first successful soft landing on the Moon by Luna 9 in 1966. ▪ **Venera Program**: A series of unmanned missions to Venus, including the first successful landing on Venus by Venera 7 in 1970. ▪ **Mars Program**: A series of unmanned missions to Mars, including the Mars 3 mission in 1971, which achieved the first successful landing on Mars. ▪ **Salyut Program**: A series of space stations launched by the Soviet Union, including the first space station, Salyut 1, launched in 1971. ▪ **Mir Space Station**: A space station that operated in low Earth orbit from 1986 to 2001, serving as a precursor to the ISS. ▪ **Progress Program**: A series of unmanned cargo spacecraft used to resupply the ISS, which has been in operation since 1978. ▪ **Phobos Program**: A series of unmanned missions to the Martian moon Phobos, including the Phobos 2 mission in 1988, which achieved orbit around Phobos but lost contact shortly thereafter. ▪ **ExoMars Program**: A joint program with the European Space Agency (ESA) to explore Mars, including the ExoMars Trace Gas Orbiter, which was launched in 2016. ▪ **Progress MS-21**: Launched in February 2022, this mission was an unmanned cargo spacecraft sent to resupply the International Space Station (ISS). ▪ **Arktika-M**: A series of satellites launched to monitor the Arctic region and provide weather forecasting and environmental monitoring data. ▪ **Elektro-L**: The Elektro-L series of weather satellites continue to be launched to provide geostationary weather monitoring over Russia and neighboring regions.
JAXA (Japan Aerospace Exploration Agency):	▪ **Hayabusa2**: A mission to study the asteroid Ryugu and return samples to Earth, launched in 2014 and returned to Earth in December 2020. ▪ **HTV-X**: An upgraded version of the H-II Transfer Vehicle (HTV) for resupply missions to the International Space Station (ISS), with the first launch planned in 2022. ▪ **MMX (Martian Moons Exploration)**: A mission to study the Martian moons Phobos and Deimos, with a planned launch in the mid-2020s. ▪ **SLIM (Smart Lander for Investigating Moon)**: A mission to demonstrate precision landing technology on the Moon, with a planned launch in the mid-2020s. ▪ **DESTINY+ (Demonstration and Experiment of Space Technology for INterplanetaryvoYage)**: A mission to study the atmosphere and surface of Venus, with a planned launch in the early 2020s. ▪ **MMX (Martian Moons Exploration)**: A mission to study the Martian moons Phobos and Deimos, with a planned launch in the mid-2020s. ▪ **SLIM (Smart Lander for Investigating Moon)**: A mission to demonstrate precision landing technology on the Moon, with a planned launch in the mid-2020s. ▪ **DESTINY+ (Demonstration and Experiment of Space Technology for INterplanetaryvoYage)**: A mission to study the atmosphere and surface of Venus, with a planned launch in the early 2020s. ▪ **Akatsuki (Venus Climate Orbiter)**: A mission to study the climate and atmosphere of Venus, launched in 2010 and successfully inserted into Venus orbit in 2015. ▪ **Hayabusa2**: A mission to study the asteroid Ryugu and return samples to Earth, launched in 2014 and returned to Earth in December 2020. ▪ **IKAROS (Interplanetary Kite-craft Accelerated by Radiation Of the Sun)**: A demonstration mission to test solar sail technology, launched in 2010. ▪ **Rovers on asteroid Ryugu**: As part of the Hayabusa2 mission, several rovers were deployed to the surface of the asteroid Ryugu to study its composition and geology. ▪ **ASTERIA (Arcsecond Space Telescope Enabling Research in Astrophysics)**: A miniaturized satellite mission to demonstrate technology for exoplanet detection, launched in 2017. ▪ **Hinode (Solar-B)**: A mission to study the Sun's magnetic field and its impact on the solar atmosphere, launched in 2006. ▪ **KAGUYA (SELENE)**: A mission to study the Moon's surface and gravitational field, launched in 2007. ▪ **H-II Transfer Vehicle (HTV)**: A series of resupply missions to the International Space Station (ISS), with the latest mission (HTV-9) launched in May 2020. ▪ **SPRINT-A**: A mission to study the interaction between the solar wind and the Earth's magnetosphere, launched in 2014.

Canadian Space Agency (CSA)	▪ **RADARSAT Constellation Mission (RCM)**: A series of three Earth observation satellites launched in June 2019 to provide C-band radar data for various applications, including maritime surveillance, disaster management, and ecosystem monitoring. ▪ **Neptune**: A proposed mission to send a spacecraft to study Neptune and its moons, with a focus on Triton, Neptune's largest moon. ▪ **OSIRIS-REx**: While this mission is led by NASA, the Canadian Space Agency contributed the OSIRIS-REx Laser Altimeter (OLA) instrument, which is used to create detailed 3D maps of the asteroid Bennu's surface. ▪ **MOPITT (Measurements Of Pollution In The Troposphere)**: An instrument on board the Terra satellite, launched in 1999, to monitor carbon monoxide and methane levels in the Earth's atmosphere. ▪ **SCISAT-1**: A satellite launched in 2003 to study the Earth's atmosphere and specifically to monitor ozone levels in the stratosphere. ▪ **Canadarm2**: While not a standalone mission, the Canadarm2 is a robotic arm on the International Space Station (ISS) that was built by the Canadian Space Agency and is used for various tasks, including docking spacecraft and assisting astronauts during spacewalks. ▪ **MOST (Microvariability and Oscillations of STars)**: A space telescope launched in 2003 to study the variability of stars and search for exoplanets. ▪ **CASSIOPE (Cascade Smallsat and Ionospheric Polar Explorer)**: A satellite launched in 2013 to study the ionosphere and test new technologies for space communications.

SPACE TELESCOPES

- **Hubble Space Telescope (HST)**: Launched in 1990, the Hubble Space Telescope is one of the most famous and successful space telescopes. It has provided stunning images and valuable scientific data across a wide range of astronomical fields.
- **James Webb Space Telescope (JWST)**: Scheduled for launch in late 2021, the JWST is a highly anticipated successor to Hubble. It will study every phase in the history of our Universe, ranging from the first luminous glows after the Big Bang to the formation of solar systems capable of supporting life.
- **Chandra X-ray Observatory**: Launched in 1999, Chandra is a space telescope specially designed to detect X-ray emissions from very hot regions of the Universe, such as exploded stars, clusters of galaxies, and matter around black holes.
- **Spitzer Space Telescope**: Launched in 2003 and retired in 2020, Spitzer was an infrared space telescope that provided valuable data on distant galaxies, star-forming regions, and exoplanets.
- **Compton Gamma Ray Observatory**: Launched in 1991 and deorbited in 2000, Compton was a space observatory designed to study gamma-ray sources, such as supernovae, black holes, and gamma-ray bursts.
- **Fermi Gamma-ray Space Telescope**: Launched in 2008, Fermi is a space observatory studying gamma-ray emissions from sources such as pulsars, black holes, and active galactic nuclei.
- **Kepler Space Telescope**: Launched in 2009 and retired in 2018, Kepler was a space telescope designed to search for exoplanets by detecting the slight dimming of stars as planets pass in front of them.
- **Tess (Transiting Exoplanet Survey Satellite)**: Launched in 2018, TESS is conducting an all-sky survey to search for exoplanets using the transit method.
- **Euclid**: Scheduled for launch in 2022, Euclid is a space telescope designed to investigate the dark universe, including dark matter and dark energy.
- **XMM-Newton**: Launched in 1999 by the European Space Agency (ESA), XMM-Newton is an X-ray observatory that studies high-energy phenomena in the Universe, such as black holes, supernovae, and galaxy clusters.
- **NuSTAR (Nuclear Spectroscopic Telescope Array)**: Launched in 2012, NuSTAR is an X-ray telescope that focuses on studying the high-energy X-ray universe, including black holes, supernova remnants, and active galaxies.
- **NICER (Neutron star Interior Composition Explorer)**: Launched in 2017, NICER is an X-ray telescope mounted on the International Space Station (ISS) that studies neutron stars, pulsars, and other compact objects.
- **GAIA**: Launched in 2013 by the European Space Agency (ESA), GAIA is a space observatory that is mapping the Milky Way galaxy in unprecedented detail, including the positions, motions, and properties of over a billion stars.
- **Planck**: Launched in 2009 by the European Space Agency (ESA), Planck was a space observatory that studied the cosmic microwave background radiation, providing valuable data on the early Universe.
- **WISE (Wide-field Infrared Survey Explorer)**: Launched in 2009, WISE was an infrared space telescope that conducted an all-sky survey to detect and study objects such as asteroids, brown dwarfs, and distant galaxies.
- **JAXA's ASTRO-H (Hitomi)**: Launched in 2016 by the Japan Aerospace Exploration Agency (JAXA), ASTRO-H was an X-ray observatory that aimed to study the hot and energetic universe before a premature termination.
- **SOHO (Solar and Heliospheric Observatory)**: Launched in 1995 by ESA and NASA, SOHO is a space observatory studying the Sun, including its outer atmosphere and solar wind.
- **ROSAT (Röntgensatellit)**: Launched in 1990 by Germany, ROSAT was a space telescope designed to perform all-sky surveys in X-ray wavelengths, providing valuable data on celestial X-ray sources.

- **ASTRO-H (Hitomi)**: Launched in 2016 by Japan, ASTRO-H was an X-ray observatory designed to study the high-energy Universe, including black holes, supernova remnants, and galaxy clusters, before a premature termination.
- **NuSTAR (Nuclear Spectroscopic Telescope Array)**: Launched in 2012 by NASA, NuSTAR is an X-ray telescope designed to study the high-energy X-ray universe, including black holes, supernova remnants, and active galaxies.
- **VERITAS (Very Energetic Radiation Imaging Telescope Array System)**: VERITAS is a ground-based gamma-ray observatory located in Arizona, USA, designed to study the highest-energy gamma rays from astrophysical sources.

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SCIENCE-BASED ORGANIZATIONS UNDER THE GOVERNMENT OF INDIA

Organisation	About
Council of Scientific and Industrial Research (CSIR)	• India's largest research and development organization, comprising 37 laboratories. • Formation: Established on September 26, 1942. • Functions: Conducts scientific and industrial research for societal and economic benefit.
Indian Council of Agricultural Research (ICAR):	• An autonomous body under the Department of Agricultural Research and Education, Ministry of Agriculture and Farmers Welfare. • Formation: Established on July 16, 1929. • Functions: Coordinates agricultural education and research in India.
National Institute of Science Communication and Information Resources (NISCAIR):	• An institute under the Council of Scientific and Industrial Research (CSIR). • Functions: Provides science communication and information services.
Department of Atomic Energy (DAE)	• A department under the Prime Minister's Office, Government of India. • Formation: Established in 1954. • Functions: Oversees atomic energy activities, including nuclear power and research reactors.
Indian Council of Medical Research (ICMR):	• An autonomous organization under the Department of Health Research, Ministry of Health and Family Welfare. • Formation: Established in 1911. • Functions: Coordinates and promotes biomedical research in India.
National Institute of Oceanography (NIO):	• A research organization under the Council of Scientific and Industrial Research (CSIR). • Formation: Established in 1966. • Functions: Conducts research in oceanography and marine sciences.
Indian Meteorological Department (IMD):	• An agency under the Ministry of Earth Sciences, Government of India. • Formation: Established in 1875. • Functions: Provides weather forecasts, warnings, and meteorological information.
Science and Engineering Research Board (SERB):	• An autonomous body under the Department of Science and Technology (DST). • Formation: Established in 2008. • Functions: Promotes basic research in science and engineering.
Central Drug Research Institute (CDRI):	• A premier biomedical research institute under the Council of Scientific and Industrial Research (CSIR). • Formation: Established in 1951. • Functions: Conducts research in drug discovery and development.
National Institute of Immunology (NII):	• An autonomous institution under the Department of Biotechnology (DBT). • Formation: Established in 1981. • Functions: Conducts research in immunology and related areas.
National Centre for Biological Sciences (NCBS):	• An autonomous institute under the Department of Biotechnology (DBT). • Formation: Established in 1992. • Functions: Conducts research in biological sciences.

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4 DEFENSE & SECURITY

IMPORTANT ORGANIZATIONS FORMED AFTER THE INDEPENDENCE

Organization	Important Information
Defense Research And Development Organization (DRDO)	**R&D wing** of the **Ministry of Defence, Government of India.** Established in **1958 and is India's largest research organization.**
Defense Innovation Organisation	**A 'not for profit' company** registered under **Section 8 of the Companies Act 2013.** Its two founding members are **Hindustan Aeronautics Limited (HAL) & Bharat Electronics Limited (BEL) – Defence Public Sector Undertakings (DPSUs).**
National Security Council (NSC)	The executive government agency tasked with advising the **Prime Minister's Office on matters of national security and strategic interest.** Established by the former Prime Minister of India **Atal Bihari Vajpayee on 19 November 1998**, with **Brajesh Mishra as the first National Security Advisor.** **The National Security Advisor**is the **chairman of the group**
Chief of Defence Staff (CDS)	His core function is to foster greater operational synergy between the three service branches of the Indian military. **He heads the Department of Military Affairs (DMA)** in the Ministry of Defence. **He is a single-point military adviser to the Defence Minister on matters involving all three services**. Enjoys the rank of **Secretary within the DoD.**
NATGRID	Came into existence after the **2008 Mumbai attacks.** It is the integrated intelligence master database structure for counter-terrorism
The Crime and Criminal Tracking Network and Systems (CCTNS)	**Founded on June 19, 2009** A project by the Indian government to create a system for effective policing through e-governance. The mandate is to maintain a **repository of intelligence databases.**
Computer Emergency Response Team (CERT-In)	**Established in 2004** as a part of the Ministry of Electronics and Information Technology (MeitY). **Objectives:** Securing India's cyber space Dealing with hacking and phishing Performing cyber security audits Promoting best practices Performing cyber security exercises and drills
National Security Advisory Board (NSAB)	**Constituted in December 1998.** First NSAB was **headed by the late K. Subrahmanyam** produced a draft **Nuclear Doctrine for the country in 2001, a Strategic Defence Review in 2002 and a National Security Review in 2007.** Initially the Board was constituted for one year, but since 2004-06, the Board has been reconstituted for two years. Two subordinate bodies working under it :**- (i) National Information Board (NIB) and (ii) Technology Coordination Group (TCG).** It has a tenure of two years.
Nuclear Command Authority Of India	Responsible for **command, control and operational decision**s regarding India's **nuclear weapons programme.** Its two branches: **Political Council headed by the Prime Minister of India and Executive Council headed by the National Security Advisor.** The Executive Council gives its opinion to the Political Council, which authorizes a nuclear attack when deemed necessary.
Strategic Forces Command	Created on **4 January 2003** by the Vajpayee Government. **Air Marshal Teja Mohan Asthana** was its first commander-in-chief. It is under the leadership of a **Commander-in-Chief** who is a three-star rank officer. It is responsible for the management and administration of the **country's tactical and strategic nuclear weapons stockpile.**
Combating Financing of terrorism cell(CFT) Cell	**Established in 2011.** To coordinate with law enforcement agencies to develop a strategy for combating terror funding. Part of the Internal Security division of MHA.
Fugitive Economic Offenders Act, 2018	Employers ED **confiscate properties** of economic offenders who have left the country to avoid facing criminal prosecution or refuse to return to the country to face prosecution. **Value of the offense is at least Rs. 100 crore**.
National Investigation	**Established in 2008** after the Mumbai terror attack.

Agency	Authorized to investigate terror-related crimes across states without special Permission from the states.
Multi Agency Center(MAC)	**Established in 2001 after the Kargil war** and operates under the Intelligence Bureau (IB). The MAC is a nodal body that shares intelligence inputs 24/7
Narco Coordination Centre (NCORD)	**Introduced in 2016** to have effective coordination of actions among various Ministries, Departments, and Central, and States law enforcement agencies dealing with narcotics.

DEFENSE AND SECURITY-RELATED COMMITTEES

Name	Details
Kargil Review Committee Report (2000)	Formed in the aftermath of the Kargil conflict in 1999. **Recommendations:** • A thorough review of the national security system by a credible body of experts • Task forces to review specific parts of the system, including the National Security Council and Intelligence • Reorganization of national security management and decision-making • Reorganization of the structure and interface between the Ministry of Defence and the Armed Forces Headquarters
Naresh Chandra Task Force on Security (2012)	Mandate: To review the defense management in the country and make suggestions for implementation of major defense projects. **Recommendations:** • Creation of a new post of Intelligence Advisor to assist the NSA and the National Intelligence Board on matters relating to coordination in the functioning of intelligence committee. • A permanent Chairman of the Chiefs of Staff Committee • Establishment of a National Defence University (NDU) and the creation of a separate think-tank on internal security.
Shekatkar Committee(2015)	**Mandate:** To suggest measures to enhance combat capability and rebalance defence expenditure of the armed forces'. **Recommendations:** • At least 2.5 – 3% of the Gross Domestic Product (GDP) should be spent on defense and security. • A Joint Services War College should be set up to train mid-level officers of the armed forces. • The Military Intelligence School at Pune should be transformed into a tri-service intelligence training establishment.
N Chandrasekaran Committee(2022)	To study the whole gamut of issues surrounding the strategic implications of Artificial Intelligence (AI) from a national security perspective. **Recommendations**: • Integrating and embedding AI strategy for Defence with Defence strategy. • Establish a High-level Defence AI Council(DAIC) and a Defence AI Project Agency (DAIPA). • Development of Data Management Framework, Establishing Data Management Office and appointing Data Management Officer. • Earmarking of AI budget from yearly Defence Budget with a corpus of Rs 1,000 crores to be provided each year for the next 5 years to support AI activities. **Steps taken based on recommendations:** • Defence AI Council (DAIC) under the Chairmanship of Raksha Mantri and Defence AI Project Agency (DAIPA) with Secretary (DP) as ex officio head, was created. • AI Sub Committee and Joint Working Group on AI in Tri-Services have been formed by services. • Defence AI Project Agency (DAIPA) has been created under the Chairmanship of Secretary DDP for enabling AI based processes in defenceOrganisations.

Committee to review AFSPA	**Jeevan Reddy Committee(2004)** • Recommended that the Act should be repealed and essential provisions of the Act be inserted into the Unlawful Activities (Prevention) Act of 1967. • "Sexual violence against women by members of the armed forces or uniformed personnel must be brought under the purview of ordinary criminal law." **Note:** The Second Administrative Reforms Commission headed by then Union law minister M Veerappa Moily also recommended that AFSPA should be repealed. **JUSTICE SANTOSH HEGDE COMMITTEE** • Appointed by the Supreme Court of India to investigate fake encounters in Manipur described AFSPA as a "symbol of oppression". • It suggested the government to make the Armed Forces Special Powers Act (AFSPA) more humane, and the security forces more accountable. **JUSTICE VERMA COMMITTEE** • To investigate atrocities of women by armed forces in AFSPA-implemented areas. • Recommended removing the requirement for prosecution sanction for crimes involving violence against women. Note: The AFSPA requires a sanction by the central government for initiating prosecution against armed forces personnel.

TANKS OF INDIA

Name	Features
T-90M Bhishma(A variant of the Russian T-90 Main Battle Tank)	• **Third-generation Russian main battle tank** developed to replace the T-72.
MBT Arjun projects- Mk1, Mk1A and MkII	• **Multi-laboratory programme of DRDO with Combat Vehicles Research and Development Establishment (CVRDE)** • Equipped with an indigenously developed **120mm main rifled gun with Fin Stabilised Armour-Piercing Discarding Sabot (FSAPDS) ammunition.** • Has a computer-controlled integrated **fire control system.** • Arjun Mk1A features **improved firepower and transmission systems.** • Arjun MkII variant is a light-weight **Futuristic Main Battle Tank (FMBT) with electro-optical sensors and high-power lasers.**
Tank Ex. aka Karna Tank	• Developed by the **Indian Defence Research and Development Organisation (DRDO) in 2002.** • Combines the **upgraded T-72M1(Ajeya) Chassis and The Arjun MBT** weapon system to provide superior firepower and better mobility.
BMD-2 (BoyevayaMashinaDesanta) aka Airborne Amphibious Light Tank and Infantry Fighting Vehicle	• Soviet airborne infantry fighting vehicle, **introduced in 1985.** • A variant of **BMD-1 with a new turret and changes to the hull.** • It is an air-droppable infantry fighting vehicle.
BMP-2 (BoyevayaMashinaPekhoty)	• An amphibious infantry fighting vehicle **introduced in the 1980s in the Soviet Union.** • **Ordnance Factory Medak (OFMK)** carried out flotation trials of BMP-II Infantry Combat Vehicles.
K9 Vajra	• It is a 155 mm, 52-caliber tracked **self-propelled howitzer.** • Built in India by **Larsen & Toubro (L&T) with technology transferred from South Korean defense major Hanwha Defense.** • It is a short gun that fires shells on high trajectories at low velocities.
T-54 MBT	• Medium Tank / Main Battle Tank (MBT) • Succeeded the fabled **SovAeronomyiet T-34 Medium Tank of World War 2.**
T-72 (Ajeya)	• Soviet-designed **main battle tank that entered production in 1971.** • **Succeeded the T-54/T-55 series systems and continues in service today.**

DRONE ARSENAL OF INDIA

Drone	Features
Heron MrkII	• It is an upgraded version of **Heron TP drones from Israel.** • **Medium-altitude long-endurance (MALE) drone** that can fly for 24 hours and has a range of 3,000 kilometers. • The drone is equipped with long-range missiles and various weaponry.
MQ-9B SeaGuardian	• 31 such drones to be bought from the **US.** • Made by **General Atomics.** • Payload capacity: over 1,700 kg. • Marine variant of Predator drones.
MQ-9B Predator	• India and the United States were looking to finalize a **deal for 31 MQ-9B Predator armed drones by March 2024.** • Deal cost around $3 billion. • Known for their **low, unobtrusive humming or buzzing sound.**
FireFly "loitering munition" also known as a suicide drone, kamikaze drone, or exploding drone.	• To be bought from Russia. • It is a type of aerial weapon that **can wait around a target area until it finds a target.** It then attacks the target by crashing into it. • **Weighs only 3 kg.**
The Harpy and Harop are loitering munitions, or "suicide drones"	• Produced by **Israel Aerospace Industries (IAI).** • Autonomous **drones controlled by a remote operator.** • Designed to attack radar **systems and suppress enemy air defenses (SEAD).**
The DRDO Rustom also known as the Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 (TAPAS BH-201)	• Medium altitude long endurance indigenous prototype drone. • It is India's indigenous **Medium Altitude Long Endurance (MALE) UAV.**
CATS Warrior(Combined Air Teaming System (CATS))	• A combination of manned and unmanned combat aircraft being developed by **Hindustan Aeronautics Limited (HAL).**
Significant Anti-Drone technologies is DRDO currently developing • **Tapas Medium Altitude Long Endurance (MALE) UAV** developed for **Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR)** applications is in an advanced stage of developmental trials. • Note- ISTAR is a military concept that **integrates diverse technologies for gathering and analyzing information, aiding strategic and tactical decision-making.** • The short-range armed UAV Archer, designed for reconnaissance, surveillance, and low-intensity conflict, is currently undergoing developmental flight trials.	

NAXALISM

- Naxalism is a form of **armed insurgency against the State motivated by leftist/Maoist ideologies** and thus is also known as **Left Wing extremism (LWE) or Maoism**.
- The Naxal insurgency in India originated in a **1967 uprising in Naxalbari, West Bengal by the Communist Party of India (Marxist).**
- The initial uprising was led by **Charu Majumdar, Kanu Sanyal and Jangal Santhal,** who were members of the Communist Party of India (Marxist).
- They are a group of people who believe in the political theory of the Chinese political leader **Mao Zedong.**
- The conflict is concentrated in the Eastern part of the country, particularly an area known as the **Red Corridor** spread across the states of **Chhattisgarh, Odisha, Jharkhand, Bihar and Andhra Pradesh.**

Evolution of Naxalism in India	
Phases	**Description**
British and Post-Independence Era	• 1925: Formation of Communist Party of India at Kanpur. • Post Indo China War(1962) differences emerged in the Party. • 1964: Birth of CPI (ML).
First Stage (1967- 75)	• In 1967 a peasant uprising took place in the Naxalbari. • In 1969, CPI (M) was broken and a new party, **Communist Party (Marxist-Leninist) (CPI-ML)**, was formed under the leadership of Charu Majumdar. • Formation of All India Coordination Committee of Communist Revolutionaries (AICCCR).
Second Stage (1975-2004)	• Continued their struggle under the **"Strategy of Protracted War".**

	• CPI (ML) converted into the People's war group in 1980 • At the same time Moist Communist Centre of India strengthened in Bihar (MCCI).
Third Stage (2004 onwards)	• **People's War Group** combined with **Moist Communist Centre of India and Formed CPI** (Moist). • This whole contiguous zone where CPI (Moist) was active, which is spread in West Bengal, Jharkhand, Chhattisgarh, Odisha, Maharashtra and Telangana is known as 'RedCorridor'.

LIST OF RADAR SYSTEMS USED BY INDIA ARMED FORCES

Indra I Radar	• Stands for **Indian Doppler Radar.** • Designed by **DRDO and manufactured by Bharat Electronics Limited.** • **It is a series of 2D radars** used by the Indian Army and Indian Air Force. • The **INDRA-I mobile surveillance** radar is used to detect low-level targets • **First significant radar system manufactured in India.**
Indra MK2 Radar (Indian Doppler Radar)	• Manufactured by **Bharat Electronics Limited.** • Used for **ground-based target interception.**
Rajendra Radar (TLR)	• It is a **passive electronically scanned array (PESA) radar** that directs **Aakash missiles to their intended targets.** • Used for surveillance, tracking, and guidance.
Ashwini Radar	• Works on **4D Low-Level Transportable Radar technology.** • It has a detection range of **up to 200 kilometers and can detect fast-moving targets.**
Swordfish Radar (LRTR)	• Produced by the Indian **Defence Research and Development Organization.** • **Created mainly to detect ballistic missiles.**

NUCLEAR DOCTRINE OF INDIA

India conducted its first nuclear test in 1974 and the second nuclear test in 1998. India declared itself a nuclear weapon state in 1998 and came forward with Nuclear Doctrine in 2003.The nuclear programme of India was initiated in the late 1940s under the guidance of Homi J. Bhabha.

- **No First Use:** It stated that India will use nuclear weapons only as retaliation against a nuclear attack on Indian territory or on Indian forces anywhere.
- **Credible minimum deterrence:** It refers to the number of nuclear arsenals and forces India needed to deter potential nuclear adversaries.
- **Command Control:** Power lies with the political leadership to determine how to employ nuclear deterrents. For this India has created the Nuclear Command Authority which consists of a political and executive council.
- **Not using against the non-nuclear state:** India is committed that it will not use nuclear weapons against any non-nuclear state.
- **Multilateral disarmament:**India continuously supports global multilateral non-discriminatory disarmament to make the world free from nuclear weapons.
- **Non-proliferation:** India observes continuous and strict control over the export of nuclear and missile-related materials.

INTERNATIONAL INITIATIVES THAT HELPS TO STRENGTHEN INDIA'S SECURITY

Interpol: India is one of the thirteen members of Interpol's executive committee, which decided to start a **special inquiry into money laundering in Asia.**

Vienna Convention on Money Laundering:

➔ Requires the member states to make money laundering from drug trafficking illegal.

➔ It encourages global collaboration in forensics and makes interstate extradition applicable to money laundering.

Financial Action Task Force (FATF):

○ The FATF identified jurisdictions with weak measures to combat money laundering and terrorist financing (AML/CFT) in two FATF lists:

■ **High-Risk Jurisdictions subject to a Call for Action (i.e. "black list")**

■ **Jurisdictions under Increased Monitoring (i.e. "grey list")**

○ At present (Dec 2023), only the **Democratic Republic of North Korea, Iran and Myanmar** are mentioned in the FATF blacklist – countries subject to a Call for Action.

○ **Pakistan was removed** from the **FATF Grey List** due to significant improvements in the overall anti-money laundering (AML) /(CFT)

Counter-Terrorism Committee (CTC):

➔ Founded by **Security Council resolution 1373 (2001),** which was unanimously adopted on **September 28, 2001,** in the wake of the September 11 terrorist attacks in the United States.

UN Resolution 1624 (2005): To prohibit it by law, prevent acts of terrorism and deny haven to anyone "concerning whom there is credible and relevant information giving serious reasons for considering that they have been guilty of such conduct.

SOUNDING ROCKETS

- One or two stage solid propellant rockets used for probing the **upper atmospheric regions and for space research.**
- **RH-75** built under the **Rohini Sounding Rocket (RSR) Programme**was the first truly Indian sounding rocket, which was followed by **RH-100 and RH-125 rockets.**

Operational sounding Rockets			
Name	**Playload**	**Purpose**	**Launch Pad**
RH-200	10	Meteorology	ThumbaBalasore
RH-300-Mk-II	60	Aeronomy	SDSC-SHAR
RH-560-MK-II	100	Aeronomy	SDSC-SHAR

ROCKET LAUNCHERS OF INDIA

- **Three active operational launch vehicles:** Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV), Geosynchronous Satellite Launch Vehicle Mk-III (LVM3).
- Deployed for launching all three types of payloads viz. **Earth Observation, Geo-stationary and Navigation.**
- **GSLV with indigenous Cryogenic Upper Stage** has enabled the launching up to **2 tonne class of communication satellites.**

Name	Features
PSLV	• **Third generation launch vehicle of India.** • **First Indian launch vehicle** to be equipped with liquid stages. • First launch in **October 1994.** • **Flagship launches:** "Chandrayaan-1 in 2008 and Mars Orbiter Spacecraft in 2013. • Used to launch various satellites into **Geosynchronous and Geostationary orbits**. • **Four-stage launch vehicle powered by solid rocket motors** in the **first and third stages and liquid rocket engines in the second and fourth.**
GSLV	• Used to send satellites and other space objects into **Geosynchronous Transfer Orbits.** • Can carry heavier payloads into orbit than the **Polar Satellite Launch Vehicle (PSLV).**
GSLV MK-II	• Can launch satellites with a **lift-off mass of up to 2,500 kg to the GTO and up to 5,000 kg to the LEO.** • **Three-staged vehicle: 1st stage:** A solid rocket motor. Second stage:liquid fuel, and the last one: a cryogenic engine.
GSLV MK-III aka Launch Vehicle Mark-III (LVM3)	• Can carry satellites weighing up to 4 tons into **Geosynchronous Transfer Orbit (GTO) or 10 tons to Low Earth Orbit (LEO).** • **Three stages:** Solid, Liquid and Cryogenic. • Will be **used for India's first human space flight,** which is tentatively scheduled for late 2024.

IMPORTANT DEFENCE-RELATED ACTS OF INDIA SINCE INDEPENDENCE

Acts	Provisions
Terrorist and Disruptive Activities (Prevention) Act, 1987	• It was in **force between 1985 and 1995 (modified in 1987)** under the background of the Punjab insurgency and was applied to the whole of India.
The Prevention of Terrorism Act, 2002 (POTA)	• Passed by the Indian Parliament in 2002. • Aimed to address crimes like terrorism, subversion, and insurgency. • **Repealed 2004**.
Unlawful Activities (Prevention) Act, 1967	• It serves as legislation that imposes reasonable restrictions on fundamental freedoms outlined in **Article 19(1) of the Constitution.** • **Section 3 of the UAPA Act:** The government has **powers to declare an association "unlawful"**. • The government should send the notification to the Unlawful Activities Prevention Tribunal **within 30 days of issuing the gazette notification** to have the ban ratified. • The tribunal consists of only one person, who **has to be a High Court judge**.

	• A government order **would not come into effect until the tribunal has confirmed it.**
Unlawful Activities (Prevention) Amendment Bill, 2019 (UAPA 2019)	• Amends the **Unlawful Activities (Prevention) Act, 1967.** • Gave the Central Government the power to notify an **individual as a 'terrorist'** • The investigating officer needs **prior approval from the Director General of Police** to seize properties connected to terrorism. • Includes acts covered by **nine listed treaties, such as the Convention for the Suppression of Terrorist Bombings, Convention Against Taking of Hostages, and the International Convention for Suppression of Acts of Nuclear Terrorism.** • Expanded definition to encompass international terrorist activities.
Foreign Exchange Regulations Act, 1973	• Imposed strict regulations on **certain kinds of payments, the dealings in foreign exchange (forex) and securities and the transactions** which had an indirect impact on the **foreign exchange and the importand export of currency.**
Foreign Exchange Management Act, 1999 (FEMA)	• Came into force with effect from **1st June 2000.** • Legal framework for the **administration of foreign exchange transactions** in India. • It replaced FERA. • A **'person resident in India'** is defined in **Section 2(v) of FEMA, 1999 as**: Barring few exceptions, a person **residing in India for more than 182 days** during the preceding financial year. • Any person or body corporate **registered or incorporated in India.** • An office, branch or agency in India **owned or controlled by a person resident outside India.** • An office, branch or agency outside India **owned or controlled by a person resident in India.**
Prevention of Money Laundering Act 2002 (PMLA)	• To prevent **money laundering and to provide for confiscation of property** derived from, or involved in, money laundering and related matters. • **ED** has the responsibility **to enforce the provisions of the PMLA** by investigating to trace the assets derived from proceeds of crime, to provisionally attach the property and to ensure prosecution of the offenders and confiscation of the property by the Special court.
Narcotic Drugs and Psychotropic Substances Act, 1985	• The Act **regulates certain operations** - such as manufacture, transport and consumption - related to narcotic drugs and psychotropic substances. • Under the Act, **financing certain illicit activities** such as cultivating cannabis, manufacturing narcotic drugs or harboring persons engaged in them is an offense. • Persons found guilty of this offense will be punished with rigorous **imprisonment of at least 10 years - extendable up to 20 years - and a fine of at least Rs.1 lakh**
AFSPA(Armed Forces Special Powers Act),1958	• Initially known as the **Armed Forces (Assam and Manipur) Special Powers Act, 1958.** • Later the territorial scope of the act also expanded to the seven states of the North-East and Act became the **"Armed Forces (Special Powers) Act, 1958", getting the acronym of AFSPA, 1958.** • **Genesis:** The **Armed Forces Special Powers Ordinance of 1942 promulgated by Viceroy Linlithgow** for the British colonial government on 15 August 1942 to suppress the Quit India Movement. • **Basis:Article 355 of the Constitution:** confers power to the Central Government to protect every state from internal disturbance. ○ **Main provisions:** • **Allows them to open fire', even causing death**, against any person in contravention to the law or carrying arms and ammunition. • It gives them **powers to arrest individuals without warrants, based on "reasonable suspicion",** and also search premises without warrants. • **Security forces are protected from prosecution and legal suits.** • **AFSPA is in force to the North-Eastern States** of the country fully or partially except **Sikkim, Meghalaya, and Tripura along with the UT of Jammu and Kashmir.**
The Armed Forces (Jammu and Kashmir) Special Powers Act, 1990	• Same purpose and objectives as **AFSPA(Armed Forces Special Powers Act),1958.**
Conservation of Foreign Exchange and Prevention of Smuggling Activities Act, 1974 (COFEPOSA)	• Act of Parliament that allows for administrative detention for **up to six months.** • Purpose:to detain people involved in **smuggling and foreign exchange manipulations**

Financial Intelligence Unit – India (FIU-IND)	• **On 18th November 2004** it was established as the central national agency responsible for receiving, processing, analyzing and disseminating information relating to suspect financial transactions. • Aso responsible for coordinating and strengthening efforts of national and international intelligence. • **FIU-IND is an independent body reporting directly to the Economic Intelligence Council (EIC)** headed by the **Finance Minister.**
The Arms Act of 1959	• **No one in India is allowed to purchase, own, or carry any firearms without a license.** • **Carrying more than three guns, unless they are a licenced dealer, a member of the Union's armed services, or a member of a rifle club or association that is registered with or recognised by the Government prohibits anyone from.** • **21 years of age is the minimum legal age to obtain a firearm licence.** • **Candidate must not have been convicted of any violent or immoral offences five years before applying, and they must not be of "unsound mind" or pose a threat to the peace and safety of the public.**
Foreign Exchange and Prevention of Smuggling Activities Act, 1974 (COFEPOSA)	• The act aims to **conserve and increase foreign exchange and prevent smuggling activities.**
National Investigation Agency(Amendment) Act, 2019	• Enhances this scope to include other **offences like human trafficking; offences related to counterfeit currency or bank notes; manufacture or sale of prohibited arms; cyber-terrorism; offenses under the Explosive Substances Act, 1908.** • Enhances the jurisdiction of the NIA: as the officers of the NIA will have the power to investigate scheduled offenses committed outside India. • The NIA Act allowed the central government to constitute Special Courts for the trial of scheduled offenses.

SERVICE RIFLES OF INDIAN ARMY: 1947-PRESENT

Rifle Name	Type	Features and uses
Lee Enfield rifle aka".303 rifle" (1947-1963)	Bolt-action, magazine-fed, repeating rifle	• WWI version is referred to as the "**SMLE", which is short for the common "Short, Magazine, Lee–Enfield"** • The Indian army used the **SMLE MK III** variants which were produced in the **rifle factory Ishapore, west Bengal.**
L1A1 Self-Loading Rifle(1963-19978)	Semi-automatic	• The Indian Army inducted **SLR in 1963** just after the Sino-Indian war to phase out its Lee-Enfield rifles. • Produced at **Ordnance Factory Tiruchirappalli** of the Ordnance Factories Board.
Isapore 2A(1963-1970s)	Caliber bolt-action rifle	• Adopted as a reserve army by the **Indian Armed Forces in 1963** soon after the Sino-Indian War of 1962.
AK-47 aka Kalashnikov	Gas-operated assault rifle	
AKM and its variants-Kalashnikov's Automatic Rifle Modernised'(1980-present)	An assault rifle designed by Soviet small arms designer Mikhail Kalashnikov in 1959.	• Developed as a replacement for the **AK-47.**
AK-100M/200 series(Under Implementation)	Assault Rifle	• They are an improved variant of the basic **AK-100 series.** • **Indo-Russia Rifles Private Limited** (IRRPL), a rifle-manufacturing facility in **Korwa, Amethi district in the Indian state of Uttar Pradesh,** will manufacture the **AK-200 variant of the Kalashnikov family of rifles.** • IRRPL joint-venture of the **Ordnance Factory Board of India and Kalashnikov Concern of Russia.** • IRRPL- **The Ordnance Factory Board (OFB)-50.5%, Kalashnikov owns 42%, 7.5%-Rosoboronexport, which will manufacture AK-203.**

INSAS aka Indian Small Arms System(1998-present)	A family of infantry arms consisting of an assault rifle and a light machine gun (LMG).	• Developed in India by the **Armament Research and Development Establishment, in Pune and manufactured by the Ordnance Factories Board** at its various factories. • **Issues with INSAS** • Underperformance during the **Kargil War 1999-Complaints of jamming, the magazine cracking due to the cold, and the rifle going into automatic mode (luckily)** when it was set for three-round bursts. • Due to all these shortcomings of INSAS, the Indian army decided to replace its service rifles on a mass scale for the fourth time. **SIG 716 G2 and AK 203** will be the future rifles of the Indian Army.
Multi Calibre Individual Weapon System (MCIWS) also known as the Advanced Automatic Rifle (AAR) and also the F-INSAS rifle(Under Trials)	An assault rifle	• Developed in India by the **Armament Research and Development Establishment, a laboratory of the Defence Research and Development Organisation.** • Expected to replace the mostly used INSAS assault rifle.
T91 assault rifle	Gas-operated, selective-fire assault rifle	• Used by the **Indian Army's Special Forces and the Indian Air Force's Garud of Indian Air Force.** • Can fire 800 rounds per minute.
AK103	Assault rifle	• Used by special forces of the Indian Navy i.e. **MARCOS**.
M4 Carbine(US made)	Assault rifle	• Used by Special Forces of Indian Armed Forces.
IMI Tavor TAR-21(Israel Made)	Semi and fully-automatic mode rifle	• More advanced than **Carbine** • Step ahead of carbine rifles.
FN F2000	Assault rifle by Belgium	• Used by a **Special Protection Group of India.**
Pistol Auto 9mm 1A(Pistol)	Semi-automatic	• Indigenous
Beretta Px4 Storm(Pistol)	Semi-automatic	• Imported from Austria
Glock(Pistol)	Semi-automatic	• Imported from Italy
SG 551(Switzerland made)	Assault rifle	• Exclusively used by National security guard.

LIST OF ACTIVE INDIAN MILITARY AIRCRAFT

Rafale Combat Aircraft	**Rafale is a twin-engine aircraft manufactured by Dassault Aviation of France.** Weapons package of the Rafale jets. • **Meteor:** It is the next generation of **Beyond Visual Range (BVR) air-to-air missile** (BVRAAM) designed to revolutionize air-to-air combat. • **SCALP Cruise Missiles:** It can **hit targets 300 km away.** • **MICA Missile System:** It is a very **versatile air-to-air missile.** It can be fired for the short-range to long-range as well right up to 100 km.
Sukhoi Su-30MKI	• **Developed by Russia.** • It is a **twin-finned, twin-jet multi-role aircraf**t capable of attaining **speeds of Mach 2** at high altitudes. • Sukhoi 30 jets have been **modified to carry BrahMos Air-to-Surface missiles** with a range of nearly 300 km.
Tejas	• **Indigenous fighter aircraft inducted into the Indian Airforce in the year 2016.** • It is **designed by the Aeronautical Development Agency (ADA) and Hindustan Aeronautics Limited (HAL).** • It is a **single-seat, single-jet engine, the multirole light fighter.**
C-130J Super Hercules	• The Lockheed Martin C-130J Super Hercules is a **four-engine turboprop military transport aircraft.** • The US has sold its C-130J Super Hercules aircraft.
C-17 Globemaster	• The **Boeing C-17 Globemaster** is a large **military transport aircraft**. • C-17 has a **fully integrated electronic cockpit** and **advanced cargo delivery** system. • **It allows a crew of three: pilot, co-pilot, and loadmaster, to operate the aircraft on any type of mission.**

Sepecat Jaguar	• Developed together by the **British Royal Air Force and French Air Force.** • Also known as Shamsher and serves IAF as primary ground **attack aircraft**.
Mirage 2000 Fighter Jet	• French **multirole, single-engine fourth-generation fighter jet.** • It is manufactured by **Dassault Aviation.** • It gained prominence after their remarkable success rate in the **1999 Kargil war.** • It has a maximum climbing speed of 60,000 feet per minute and is **designed for all-weather penetration at low altitude.**
Apache Helicopters	• US made • Most advanced multi-role heavy attack helicopter in the world. • Its modern capabilities include **fire-and-forget, anti-tank missiles, air-to-air missiles, rockets, and other ammunition.** • **It is day/night, all-weather capable, and has high agility and survivability against battle damage**.
MiG-21 Fighter Jets	• Product of the Soviet Union which entered into the service in 1959. • First **supersonic fighter aircraft** of the Indian Air Force. • **India inducted the MiG-21 in 1963 and got full technology transfer and rights to license-build the aircraft in the country.** • MiG-21 fighter jets was phased out of service by 2021-22.
Advanced Medium Combat Aircraft	• Indigenous fighter and expected to make its first flight by 2032. • It is built under India's only **fifth-generation** aircraft programme.
Biojet fuel for Aircraft	• IAF flew an **An-32 aircraft,** whose lead plane used a mix of **Aviation Turbine Fuel** blended with **10% biofuel.** • The biofuel has been **extracted from Jatropha plant seeds** using a technology patented by the **CSIR and the Indian Institute of Petroleum, Dehradun.**
Kamov Ka-226T	• Russia plans to deliver 200 **Kamov Ka-226T military helicopters** to India in a first tranche as part of a **$1 billion deal, signed at the Indo-Russia Summit in Moscow, 2015.** • It is a lightweight, **twin-engine multi-role chopper that offers services for both military and civilian purposes.** • **It will replace India's ageing fleet of Cheetah and Chetak.**
HAL Dhruv	• **Utility helicopter designed and developed by Hindustan Aeronautics Limited (HAL)**. • A **twin-engine, multi-role, multi-mission new generation helicopter in the 5.5-ton weight class.**
HAL Rudra	• **It is an armed version of HAL Dhruv** which is designed and manufactured by Hindustan Aeronautics Limited (HAL). • It is equipped with **Forward Looking Infrared (FLIR)** and **Thermal Imaging Sights Interface**.
HAL Chetak	• The seven-seater **Chetak helicopter is a versatile,multi-role, multi-purpose, and spacious.** • The Chetak is being replaced by HAL Dhruv in the armed forces. • HAL Chetak – Single engine • Maximum speed – Over 210 km/hrs.
HAL Cheetah	• Built by **Aérospatiale** of France and built under license by Hindustan Aeronautics Limited (HAL) in India. • **They are high-performance helicopters designed for operation over a very wide range of weight, the center of gravity, and altitude conditions**.

CENTRAL ARMED POLICE FORCES (CAPF)

- Collective name of central police organizations under the **Ministry of Home Affairs of India**.These are technically **paramilitary forces formerly known as the Central Paramilitary Forces.**
- Formerly known as the **Central Para-Military Forces.**
- CAPF is further classified into**seven Forces.**

Border Security Force (BSF)	• India's border guarding organization at its borders with Pakistan and Bangladesh. • Raised in the wake of the Indo-Pakistani War of 1965
Indo-Tibetan Border Police (ITBP)	• Border guarding force of India deployed along its borders with Tibet Autonomous Region. • established in 1962 in the aftermath of the Sino-Indian War of 1962.
Sashastra Seema Bal (SSB)	• Deployed along its borders with Nepal and Bhutan. • The force was originally set up under the name **Special Service Bureau** in 1963.
Central Industrial Security Force (CISF)	• Provides security to over 356 industrial units (including 13 Private Sector Units), government infrastructure projects and facilities and establishments located all over India. • Set up under an Act of the Parliament of India on 15 March 1969.

	• Subsequently made an armed force of India by another Act of Parliament passed on 15 June 1983.
Central Reserve Police Force (CRPF)	• Reserve gendarmerie and internal combat force in India Created as Crown. Representative's Police on 27 July 1939. • Primary role: Assisting the State/Union Territories in police operations to maintain law and order and counter-insurgency.
Assam Rifles	• Came into being in 1835, as a militia called the 'Cachar Levy', to primarily protect British Tea estates and their settlements against tribal raids. • Conventional combat role during the Sino-India War 1962. • Operations in a foreign land as part of the Indian Peace Keeping Force to Sri Lanka in 1987 (Operation Pawan). • Peacekeeping role in the North-Eastern areas of India. • MHA has proposed to merge it with the Indo-Tibetan Border Police (ITBP).
National Security Guard	• Raised in the wake of Operation Blue Star in 1984. • Modelled on the GSG-9 of Germany and the United Kingdom's SAS. **It comprises two complementary elements:** • Special Action Group (SAG) – comprising Army personnel • Special Ranger Groups (SRG) – comprising CAPF and State Police forces personnel **The major functions of the NSG are:** • Counter hijacking tasks on land, air and sea • Post blast investigation • Bomb disposal (search, detection & neutralisation of IEDs) • VIP security • Hostage rescue missions

PROJECTS BY NAVY

PROJECT 75	• Part of a 30-year submarine building plan from 2007 up to 2030. • This project envisages the construction of six conventional submarines with better sensors and weapons and the Air Independent Propulsion System (AIP)- Kalvari, Khanderi, Karanj, Vela, Vagir and Vagsheer.
PROJECT 28	• Under this 4 Anti-Submarine Warships have to be built indigenously in India. • Four corvettes- INS Kamorta, INS Kadmatt, INS Kiltan and INS Kavaratti. • The warships are named after the islands in the Lakshadweep archipelago.
PROJECT 17A	• to construct a series of stealth guided-missile frigates. • The first stealth ship launched under Project 17A: **Nilgiri**, • The second ship: **Udaygiri.**.

Two Aircraft carriers	
INS Vikrant	• Vikrant Class. • Also known as IAC-1. • India's fourth carrier and the first to be built in India. • Constructed by the Cochin Shipyard Limited (CSL) in Kochi, Kerala. • Namesake *Vikrant* is a tribute to India's first aircraft carrier INS *Vikrant* (1961). • Commissioned 2 September 2022.
INS Vikramaditya	• Kiev Class. • Modified Soviet aircraft carrier *Admiral Gorshkov*. • Modified *Kiev*-class aircraft carrier and the flagship of the Indian Navy. • Commissioned in India in 2013.
Nuclear-powered ballistic missile submarines (SSBN)	
Arihant class **Active:** • INS Arihant • NS Arighat	• Developed under *Advanced Technology Vessel* (ATV) project. • *Arihant* holds the distinction of being the first ballistic missile submarine to have been built by a country other than one of the five permanent members of the United Nations Security Council.
Conventionally-powered submarines (SSK)	
Kalvari class • INS Kalvari • INS Khanderi	• Formally classified as the **Project-75 submarines (P-75)**, is a class of diesel-electric attack submarines**.** • Indian Scorpène-class variant.

• INS Karani • INS Vela • INS Vagir	• Currently being constructed by a syndicate of French and Indian shipyards, namely, Naval Group and Mazagon Dock Limited (MDL) respectively.
Sindhughoshclass • **INS Sindhughosh** • **INS Sindhuraj** • **INS Sindhuratna** • **INS Sindhukesari** • **INS Sindhukirti** • **INS Sindhuvijay** • **INS Sindhushastra**	• Kilo-class diesel-electric submarines**.** • designed as part of *Project 877*, • Built under a contract between Rosvooruzhenie(Russia) and the Ministry of Defence (India).
Shishumar class • **INS Shishumar** • **INS Shankush** • **INS Shalki** • **INS Shankul**	• Diesel-electric attack submarines**.** • Indian Type 209 class variant. • Built by India West Germany.
Guided Missile Destroyer	
Visakhapatnamclass • **INS Visakhapatnam** • **INS Mormugao** • **INS Imphal**	• Classified as the **P-15** ***Bravo*** **class**, or simply **P-15B.** • Upgraded derivative of its predecessor, the ***Kolkata*** **class,** with improved features of stealth, automation and ordnance. • Designed by the **Warship Design Bureau (WDB)**, a total of four ships are being built by**Mazagon Dock Limited (MDL)**, under the Make in India initiative. • The first vessel of the class, **INS** ***Visakhapatnam*** **was commissioned on 21 November 2021.**
Kolkata class • **INS Kolkata** • **INS Kochi (INS Chennai)**	• **Aka** ***Project 15A*** • The class comprises three ships **–*Kolkata*, *Kochi* and *Chennai*,** all of which were built by **Mazagon Dock Limited (MDL)** in India, and are the largest destroyers to be operated by the Indian Navy. • The destroyers are a follow-on of the **Project 15** ***Delhi*****-class destroyers**
Delhi class • **INS Delhi** • **INS Mysore** • **INS Mumbai**	• Built by **Mazagon Dock Limited (MDL)**. • Built under Project 15" in 1980.
Rajput class • **INS Rana** • **INS Ranvir (D54)** • **INS Ranvijay (D55)**	• Modified versions of **Soviet Kashin-class destroyers**. • Built under help of the Soviet Union.
Frigates	
Shivalik class • **INS Shivalik** • **INS Satpura** • **INS Sahyadri**	• **Project 17 class** is a class of multi-role stealth frigates**.** • Designed to have **better stealth features and land-attack capabilities** than the preceding *Talwar*-class frigates. • Four of the ships of the class were built by **Mazagon Dock Limited (MDL)** and three by **Garden Reach Shipbuilders and Engineers (GRSE).**
Talwar class • **INS Talwar** • **INS Trishul** • **INS Tabar** • **INS Teg** • **INS Tarkash** • **INS Trikand**	• Class of stealth guided missile frigates designed and built by **Russia for the Indian Navy.** • Improved versions of the Krivak III-class (Project 1135) frigates
Brahmaputra class • **INS Brahmaputra** • **INS Betwa** • **INS Beas**	• They are an enhancement of the***Godavari*** **class.**
Corvettes	
ASW corvette • **INS Kamorta** • **INS Kadmatt** • **INS Kiltan** • **INS Kavaratti**	• Type of **ASW corvette.** • The class is primarily designed for anti-submarine warfare.

Kora class • **INS Kora** • **INS Kirch** • **INS Kulish** • **INS Karmuk** • **INS Kuthar**	• **Guided missile corvette** • Built at Garden Reach Shipbuilders and Engineers (GRSE) and outfitted at Mazagon Dock Limited (MDL).
Khukri class • **INS Kuthar** • **INS Khanjar**	• ASW corvette type. • Intended to replace the ageing Petya II-class corvettes of the Indian Navy.
Veer class • **INS Vibhuti** • **INS Vipul** • **INS Vinash** • **INS Vidyut** • **INS Nashak** • **INS Pralaya** • **INS Prabal**	• **ASW corvette** • Indian variant of the SovietTarantul class. • Inducted during Operation Trident and Operation Python of the Indo-Pakistani War of 1971.

INTEGRATED GUIDED MISSILE DEVELOPMENT PROGRAMME (IGMDP)

- Conceived by**Dr. A P J Abdul Kalam** to enable India attain self-sufficiency in missile technology, in response to the **Missile Technology Control Regime.**
- IGMDP was started in **1983 and completed in March 2012.**
- It developed 5 types of missiles under it.

AGNI	• It is an intercontinental surface-to-surface, nuclear capable ballistic missile developed by DRDO. • At present, US, China, Russia, UK, France and Israel are known to have ICBMs. • It has been equipped with very high accuracy. • Ring Laser Gyro based Inertial Navigation System (RINS) and Micro Navigation System (MINS).
PRITHVI	• Tactical surface-to-surface short range ballistic missile. • First missile developed under IGMDP in 1983. • Uses either liquid or both liquid and solid fuels and are capable of carrying conventional as well as nuclear warhead. • Prithvi I- Army version-150 km range. • Prithvi II- Air force version-350 km range. • Prithvi III- Naval version-600 km range.
TRISHUL	• Short range surface-to-air missile for Indian Navy used for Immediate combat action. • Range – 9km. • Currently not in service.
NAG	• Anti-tank missile. • Range – 4km. • 3rd generation 'fire and forget' guided missile where the target is identified and designated before the weapon is launched. • It is an all-weather condition with day and night capabilities. • Launched from land and air-based platforms.
AKASH	• Group of 4 medium-range surface-to-air missiles with a radar called Rajendra. • Multi-target engagement capacity. The radar detects incoming objects and missiles are fired. • Range – 30 km. Altitudes up to 18000 m. • Already in use.

TYPES OF INDIAN MISSILES

1. Air-to-Air Missiles (AAM)
2. Surface-to-Air Missiles (SAM)
3. Surface-to-Surface Missiles
4. Ballistic Missile Defence (BMD)/Interceptor Missiles
5. Cruise Missiles
6. Submarine Launched Ballistic Missiles
7. Anti-Tank Missiles

Air-to-Air Missiles (AAM)-Missiles launched from aircraft to engage aerial targets	
Astra	• India's first beyond visual range air-to-air missile (BVRAAM). • Speed: 4.5 mach • Range: Over 70 km.
MICA	• A multi-target, air-to-air missile system for the Rafale and Mirage 2000-5 combat aircraft. • Designed and developed by Matra BAE Dynamics Alenia (MBDA), a European missile systems producer. • Range: 0.5 to 60 km.
Novator K-100	• Medium-range air-to-air missile developed by India and Russia. • It has a range of 300–400 km.
Surface-to-surface Missiles	
AGNI	• Agni-1: Strike range of 700–1200 kilometers. It can carry a payload of up to 1,000 kg. • Agni Prime: Two-stage ballistic missile with a range of 1,000–2,000 km uses solid propellant and is stored in a canister. • Agni II: Has a range of around 2,000 kilometers. • Agni III: Has a range of almost 2,500 kilometers. • Agni IV: Has a range of about 3,500 kilometers and can be launched from a road-mobile launcher. • Agni-V: The longest missile in the Agni series, with a range of nearly 5,000 kilometers. With this range, India can it target Beijing, the capital of China.
Prithvi	• A short-range ballistic missile (SRBM) developed by India's Defence Research and Development Organisation (DRDO). • It is a single-stage liquid-fueled missile that can carry warheads up to 1,000 kg. • Prithvi I: Has a range of 150 km and an accuracy range of 10 to 50 meters. • Prithvi II: Has a range of around 350 km and can carry a one tonne payload. It has a maximum warhead mounting capability of 500 kg. • Prithvi III: This is a two-stage surface-to-surface missile. The first stage is solid-fueled and the second stage is liquid-fueled. The Prithvi III missile is also known as Dhanush, which means "bow" in Sanskrit.
Shaurya	• It is a canister-launched, hypersonic, surface-to-surface missile. • It is the land variant of the K-15 Sagarika, a short-range submarine-launched ballistic missile (SLBM).
Prahaar	• It is a short-range, surface-to-surface, solid-fueled, tactical ballistic missile. • The missile has a range of 150–500 kilometers and can be launched from a mobile launcher.
Surface-To-Air Missiles	
Trishul	• Short-Range surface-to-air missile • Range is 9 Km. • There were problems with this missile as it could not hit its targets. Hence, this program was officially closed in 2008.
Akash Missile	Medium-range surface-to-air missile. Speed: Mach 2.5 to 3.5 Variants • Akash -1S (18 – 30 Km) • Akash Mk-II (35 – 40 Km) • Akash-NG (More than 50 Km)
Barak 8	• A supersonic, vertically-launched short-range air defence system, with an operational range of about 5 to 100 km. • Imported from Israel.
Cruise Missiles	
BrahMos	• It is a supersonic cruise missile developed by the Defence Research and Development Organisation (DRDO) of India and the Russian Federation's NPO Mashinostroyeniya (NPOM). • The missile is named after the Brahmaputra and Moskva rivers. • Speed: Mach 2.8 to 3 Mach. • Range: 290 km.
BrahMos II	• A hypersonic cruise missile being developed jointly by India's Defence Research and Development Organisation and Russia's NPO Mashinostroyenia. • It is a two-stage missile with a solid propellant booster engine and a liquid ramjet.
Nirbhay	• It is a long-range, subsonic cruise missile that can penetrate enemy territory and strike high-value targets. • It is India's first indigenously produced cruise missile. • It has a range of 800-1,000 km while carrying a 450 kg payload. • Speed: Mach: 0.8

Ballistic Missile Defence (BMD) / Interceptor Missiles- Missiles designed to intercept and destroy incoming ballistic missiles. • India's BMD development began in **1999, after the Kargil War.** • It is a two-tiered defense system and will be able to intercept any incoming missile launched 5,000 km away. • **Prithvi Air Defence (PAD)**: It's designed for High altitude interception (exo-atmospheric interception). • **Advanced Air Defence (AAD):** It's an endo-atmospheric interception systems (for low-altitude interception).	
Subsonic cruise missile	• It is a two-stage anti-ballistic missile that can intercept incoming ballistic missiles outside the atmosphere. • It has a maximum interception altitude of 80 kilometers and a range of 300 to 2000 kilometers. • The PAD has a maximum speed of Mach 5-8 and is also known as the Pradyumna Ballistic Missile Interceptor.
Prithvi Defence Vehicle (PDV)	• It is a two-stage interceptor missile that is part of India's Ballistic Missile Defence System. • It is capable of intercepting missiles at altitudes of 50–80 km and has a maximum speed of Mach 5–8.
Advanced Air Defence (AAD) /Ashwin Ballistic Missile Interceptor	• It is an anti-ballistic missile that intercepts incoming ballistic missiles at an altitude of 40 km (25 mi). • It is also known as the Ashwin Ballistic Missile Interceptor.
Submarine Launched Ballistic Missiles- Missiles launched from submarines to strike targets on land	
Ashwin	• It is an advanced air defense (AAD) interceptor missile. • It's a low-altitude, supersonic ballistic interceptor missile designed to intercept enemy missiles in the endo-atmosphere.
K-4	• An intermediate-range submarine-launched ballistic missile (SLBM) with a range of 3,500–5,000 km. • The K-4 is 10 meters long, weighs 20 tonnes, and can carry a 2-tonne payload.
K-5	• A submarine-launched ballistic missile under development by the Defence Research and Development Organisation of India. • It has a range of around 5,000–6,000 km.
Sagarika	• It is also known as the K-15 or B-05. • Range: 700–1900 km.
Anti-Tank Missiles-Specifically designed to target armored vehicles.	
Amogha	• It is designed and tested by Bharat Dynamics Limited (BDL). • Range: up to 2.8 kilometers.
Nag	• It is a third-generation, fire-and-forget, anti-tank guided missile (ATGM) developed by India's Defence Research and Development Organisation (DRDO). • The missile is also known as "Prospina" for the land-attack version. • It is a "fire-and-forget" missile, which means it doesn't require any external intervention after launch.
Helina	• It is a third-generation, fire-and-forget class anti-tank guided missile (ATGM) system. • The name HELINA is an abbreviation for "Helicopter-launched Nag".

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5 ENVIRONMENT & ECOLOGY

MAJOR POLICIES

Policy	Objective	Key Provisions
National Environmental Policy, 2006	To ensure environmental protection and sustainable development.	Integration of environmental concerns into various sectors. - Conservation of critical environmental resources. - Adoption of a sustainable lifestyle. - Effective implementation of environmental laws and regulations. - Promotion of eco-friendly technologies and practices.
National Action Plan on Climate Change, 2008	To outline strategies and measures to address climate change and its impacts.	Promotion of sustainable development. - Adaptation to climate change impacts. - Mitigation of greenhouse gas emissions. - Enhanced energy efficiency and renewable energy deployment. - Sustainable agriculture and water resource management. - Conservation of Himalayan ecosystems.
National Biodiversity Strategy and Action Plan (NBSAP), 2008	To conserve and sustainably use biodiversity and its components.	Identification and conservation of biodiversity hotspots. - Protection of endangered species and habitats. - Sustainable management of forests, wetlands, and marine ecosystems. - Promotion of traditional knowledge and practices. - Strengthening of biodiversity-related laws and regulations.
National Forest Policy, 1988	To promote conservation, sustainable management, and equitable utilization of forest resources.	Conservation of existing natural heritage. - Prevention of soil erosion and denudation. - Increase in forest and tree cover through afforestation and social forestry. - Enhanced productivity of forests. - Efficient utilization of forest produce. - Promotion of employment opportunities and women's participation in forestry.
National Water Policy, 2012	To ensure sustainable, equitable, and integrated water resource management.	Conservation of water resources and ecosystems. - Promotion of water-efficient technologies and practices. - Integrated management of river basins. - Ensuring drinking water security for all. - Effective regulation of water use and allocation. - Protection of water quality. - Public participation in water resource planning and management.
National Policy on Biofuels, 2018	To promote the use of biofuels and reduce dependence on fossil fuels.	Encouragement of biofuel production from non-food feedstocks. - Promotion of research and development in biofuel technologies. - Setting blending targets for biofuels in transportation fuels. - Creation of a conducive policy environment for biofuel investments. - Incentives for biofuel production, distribution, and use. - Promotion of sustainable biofuel feedstock cultivation.
National Policy on Marine Fisheries, 2017	To promote sustainable management and conservation of marine fisheries resources.	Regulation of fishing activities to prevent overexploitation. - Protection of marine ecosystems and biodiversity. - Promotion of responsible fishing practices. - Support for small-scale fishers and coastal communities. - Enhancement of scientific research and data collection. - Implementation of international agreements and conventions related to marine fisheries.

WILDLIFE CONSERVATION PROJECTS

Project	Year	Location/Initiation	Description
Project Tiger	1973	India	Preventing the reduction in the number of tigers and increasing their number.
Project Red Panda	1996	Sikkim, Arunachal Pradesh, Darjeeling	Collaboration between Padmaja Naidu Himalayan Zoological Park and the World Nature Fund for red panda conservation.
Project Thamin Deer	1977	Manipur	Conservation efforts for the rare Thamin deer species found in Manipur.
Project Turtle Conservation	1975	Odisha (Bhitarkanika Sanctuary)	Protection of Olive Ridley South American turtles, nesting primarily on the Odisha coast, with initiatives from the Bhitarkanika Sanctuary.
Project Rhino	1987	Assam, West Bengal	Conservation efforts focused on the one-horned rhino found in India, particularly in Manas Wildlife Sanctuary,

			Kaziranga National Park, and Jalapadara Sanctuary.
Gharial Breeding Project	1975	Odisha, Uttar Pradesh, Rajasthan, Madhya Pradesh, Andaman, Assam, Bihar, Nagaland	Initiated by the Government of India in collaboration with the UNDP for the conservation of gharials, spanning across multiple states.
Vulture Conservation Project	2006	Haryana, Gujarat, Madhya Pradesh, Telangana, Odisha	A joint effort between Haryana Forest Department and Bombay Natural History Society to conserve vultures, primarily addressing the threat posed by diclofenac use.
Gir Lion Project	1973	Gujarat	Conservation measures for the Asiatic lion population in Gir Sanctuary, now a national park, initiated by the Central Government.
Project Elephant	1992	Jharkhand	Central Government's initiative for elephant conservation, establishing reserves across various states including Kerala, Assam, Uttarakhand, among others.
Project Musk Deer	1970	Uttarakhand	Collaboration with IUCN for the conservation of musk deer, found in the Himalayan region from Himachal Pradesh to Sikkim, with the initial focus in Kedarnath Sanctuary.
Conservation of Gangetic Dolphin	1997	Bihar (Vikramashila Ganga Dolphin Sanctuary)	Conservation efforts for the endangered Gangetic dolphin, including the establishment of Vikramashila Ganga Dolphin Sanctuary in Bihar, aimed at protecting its habitat along the Ganga River.
Project Hangul	1970	Jammu and Kashmir	Conservation project for the Hangul, or Kashmiri Stag, the state animal of Jammu and Kashmir, primarily found in Dachigam National Park.
Global Tiger Forum	1993	Delhi	Establishment aimed at fostering international cooperation for the protection and conservation of tigers worldwide.

CONSERVATION AREAS: WLS, NPS, BR, BIRD SANCTUARIES

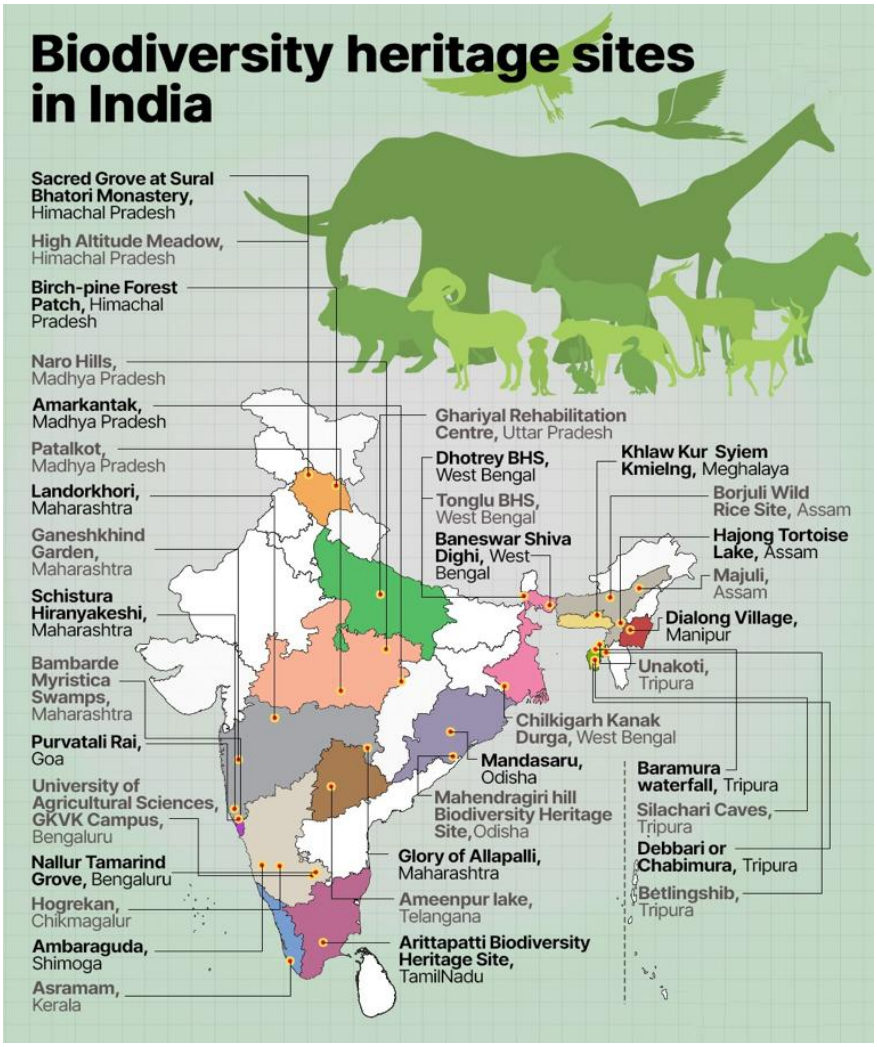
Type	Key Points	Difference
National Parks (NPs)	Reserved areas for the conservation of ecosystems and biodiversity.	Aim to conserve not only wildlife but also the entire ecosystem.
	Stricter regulations compared to wildlife sanctuaries, with limited human activities allowed.	Larger in size compared to wildlife sanctuaries.
	Activities like hunting, grazing, and wood cutting are usually prohibited.	Often have more developed infrastructure for tourism and education.
Wildlife Sanctuaries (WLS)	Protected areas for conservation of wildlife and their habitats.	Primarily focused on the conservation of wildlife and their habitats.
	Human activities are restricted to ensure minimal disturbance to the wildlife.	Generally smaller in size compared to national parks.
	Activities like hunting, poaching, and grazing are strictly prohibited.	Often serve as buffer zones for national parks.
Biosphere Reserves (BR)	Designated areas for conservation, sustainable development, and scientific research.	Have three distinct zones: a core area, buffer zone, and transition area.
	Aim to reconcile biodiversity conservation with sustainable use of natural resources.	Core areas are strictly protected, while buffer zones allow for limited human activities.
	Promote scientific research, environmental education, and sustainable development.	Serve as experimental sites for testing sustainable development strategies.
Bird Sanctuaries	Protected areas primarily for the conservation and protection of bird species and their habitats.	Specifically designated to conserve avian biodiversity.
	Provide safe habitats for breeding, nesting, and feeding of various bird species.	May overlap with wildlife sanctuaries or national parks but have specific focus on birds.
	Human activities like hunting, disturbance, and habitat destruction are strictly regulated.	Often serve as important sites for birdwatching and ecotourism.

BIOSPHERE RESERVES OF INDIA

Biosphere Reserve	Location	Description
Nilgiri Biosphere Reserve	Tamil Nadu, Kerala, Karnataka	Encompasses the Nilgiri Hills and part of the Western Ghats, known for lush forests, diverse flora/fauna, and several protected areas.
Nanda Devi Biosphere Reserve	Uttarakhand	Includes Nanda Devi National Park and Valley of Flowers National Park, famous for alpine meadows, glaciers, and rich biodiversity.

Sunderbans Biosphere Reserve	West Bengal	Spans the Ganges-Brahmaputra delta with mangrove forests, tidal rivers, and diverse ecosystems, habitat to Bengal tigers and other wildlife.
Gulf of Mannar Biosphere Reserve	Tamil Nadu	Encompasses marine, coastal, and island ecosystems, featuring coral reefs, seagrass beds, and diverse marine life in the Gulf of Mannar.
Great Nicobar Biosphere Reserve	Andaman and Nicobar Islands	Covers a significant portion of Great Nicobar Island and surrounding marine areas, featuring tropical rainforests, mangroves, and unique biodiversity.
Simlipal Biosphere Reserve	Odisha	Located in Odisha, it includes Simlipal National Park and Tiger Reserve, known for its dense forests, waterfalls, and diverse flora/fauna.
Pachmarhi Biosphere Reserve	Madhya Pradesh	Encompasses the Pachmarhi hill station and Satpura Range, featuring dense forests, waterfalls, and unique geological formations.
Agasthyamalai Biosphere Reserve	Kerala, Tamil Nadu	Located in the Western Ghats, it is known for its rich biodiversity, including endemic species, and Agasthyakoodam Peak, the second highest in Kerala.
Manas Biosphere Reserve	Assam	Includes Manas National Park, UNESCO World Heritage Site, known for its grasslands, forests, and diverse wildlife, including the Bengal tiger.
Khangchendzonga Biosphere Reserve	Sikkim	Encompasses Khangchendzonga National Park, a UNESCO World Heritage Site, featuring glaciers, alpine meadows, and sacred lakes.
Nokrek Biosphere Reserve	Meghalaya	Known for its unique ecosystem, including the Nokrek Peak, and diverse flora/fauna, including the endangered red panda.
Dihang-Dibang Biosphere Reserve	Arunachal Pradesh	Located in the Eastern Himalayas, it features diverse habitats, including tropical rainforests, alpine meadows, and unique wildlife species.

BIOSPHERE HERITAGE SITES IN INDIA



Aspect	Community Reserves	Conservation Reserves
Definition	Areas owned or managed by	Areas primarily managed for the conservation of

	communities voluntarily to conserve biodiversity and traditional resources.	landscapes, ecosystems, and wildlife outside protected areas.
Ownership/Management	Owned and managed by local communities or indigenous groups.	Managed by the government or a recognized organization.
Purpose	Conservation of biodiversity, protection of cultural heritage, and sustainable use of resources by local communities.	Conservation of landscapes, flora, fauna, and traditional resources with an emphasis on ecological balance and wildlife.
Entry and Activities	Controlled by the community with restrictions on certain activities.	Regulated by the government with restrictions on activities that may harm wildlife and ecosystems.
Declaration Authority	Declared by the State Government in consultation with local communities.	Declared by the State Government based on the recommendations of the State Board for Wildlife.
Role in Conservation	Promotes community involvement in conservation and sustainable resource use.	Aims at protecting and conserving areas that are ecologically important but may not qualify as national parks or sanctuaries.
Examples	Moyar River Community Reserve (Tamil Nadu), Bhagirathi Community Reserve (Uttarakhand).	Kumbhalgarh Conservation Reserve (Rajasthan), Tansa Wildlife Sanctuary Conservation Reserve (Maharashtra).

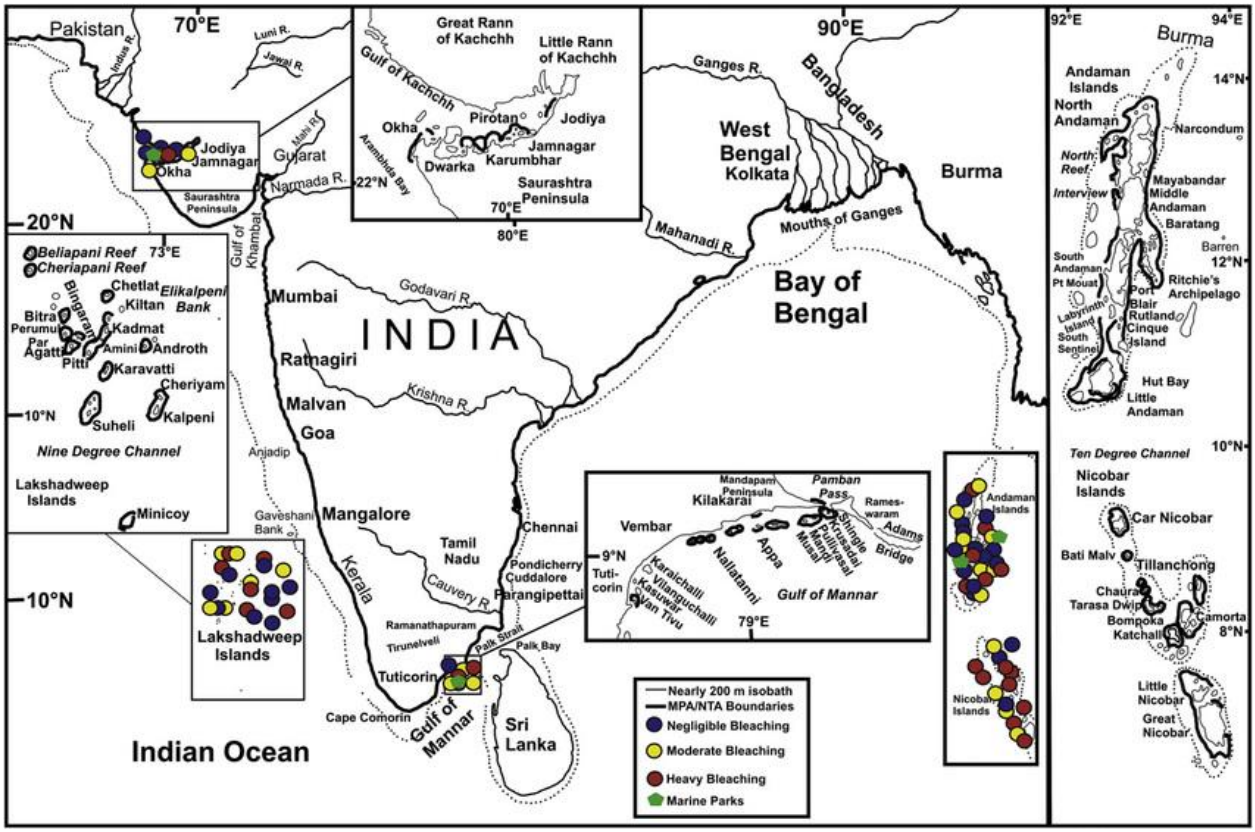
MARINE PROTECTED AREA

MAJOR VEGETATION ZONES IN INDIA

Region	Description	Vegetation
Assam region	Brahmaputra and Surma valleys	Evergreen forest, dense forest, clumps of long grass
Indus Plain region	Plains of Punjab, Western Rajasthan and North Gujarat	Dry and hot; forests and shrubs
Malabar Region	Peninsular coast	Dense forests; commercial crops: coconut, areca nut, black pepper, coffee, rubber, cashew nuts
Andaman Region	Andaman Islands	Evergreen, semi-evergreen, mangrove, coastal, upland forests
Western Himalayan Region	From Kashmir to Kumaon	Tropical Zone: pine, cedar, coniferous trees, broadleaf temperate trees; Alpine Zone: white cedar, white bhoj tree, evergreen tree
Eastern Himalayan Region	Darjeeling before Sikkim	Temperate zone: Oak, nutmeg, maple, evergreen trees with large flowers, small cane forests
Gangetic plains	Alluvial plain	Cultivation of wheat, rice, sugarcane

Deccan region	Indian Peninsular	Deciduous trees, variety of wild shrubs

MAJOR CORAL REEFS



Coral Reef	Location	Description
Gulf of Mannar Reef	Off the southeastern coast of India, between Tamil Nadu and Sri Lanka	One of the most diverse and well-preserved coral reef ecosystems in India, recognized as a Marine National Park and Biosphere Reserve
Andaman and Nicobar Islands	Surrounding the entire archipelago of Andaman and Nicobar Islands	Extensive coral reefs supporting a wide array of marine life, popular among divers and snorkelers; notable reefs around Havelock Island and Neil Island
Lakshadweep Islands	Surrounding the islands of Lakshadweep	Pristine and biodiverse coral reefs known for crystal-clear waters, vibrant coral gardens, and diverse marine species; prominent reefs around Agatti Island, Bangaram Atoll, and Kadmat Island
Palk Bay Reef	Between Tamil Nadu and Sri Lanka	Significant coral reef formations facing threats such as overfishing, habitat destruction, and pollution
Netrani Island Reef	Off the coast of Karnataka in the Arabian Sea	Small coral island with reefs popular among divers for clear waters and abundant marine life

BOTANICAL MEDICINE

Medicine	Source	Effect
Caffeine	Tea, Coffee	Acts as a psychoactive stimulant, increasing alertness and reducing fatigue by blocking the action of adenosine, a neurotransmitter that promotes sleep.
Tetracycline	Bacterium	Functions as a bactericide, inhibiting the growth and reproduction of bacteria by interfering with their protein synthesis.
Penicillin	Penicillium (fungus)	Known for its antibacterial properties, penicillin works by inhibiting the synthesis of bacterial cell walls, leading to their destruction.
Papain	Papaya	An enzyme found in papaya, it aids in digestion by breaking down proteins into smaller peptides and amino acids.

Morphine	Papaver somniferum or Poppy	Derived from the opium poppy, morphine is a potent analgesic that acts on the central nervous system to relieve moderate to severe pain.
Menthol	Mint	When applied externally, such as on the skin, menthol produces a cooling sensation and helps alleviate pain or discomfort.
Atropine	Belladonna	Acts as a painkiller and also has various other effects such as dilating pupils, increasing heart rate, and reducing secretions in the respiratory tract.
Quinine	Cinchona	Primarily used to treat malarial fever, quinine works by interfering with the parasite's ability to digest hemoglobin, ultimately leading to its death.
Cocaine	Erythroxylum Coca	A powerful stimulant and local anesthetic, cocaine blocks the reuptake of neurotransmitters like dopamine, leading to feelings of euphoria and numbness to pain.
Hydroxychloroquine	From the bark of the Cinchona tree	Originally used as an antimalarial drug, hydroxychloroquine also exhibits immunomodulatory effects, making it useful in the treatment of autoimmune diseases like rheumatoid arthritis and lupus.

IMPORTANT ENVIRONMENT MOVEMENTS

Movement Name	Leader	Objective	Stated In
Chipko Movement	Sunderlal Bahuguna	Forest conservation through non-violent protest	1970s
Narmada BachaoAndolan	Medha Patkar	Oppose large dams on Narmada River	1980s
Silent Valley Movement	M. K. Prasad	Protection of Silent Valley National Park	1970s
Appiko Movement	Panduranga Hegde	Afforestation and conservation in Karnataka	1980s
Malti Forest Conservation	Malti Devi	Protection of forests in Bihar	1970s
Baliapal Movement	Biranchi Das	Oppose proposed missile testing range in Orissa	1980s
Tehri Dam Protest	Sundarlal Bahuguna	Oppose construction of Tehri Dam	1990s
Bishnoi Movement	Amrita Devi	Protecting trees and wildlife	1730
Save Ganga Movement	Swami Gyanswarup Sanand (formerly known as GD Agrawal)	Cleanse and conserve the Ganges River	2000s
Save Western Ghats Movement	Various activists	Conservation of the Western Ghats	2010s
Save Our Tigers Movement	Various conservationists	Protection and conservation of tigers	2000s
Save the Vultures Movement	Not Applicable	Conservation of vulture populations	2000s

ENVIRONMENT RELATED SCHEMES

NATIONAL RIVER CONSERVATION PLAN (NRCP)

Key Feature	Ministry	Facts
Aim	Ministry of Environment, Forest and Climate Change (MoEFCC)	To improve the water quality of major rivers in India by implementing pollution abatement measures. To promote sustainable development along riverbanks. To create public awareness about the importance of river conservation.
Launch Year	1995	Launched with the objective of addressing pollution in major rivers of India, initially focusing on 29 identified polluted stretches along 19 rivers. Subsequently expanded to cover more rivers and pollution hotspots.
Funding	Central Government	Initially funded through the Government of India and later supported by the World Bank and other international agencies. Funding allocated for pollution abatement projects, sewage treatment plants, and other infrastructure.
Components		Identification of polluted stretches and formulation of pollution abatement action plans. Construction of sewage treatment plants and sewage network augmentation. Establishment of monitoring systems for water quality assessment. Promotion of public participation and awareness programs.

ECOMARK SCHEME OF INDIA (ECOMARK)

Key Feature	Description
Scheme Name	Ecomark Scheme of India (ECOMARK)
Ministry	Ministry of Environment, Forest and Climate Change (MoEFCC)
Objective	To encourage consumers to purchase environmentally-friendly products by providing a recognizable eco-label
Launch Year	1991
Type	Voluntary
Certification Body	Bureau of Indian Standards (BIS)
Criteria for Products	Products must meet certain environmental standards and criteria set by BIS to be eligible for Ecomark
Ecolabel	The Ecomark logo is a green leaf with the word "ECOMARK" written inside it
Benefits	Promotes sustainable consumption and production practices Helps consumers make informed choices about environmentally-friendly products Encourages industries to adopt eco-friendly manufacturing processes Contributes to environmental conservation and protection of natural resources

NATIONAL AFFORESTATION PROGRAMME (NAP)

Key Feature/Fact	Description
Ministry	Ministry of Environment, Forests, and Climate Change (MoEFCC)
Launch Year	2002
Objective	Restore ecologically damaged forests and develop forest resources with people's participation, emphasizing improving the livelihoods of forest-fringe communities, particularly the poor.
Implementing Board	National Afforestation and Eco-development Board (NAEB)
Implementing Agencies	Forest Development Agencies (FDAs)
Funding Pattern	Centrally sponsored scheme with a sharing pattern of 60:40 between Centre and States, and 90:10 for North Eastern and hilly states.
Institutional Structure	Three-tier structure consisting of State Forest Development Agency (SFDA) at the state level, Forest Development Agency (FDA) at the forest division level, and Joint Forest Management Committees (JFMCs) at the village level.
Strategies for Forest Conservation and Development	Afforestation via natural/artificial regeneration, protection, and management.

Major Schemes for Forest Development	National Afforestation Programme (NAP), National Mission for a Green India (GIM), Forest Fire Prevention and Management Scheme (FFPM).
Integration with Green India Mission (GIM)	NAP merged into GIM to achieve targeted afforestation objectives; financial allocation provided under one budgetary head.
Utilization of Compensatory Afforestation Funds (CAMPA)	Funds collected from states under CAMPA utilized for plantation activities, including compensatory afforestation by states/UTs.
Contribution to Forest Cover Expansion	NAP, along with GIM and other afforestation schemes, contributed to restoring degraded forest areas, leading to stabilization and expansion of forest cover.
India State of Forest Report (ISFR) Findings	According to ISFR 2021, India's total forest and tree cover is 8,09,537 square kilometers, representing 24.62% of the country's geographical area, up from 7,94,245 square kilometers (24.16%) in ISFR 2015, indicating an increase of 15,292 square kilometers in the country's forest and tree cover.

NAGAR VAN YOJANA (URBAN FORESTS)

Implementation Period	2020-21 to 2024-25
Objective	Significantly enhance tree cover in urban and peri-urban areas, enhance biodiversity, improve ecological benefits, and enhance quality of life for city dwellers
Theme of World Environment Day 2020	'Celebrating Biodiversity'
Additional Focus	Nagar Van (Urban Forests)
Target Number of Urban	Develop 200 Urban Forests across the country in the next five years

Forests	
Role Model Urban Forest	Warje Urban Forest in Pune, Maharashtra
Participation	Involves collaboration between Forest Department, Municipal bodies, NGOs, Corporates, and local citizens
Land for Urban Forests	Primarily existing forest land in the city or vacant land offered by urban local bodies
Funding Source	Compensatory Afforestation Fund (CAF) Act, 2016 (CAMPA funds)
Nodal Agency	Ministry of Environment, Forests & Climate Change (MoEFCC)
Definition of Urban Forest	Forested areas near cities managed for recreation, conservation, education, biodiversity conservation, and support services

ENVIRONMENT RELATED ACTS

Act	Objective	Key Provisions
Wildlife Protection Act, 1972	Protect wild animals, birds, plants & matter connected with them.	Establishment of Wildlife Advisory Board, Wildlife Warden. - Central Zoo Authority and National Board for Wildlife. - Establishment of National Parks, Wildlife Sanctuaries, Conservation reserve, community reserves, & Tiger reserves. - License for Trade & commerce in some wildlife species & Ban trade or commerce in scheduled animals. - In-situ & ex-situ conservation of wildlife. - Regulations for hunting wild animals & birds. - Four Schedules specifying varying degrees of protection for different species. - Amendments in 2006 to expand scope, creating National Tiger Conservation Authority and Wildlife Crime Control Bureau.
Background (2022 Amendments)	In 2022, amendments to the Wildlife Protection Act led to the merging of four schedules of wild animals into two, reducing the total from six to four.	Schedule I now includes animals requiring utmost protection, while Schedule II comprises species needing comparatively lower protection. The categories under Schedule II encompass birds, reptiles, mammals, and amphibians. Schedule IV is dedicated to species to be protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
Environment (Protection) Act, 1986	Safeguarding and enhancing the environment while minimizing pollution.	Central government authority to control & reduce pollution from all sources. - Procedures for setting standards of emission or discharge of environmental pollutants.
Indian Forest Act, 1927	Protect & conserve forests.	Categorization of forest into Reserve forest, Protected forest & Village forest. - Defines forest offense, Specifies prohibited acts inside a Reserved Forest, and penalties for violations.
Forest (Conservation) Act, 1980	Protect forests and control their deterioration.	Mandatory prior approval from the Central Government for diversion of forest land for non-forestry purposes. - Measures to check deforestation & encourage afforestation.
National Forest Policy, 1988	Ensure environmental stability & ecological balance.	Conservation of existing Natural Heritage. - Checking Soil Erosion & Denudation. - Substantially increasing Forest or Tree Cover through Afforestation & Social Forestry. - Increasing productivity of Forests. - Efficient utilization of Forest Produce & Optimum Use of Wood (Timber). - Generation of Work Opportunities, involving Women. - Recommends 33% forest cover.
Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	Restore deprived forest rights of Scheduled Tribes & other traditional forest dwellers.	Legal recognition to rights of traditional forest-dwelling communities. - Recognition of rights in National Parks, Sanctuaries, Reserve Forest & Protected Forests. - Defines 'Critical wildlife habitats'. - Rights recognized: Title Rights, Use Rights, Community forest resource rights. - Eligibility criteria based on Scheduled Tribe status, residency, and dependency on forests for livelihood. - Recognition process involves Gram Sabha & Screening committees.
Biological Diversity Act, 2002	Conserve, promote sustainable use of biological diversity & ensure fair & equitable sharing of its benefits.	Prohibition on transfer of Indian genetic material outside the country without approval. - Mandatory permission for claiming IPR over Biodiversity & its derivatives. - Regulation of use of GM organisms. - Establishment of National, State, & Local Biodiversity Funds. - Setup of Biodiversity Management Committees at village level, State Biodiversity Boards at state level, & National Biodiversity Authority at national level.
Biological Diversity	Amend the Biological	Measures to enhance compliance, promote equitable benefit-sharing,

(Amendment) Bill, 2021	Diversity Act of 2002 to strengthen the regulatory framework for conservation and sustainable use of biological resources in India.	streamline processes through digital platforms, strengthen the role of the National Biodiversity Authority, and enforce penalties for non-compliance. The bill also emphasizes the importance of biodiversity conservation for the well-being of ecosystems and communities.
Coastal Regulation Zone (CRZ) Rules, 2019	Promote sustainable development and conserve coastal environments.	Governance of human and industrial activity near the coastline. - Specifies regulations for different coastal zones. - Involvement of coastal communities for management of Critically Vulnerable Coastal Areas. - Facilities permitted in Beaches in CRZ-III areas.
Bio-Medical Waste Rules, 2016	Manage bio-medical waste effectively.	Expansion of rules to include various healthcare activities. - Phasing out of chlorinated plastic bags, gloves & blood bags. - Pre-treatment of laboratory waste, microbiological waste, blood samples & blood bags. - Implementation of Bar-Code System for bio-medical waste disposal. - Categorization of waste for improved segregation. - Requirement for common bio-medical waste treatment facilities provided by State Govt.
e-Waste Management Rules, 2016	Manage electronic waste efficiently.	Inclusion of CFL & other Mercury-containing lamps as e-waste. - Introduction of Extended Producer Responsibility (EPR). - Safety, health & skill development of workers involved in dismantling & recycling operations. - Penalties for violation. - Rights of Urban Local Bodies for user fees and spot fines.
Hazardous and Other Wastes (Management and Trans-boundary Movement) Amendment Rules, 2019	Strengthen the management of hazardous waste.	Prohibition on import of solid plastic waste. - Exemption for certain exports and imports. - Exemption for industries not requiring consent under Water Act 1974 & Air Act 1981.
National Green Tribunal (NGT) Act, 2010	Expedite disposal of environmental cases & reduce burden of litigation.	Establishment of NGT with jurisdiction over civil cases related to environment. - Enforcement of environmental rights, relief & compensation. - Binding NGT orders, appealable in SC. - Composition of NGT benches at various levels. - Deals with various environmental laws except Wildlife Protection Act, Indian Forest Act, & Forest Rights Act.
Ozone Depleting Substances (ODS) Rules, 2000	Regulate production, consumption & phasing out of ODSs.	Prohibition on use of CFCs except for medical purposes. - Phase-out schedule for HCFCs. - Mandatory registration of ODS producers, sellers, importers, and stockists. - Amendments in 2019 for complete phase-out of HCFC-141b and prohibition on its import.
Protection of Plant Variety and Farmers Right Act, 2001	Protect plant varieties, farmers' rights &encourage development of new varieties.	Recognition of Farmers, Breeders & researchers rights. - Compensation for non-performance of variety. - Exclusivity rights for breeders. - Usage rights for researchers. - Investment in R&D for new plant varieties.
Compensatory Afforestation Fund Act (CAMPA Act), 2016	Utilize afforestation funds effectively.	Establishment of CAMPA at central & state level. - Creation of National Compensatory Afforestation Fund & State Compensatory Afforestation Fund. - Utilization of funds for afforestation, wildlife protection & infrastructure. - Mandatory afforestation or deposit for non-forest land diversion.
Wild Life (Protection) Licencing (Additional Matters for Consideration) Rules, 2024	Earlier rules restricted licences for trading in Schedule I and Part II of Schedule II species. New notification lifts restrictions on Schedule II species but maintains them for Schedule I species.	**Factors for consideration in the licensing process include:** • The capacity of the applicant, including facilities, equipment, and the feasibility of business premises. • The source and manner in which supplies would be obtained. • The number of existing licenses in the relevant area. • The potential implications on hunting or trade of the concerned wild animals.

LATEST AMENDMENTS

Aspect	Solid Waste Management (SWM) Rules, 2016	Amendments to Plastic Waste Management Rules (PWM), 2016	E-Waste (Management) Amendment Rules, 2023
Objective	Providing a framework for effective management of municipal solid waste.	Strengthening waste collection and processing infrastructure, promoting innovation in reusable and compostable alternatives.	Expanding the scope of regulated e-waste and streamlining the processing and disposal process.
Waste Segregation at Source	Mandatory segregation into organic, recyclable, and inert categories.	Not specifically addressed, but the focus is on promoting alternatives and reducing single-use plastics.	Not directly addressed in the rules, but inclusion of new e-waste categories is emphasized.
Processing and Disposal	Composting for organic waste, recycling for recyclables, proper disposal.	Phased ban on additional single-use plastic items, guidelines for compostable plastic bags, promotion of alternatives, enhanced Extended Producer Responsibility (EPR).	Inclusion of new e-waste categories, simplified compliance procedures, promotion of the formal e-waste recycling sector.
Producer Responsibility	Encourages manufacturers to participate in waste management.	Stricter obligations under Enhanced EPR for manufacturers, importers, and brand owners to manage plastic waste generated from their products.	Simplified compliance procedures for e-waste producers, emphasis on promoting formal recycling.
Ban on Specific Items	Not explicitly mentioned, focuses on segregation and proper disposal.	Phased ban on additional single-use plastic items like PVC banners, polystyrene cups, and cutlery.	No specific mention of bans, but inclusion of new e-waste categories is addressed.
Guidelines for Alternatives	Not explicitly mentioned.	Guidelines for compostable plastic bags to set standards for biodegradability and compostability.	Emphasis on promoting alternatives in the e-waste sector, encouraging research and development of sustainable solutions.
Inclusion of New Categories	Not explicitly mentioned.	No inclusion of new plastic waste categories mentioned.	Inclusion of new categories of e-waste like LED lamps and cathode ray tubes under regulation.
Simplified Compliance Procedures	Not explicitly mentioned.	Simplifying procedures for registering e-waste producers and dismantlers.	Simplified compliance procedures for e-waste producers, aiming to streamline the process.
Promotion of Formal Recycling Sector	Not explicitly mentioned.	Encouraging the growth of formal e-waste recycling sector through incentives and capacity building.	Emphasis on promoting the formal e-waste recycling sector through incentives and capacity building.
Focus on Sustainable Management Practices	Not explicitly mentioned.	Emphasis on promoting biodegradable and compostable alternatives, encouraging research and development of sustainable solutions.	Focus on sustainable management by ensuring the implementation of approved destruction technologies for managing refrigerants.

POLLUTION RELATED INITIATIVES

National Clean Air Program (NCAP)	Launched in January 2019, aims to reduce particulate matter pollution by 30% by 2024 in over 100 of the most polluted cities.
Clean Air Research Initiative (CARI)	Initiated by the Department of Science & Technology (DST) to focus on identifying technologies for practical solutions to mitigate air pollution.
National Mission for Clean Ganga and Jal Jeevan Mission	Contribute to the growth of the Indian water and wastewater treatment market, creating opportunities for advanced water management technologies.
SuddhaVaayu	A project aimed at designing an electrical mitigation chamber to remove PM 2.5 and PM 10 particles from the air.
Health Care Without Harm	Focuses on empowering healthcare professionals to advocate for clean air and health in the clean air movement.
National Action Plan on Climate Change	Launched in 2008, aims to enhance climate change mitigation and adaptation efforts in India.

BEACHES IN INDIA

There are 12 Blue Flag-certified beaches in India.

Beach Name	Location	Description
Golden Beach (Puri)	Odisha	Situated in Puri, Odisha, this beach is renowned for its golden sands and picturesque sunsets. It is a popular tourist destination and a significant pilgrimage site due to its proximity to the Jagannath Temple.
Shivrajpur Beach	Gujarat	Located near Dwarka in Gujarat, Shivrajpur Beach is known for its pristine beauty and clear blue waters.
Kappad Beach	Kerala	Kappad Beach, situated near Kozhikode in Kerala, holds historical significance as the place where Portuguese explorer Vasco da Gama landed in India in 1498.
Ghoghla Beach	Diu	Ghoghla Beach, located in the Union Territory of Diu, is known for its soft sandy shores and calm waters. It is an ideal spot for swimming and sunbathing.
Radhanagar Beach	Andaman and Nicobar Islands	Situated on Havelock Island in the Andaman and Nicobar Islands, Radhanagar Beach is renowned for its pristine white sands and crystal-clear turquoise waters.
Kasarkod Beach	Karnataka	Kasarkod Beach, located in Karnataka, is known for its tranquil atmosphere and scenic beauty. Surrounded by palm trees and casuarina groves, it offers a serene environment for relaxation and leisure activities.
PadubidriBeach	Karnataka	Padubidri Beach, situated in Udupi district of Karnataka, is a pristine stretch of coastline known for its golden sands and clear waters.
Rushikonda Beach	Andhra Pradesh	Located near Visakhapatnam in Andhra Pradesh, Rushikonda Beach is famous for its golden sands and excellent surfing conditions. It attracts surfers and beach enthusiasts from across the country.
Kovalam Beach	Tamil Nadu	Situated near Thiruvananthapuram in Tamil Nadu, Kovalam Beach is renowned for its crescent-shaped coastline and shallow waters.
Eden Beach	Puducherry	Eden Beach, located in Puducherry, offers a serene retreat for visitors with its golden sands and tranquil atmosphere.
Minicoy Thundi Beach	Lakshadweep	Situated on Minicoy Island in the Lakshadweep archipelago, Thundi Beach is known for its powdery white sands and turquoise waters.

Kadmat Beach	Lakshadweep	Kadmat Beach, located on Kadmat Island in Lakshadweep, is famous for its pristine beauty and coral reefs.

Other Beaches in India:

Andaman and Nicobar Islands	**Description**
Radhanagar Beach (Havelock Island)	Often ranked among Asia's best beaches, known for its pristine white sand, turquoise waters, and lush rainforests.
Elephant Beach (Havelock Island)	Secluded beach with snorkeling and diving opportunities, accessible only by boat.
Kala Patthar Beach (Havelock Island)	Picturesque black sand beach known for its dramatic cliffs and rock formations.
Lakshadweep	**Description**
Agatti Beach (Agatti Island)	Pristine beach with calm waters, ideal for swimming, sunbathing, and snorkeling.
Kadmat Beach (Kadmat Island)	Popular with cruise tourists, known for its clear waters and coral reefs.
Minicoy Beach (Minicoy Island)	Unique beach with white sand and turquoise waters, fringed by coconut palms. (Blue Flag certified)
Kerala	**Description**
Kovalam Beach	Popular beach with three distinct sections (Lighthouse, Hawah, and Samudra), known for its vibrant atmosphere and water sports. (Blue Flag certified)
Mararikulam Beach	Less crowded beach with Ayurveda resorts and backwaters, offering a serene escape.
Muzhappilangad Beach	Drive-in beach, popular for its scenic beauty and black sand.
Tamil Nadu	**Description**
Marina Beach (Chennai)	Second longest urban beach in the world, offering expansive views and historical landmarks.
Mahabalipuram Beach	Beachfront town with historical monuments and serene atmosphere.
Kovalam Beach (Tamil Nadu)	Picturesque beach with golden sand and palm trees, known for its laid-back charm. (Blue Flag certified)
Odisha	**Description**
Konark Beach	Golden sand beach adjoining the UNESCO World Heritage Site of Konark Sun Temple.
Chandipur Beach	Beach with unique disappearing sea phenomenon, popular for its red crabs.
Gopalpur Beach	Secluded beach with palm trees and calm waters, offering a relaxing getaway.
Gujarat	**Description**
Mandvi Beach	Beach town with white sand and historical monuments, popular for its kite flying festival.
Dwarka Beach	Beach adjoining the holy town of Dwarka, known for its religious significance and calm waters.
Diu Beaches	Beautiful beaches in Diu Island, known for its tranquil sands and stunning views.
Karnataka	**Description**
Gokarna Beaches	A stunning collection of beaches near Gokarna town, renowned for their serene atmosphere and scenic beauty.
Murudeshwar Beach	Beach with a towering Shiva statue, offering stunning views and religious significance.
Kapu Beach	Secluded beach with white sand and turquoise waters, known for its laid-back vibe. (Blue Flag certified)
Goa	**Description**
Calangute Beach	Lively beach with numerous shacks and water sports activities.
Anjuna Beach	Popular beach with a bohemian atmosphere and flea markets.
Agonda Beach	Secluded beach with palm trees and calm waters, offering a peaceful escape.

TIGER RESERVES

S.No	State/UT	Tiger Reserve	Distinct Features
1	Andhra Pradesh	**NagarjunsagarSrisailam**	Largest Tiger Reserve in India, spanning across five districts; rich biodiversity with diverse flora and fauna.
2	Arunachal Pradesh	**Namdapha**	Largest protected area in the Eastern Himalaya biodiversity hotspot; home to various endangered species like snow leopards.
3	Arunachal	**Kamlang**	Known for its rich avifauna and unique habitat types including evergreen

	Pradesh		forests, grasslands, and riverine ecosystems.
4	Arunachal Pradesh	**Pakke**	Famous for its efforts in conservation of the Bengal tiger and four species of the Hornbill bird.
5	Assam	**Manas**	UNESCO World Heritage Site; biodiversity hotspot with rare and endangered species like the Assam roofed turtle.
6	Assam	**Nameri**	Important bird area with diverse avifauna including the endangered white-winged wood duck.
7	Assam	**Orang**	Known for its population of the Indian rhinoceros and royal Bengal tiger.
8	Assam	**Kaziranga**	UNESCO World Heritage Site; hosts two-thirds of the world's great one-horned rhinoceroses.
9	Bihar	**Valmiki**	Located in the foothills of the Himalayas; significant population of Bengal tigers.
10	Chattisgarh	**Udanti-Sitanadi**	Rich in biodiversity with a mix of moist peninsular sal forests, tropical semi-evergreen forests, and grasslands.
11	Chattisgarh	**Achanakmar**	Known for its unique landscape of plateaus, hills, and forests; diverse flora and fauna including tigers and leopards.
12	Chattisgarh	**Indravati**	One of the finest and most picturesque wildlife reserves in central India; rich in biodiversity.
13	Jharkhand	**Palamau**	Part of the Palamau Tiger Reserve; home to a significant population of royal Bengal tigers.
14	Karnataka	**Bandipur**	Part of the Nilgiri Biosphere Reserve; famous for its population of royal Bengal tigers and Asian elephants.
15	Karnataka	**Bhadra**	Part of the Western Ghats; known for its scenic beauty and diverse flora and fauna including tigers and leopards.
16	Karnataka	**Dandeli-Anshi**	Largest protected area in Karnataka; home to the elusive black panther and various species of hornbills.
17	Karnataka	**Nagarahole**	UNESCO World Heritage Site; known for its dense canopy cover and high density of tigers and Indian elephants.
18	Karnataka	**Biligiri Ranganatha Temple**	Located at the confluence of the Western and Eastern Ghats; known for its unique ecosystem and tribal communities.
19	Kerala	**Periyar**	Home to the endangered Nilgiritahr and the rare lion-tailed macaque; offers boat safaris to explore the wildlife.
20	Kerala	**Parambikulam**	Part of the Anamalai Tiger Reserve; known for its diverse habitats ranging from grasslands to evergreen forests.
21	Madhya Pradesh	**Kanha**	Inspiration for Rudyard Kipling's "The Jungle Book"; significant population of Bengal tigers and Indian leopards.
22	Madhya Pradesh	**Pench**	Named after the Pench River; offers rich biodiversity with sightings of tigers, leopards, and diverse bird species.
23	Madhya Pradesh	**Bandhavgarh**	Known for its high density of Bengal tigers and the ancient Bandhavgarh Fort; offers excellent wildlife viewing.
24	Madhya Pradesh	**Panna**	Famous for successful reintroduction of tigers and unique rock formations; hosts various species of deer and antelope.
25	Madhya Pradesh	**Satpura**	Offers diverse landscapes including deep valleys, sandstone peaks, and dense forests; home to tigers and leopards.
26	Madhya Pradesh	**Sanjay-Dubri**	Part of the Sanjay National Park; located in the easternmost part of Madhya Pradesh; offers wilderness experiences.
27	Madhya Pradesh	**VeeranganaDurgavati**	Named after the warrior queen Durgavati; known for its historical significance and rich biodiversity.
28	Maharashtra	**Melghat**	Home to the Indian bison (gaur) and the critically endangered forest owlet; offers opportunities for eco-tourism.
29	Maharashtra	**Tadoba-Andhari**	Known for its high density of tigers and unique topography with Tadoba Lake as a prominent feature.
30	Maharashtra	**Pench**	Shared with Madhya Pradesh; offers diverse habitats and rich biodiversity including Bengal tigers and Indian leopards.
31	Maharashtra	**Sahyadri**	Also known as Sahyadri Tiger Reserve; located in the Western Ghats; known for its dense forests and scenic beauty.
32	Maharashtra	**Nawegaon-Nagzira**	Home to the Indian bison (gaur) and the endangered tiger; offers wildlife safaris and birdwatching opportunities.
33	Maharashtra	**Bor**	Smallest tiger reserve in Maharashtra; offers opportunities for birdwatching

			and nature walks.
34	Mizoram	**Dampa**	Located in the Indo-Myanmar biodiversity hotspot; home to various species of mammals, birds, and reptiles.
35	Odisha	**Similipal**	UNESCO World Heritage Site; known for its rich biodiversity and unique ecosystems including tropical moist forests.
36	Odisha	**Satkosia**	Located on the banks of the Mahanadi River; offers opportunities for wildlife safaris and eco-tourism activities.
37	Rajasthan	**Ranthambore**	Famous for its tiger population and historical Ranthambore Fort; offers excellent tiger sightings and photography.
38	Rajasthan	**Sariska**	Known for successful relocation of tigers; offers diverse landscapes including grasslands and rocky hills.
39	Rajasthan	**Mukandra Hills**	Newest tiger reserve in Rajasthan; aims to conserve the Aravalli Range ecosystem and its biodiversity.
40	Rajasthan	**Dholpur – Karauli**	Also known as Kailadevi Wildlife Sanctuary; home to various species of mammals, birds, and reptiles.
41	Tamil Nadu	**Kalakad-Mundanthurai**	Part of the Agasthyamalai Biosphere Reserve; known for its high species diversity and endemic flora and fauna.
42	Tamil Nadu	**Anamalai**	Part of the Anamalai Tiger Reserve; offers opportunities for wildlife safaris and trekking in the Western Ghats.
43	Tamil Nadu	**Mudumalai**	Part of the Nilgiri Biosphere Reserve; known for its elephant population and diverse wildlife including tigers.
44	Tamil Nadu	**Sathyamangalam**	Largest wildlife sanctuary in Tamil Nadu; known for its population of Bengal tigers and Indian elephants.
45	Tamil Nadu	**SrivilliputhurMegamalai**	Offers diverse habitats including tropical evergreen forests, grasslands, and sholas; home to endemic species.
46	Telangana	**Kawal**	Located in the northern part of Telangana; offers opportunities for tiger sightings and birdwatching.
47	Telangana	**Amrabad**	Part of the Nallamala forest range; known for its diverse flora and fauna including tigers and Indian leopards.
48	Uttar Pradesh	**Dudhwa**	Important rhinoceros habitat; known for its population of royal Bengal tigers, Indian rhinoceroses, and swamp deer.
49	Uttar Pradesh	**Pilibhit**	Located in the terai region; home to the critically endangered Bengal florican and various species of deer.
50	Uttar Pradesh	**Amangarh (buffer of Corbett TR)**	Buffer zone of Corbett Tiger Reserve; provides connectivity for wildlife between different habitats.
51	Uttarakhand	**Corbett**	Oldest national park in India; known for its dense population of tigers and opportunities for wildlife photography.
52	Uttarakhand	**Rajaji TR**	Known for its population of Asian elephants and diverse flora and fauna; offers opportunities for wildlife safaris.
53	West Bengal	**Sunderbans**	UNESCO World Heritage Site; largest tidal halophytic mangrove forest in the world; home to the Bengal tiger.
54	West Bengal	**Buxa**	Located in the Buxa Hills; offers diverse habitats including moist deciduous forests and grasslands.
55	Rajasthan	**Ramgarh Vishdhari Wildlife Sanctuary**	Located in the Aravalli Range; known for its rocky terrain and diverse flora and fauna.
56	Chhattisgarh	**Guru Ghasidas National Park(Sanjay National Park)**	Known for its rich biodiversity including Bengal tigers, leopards, and various species of deer.

ELEPHANT RESERVES

Elephant Range	Elephant Reserve	State	Brief Description
Eastern India	South West Bengal	Mayurjharna	Elephant reserve in South West Bengal, covering 214 sq km.
		Singhbhum	Covering a vast area of 4530 sq km in Jharkhand.
		Mayurbhanj	Spans over 3214 sq km in Odisha.
		Mahanadi	Located in Odisha, occupying 1038 sq km.
		Sambalpur	Elephant reserve in Odisha, spanning 427 sq km.
		Vaitarni	A significant area of 1755 sq km in Odisha.
		South Odisha	Extensive elephant reserve in Odisha, covering 4216 sq km.
		Lemru	A smaller reserve of 50 sq km in Chhattisgarh.
		BadalkhodTamorpingla	Covering 1048.30 sq km in Chhattisgarh.
Northern Brahmaputra	Kameng	Arunachal Pradesh	Located in Arunachal Pradesh, spanning 1892 sq km.
		Sonitpur	Extensive reserve in Assam, covering 1420 sq km.
Dakshin Brahmaputra	Dihang-Patkoi	Assam	Elephant reserve in Assam, occupying 937 sq km.
		South Arunachal Pradesh	Spans a massive area of 195750 sq km.
Kaziranga	Kaziranga-Karbianglong	Assam	Famous reserve in Assam, covering 3270 sq km.
	Dhansiri-Lungdog	Assam	Another significant area of 2740 sq km in Assam.

	Intanki	Nagaland	Smaller reserve in Nagaland, covering 202 sq km.
Eastern Daars	Chirang-ripu	Assam	Reserve in Assam, covering 2600 sq km.
	Eastern do-ask	West Bengal	Reserve in West Bengal, spanning 978 sq km.
Eastern Himalaya	Garo Hills	Meghalaya	Elephant reserve in Meghalaya, covering 3500 sq km.
	Khasi Hills	Meghalaya	Occupying 1331 sq km in Meghalaya.
Nilgiri Eastern Ghat	Mysore	Karnataka	Extensive reserve in Karnataka, covering 6724 sq km.
	Wayanad	Kerala	Located in Kerala, spanning 1200 sq km.
	Nilgiri	Tamil Nadu	Elephant reserve in Tamil Nadu, occupying 2663 sq km.
	Royal	Andhra Pradesh	Reserve in Andhra Pradesh, covering 766 sq km.
Southern Nilgiris	Neelambar, Silent valley	Kerala	Elephant reserve in Kerala, covering 1457 sq km.
	Coimbatore	Tamil Nadu	Reserve in Tamil Nadu, spanning 566 sq km.
Western Ghats	Annamalai	Tamil Nadu	Extensive reserve in Tamil Nadu, covering 3728 sq km.
	Anaimudi	Kerala	Occupying 3728 sq km in Kerala.
Periyar	Periyar	Kerala	Famous reserve in Kerala, covering 3742 sq km.
	Srivilliputtur	Tamil Nadu	Elephant reserve in Tamil Nadu, spanning 1249 sq km.
Northern India	Shivalik /Rajaji Park	Uttarakhand	Extensive reserve in Uttarakhand, covering 5405 sq km.
	Uttar Pradesh E. R	Uttar Pradesh	Reserve in Uttar Pradesh, occupying 744 sq km.

MAJOR ENVIRONMENTAL ORGANISATIONS

Organization	Key Details	Formation	Focus Areas	Headquarters
Botanical Survey of India	Established in 1890, the Botanical Survey of India (BSI) is responsible for documenting and conserving India's plant biodiversity. It conducts botanical surveys, research, and conservation activities across the country.	1890	Plant biodiversity, botanical surveys, research, conservation	Kolkata, West Bengal
Zoological Survey of India	Founded in 1916, the Zoological Survey of India (ZSI) is tasked with documenting India's fauna. It conducts surveys, research, and conservation efforts to understand and protect the country's diverse animal species and their habitats.	1916	Faunal diversity, zoological surveys, research, conservation	Kolkata, West Bengal
Wildlife Institute of India	Established in 1982, the Wildlife Institute of India (WII) is an autonomous institution under the Ministry of Environment, Forests and Climate Change. It focuses on wildlife research, training, and capacity building for conservation management.	1982	Wildlife research, training, capacity building, conservation management	Dehradun, Uttarakhand
Forest Survey of India	Founded in 1981, the Forest Survey of India (FSI) is responsible for forest resource assessment, monitoring, and management. It provides data and information related to forests and tree cover to support environmental decision-making.	1981	Forest resource assessment, monitoring, management	Dehradun, Uttarakhand
Bombay Natural History Society	Established in 1883, the Bombay Natural History Society (BNHS) is one of the oldest NGOs in India dedicated to the study and conservation of nature. It conducts research, education, and conservation projects across various ecosystems.	1883	Nature conservation, research, education, conservation projects	Mumbai, Maharashtra

World Wide Fund for Nature	Founded in 1961, the World Wide Fund for Nature (WWF) is one of the largest conservation organizations globally. WWF India focuses on protecting biodiversity, sustainable development, and addressing environmental challenges through research and advocacy.	1961	Biodiversity conservation, sustainable development, research, advocacy	New Delhi, Delhi
International Union for Conservation of Nature	Established in 1948, the International Union for Conservation of Nature (IUCN) is a global authority on nature conservation and sustainable use of natural resources. It assesses the conservation status of species and ecosystems and provides guidance on conservation policies and practices.	1948	Nature conservation, sustainable use of natural resources, conservation status assessment, policy guidance	Gland, Switzerland

CONFERENCE OF THE PARTIES (COP) MEETINGS UNDER THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

COP1 (Berlin, Germany, 1995)	Adoption of the Berlin Mandate, establishing a timeline for the negotiation of legally binding emission reduction targets.
COP3 (Kyoto, Japan, 1997)	Adoption of the Kyoto Protocol, introducing legally binding emission reduction targets for developed countries and the Clean Development Mechanism (CDM).
COP6 (The Hague, Netherlands, 2000)	Negotiations on the implementation of the Kyoto Protocol collapsed due to disagreements on emissions trading and the use of carbon sinks.
COP7 (Marrakech, Morocco, 2001)	The Marrakech Accords resolved issues left unresolved in The Hague, ensuring the operationalization of the Kyoto Protocol.
COP11 (Montreal, Canada, 2005)	Launch of the Montreal Action Plan, paving the way for negotiations on the post-2012 period (the period after the first commitment period of the Kyoto Protocol).
COP15 (Copenhagen, Denmark, 2009)	Copenhagen Summit. However, negotiations did not result in a legally binding agreement. The Copenhagen Accord, a political agreement, was noted.
COP16 (Cancun, Mexico, 2010)	Adoption of the Cancun Agreements, addressing issues such as climate finance, adaptation, technology transfer, and mitigation pledges.
COP17 (Durban, South Africa, 2011)	Adoption of the Durban Platform, establishing a process to develop a new global climate agreement applicable to all countries by 2015.
COP21 (Paris, France, 2015)	Adoption of the Paris Agreement, a landmark accord aiming to limit global temperature increase to well below 2 degrees Celsius above pre-industrial levels.
COP22 (Marrakech, Morocco, 2016)	Implementation of the Paris Agreement and the Marrakech Proclamation emphasizing the need for urgent climate action.
COP24 (Katowice, Poland, 2018)	Katowice Rulebook, providing guidelines for the transparent and uniform implementation of the Paris Agreement.
COP25 (Madrid, Spain, 2019)	Finalization of outstanding issues from COP24 and discussions on increasing ambition in emission reductions.
COP26 (Glasgow, UK, 2021)	Addressing outstanding issues from previous COPs, particularly on climate finance and global efforts to limit temperature rise. Leaders emphasized the urgency of climate action.

TREATIES, AGREEMENTS AND CONVENTIONS

	Objective	Key Points
Paris Agreement (2015)	Mitigation of greenhouse gas emissions to limit global temperature rise.	Nationally Determined Contributions (NDCs) voluntarily submitted by countries to reduce emissions.
Kyoto Protocol (1997)	Reduction of greenhouse gas emissions, especially from developed countries.	Binding emission reduction targets for developed nations during the commitment period.
Montreal Protocol (1987)	Phasing out substances depleting the	Global cooperation to protect the ozone

	ozone layer, such as CFCs.	layer through controlled phase-outs.
Rio Declaration on Environment and Development (1992)	Integration of environmental and developmental goals.	Principles guiding sustainable development, including the precautionary principle.
United Nations Framework Convention on Climate Change (UNFCCC) (1992)	Conservation of biodiversity and sustainable use of biological resources.	Three main objectives - conservation, sustainable use, and fair and equitable benefit-sharing.
Aarhus Convention (1998)	Stabilization of greenhouse gas concentrations to prevent anthropogenic interference.	Annual Conference of the Parties (COP) meetings, facilitating global climate action.
Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (2010)	Fair and equitable sharing of benefits arising from the utilization of genetic resources.	Access and benefit-sharing framework for genetic resources.
Stockholm Convention on Persistent Organic Pollutants (POPs) (2001)	Elimination or restriction of the production and use of persistent organic pollutants.	Global ban on 12 POPs, including DDT and PCBs.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989)	Control of transboundary movements of hazardous wastes.	Regulating the movement and disposal of hazardous wastes to prevent environmental damage.
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998)	Promoting shared responsibility in the international trade of hazardous chemicals.	Information exchange and prior informed consent for certain hazardous chemicals.
International Convention for the Regulation of Whaling (1946)	Regulation of whaling to ensure conservation of whale stocks.	Establishing quotas and regulations to prevent over-exploitation of whale populations.
Minamata Convention	To address and mitigate the effects of mercury pollution on human health and the environment, particularly in Minamata City, Japan, and other affected regions globally.	Named after the Minamata Bay in Japan, where severe mercury poisoning occurred due to industrial pollution. Resulted in neurological disorders, birth defects, and deaths among residents and wildlife. Led to the recognition of the Minamata Convention on Mercury in 2013. Aims to reduce mercury emissions, promote safe handling of mercury-containing products, and protect human health and the environment.

IMPORTANT REPORTS, INDICES

Report	Description
India State of Forest Report 2023	Provides assessment of forest cover in India. Showed an increase of 2,268 sq km to 80.9 million hectares, which is 24.39% of the total geographical area.
India Environment Performance Index (IEPI) 2023	Ranks countries based on environmental performance across 11 categories. India ranked 180th out of 180 countries, the lowest in South Asia.
National Green Tribunal (NGT) Annual Report 2023-24	Provides overview of cases heard and disposed of by NGT in the previous year. Disposed of over 1.8 lakh cases, including those related to air pollution, water pollution, and waste management.
National Air Quality Index (AQI)	Maintained by CPCB, provides real-time air quality information for major Indian cities. As of October 26, 2023, 144 cities had poor or very poor air quality.
Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6)	Comprehensive assessment of climate change. Found human activities are causing climate change and world is on track for exceeding Paris Agreement goals.
World Wildlife Fund (WWF) Living Planet Report 2022	Found global vertebrate populations declined by an average of 69% since 1970. India lost 58% of its vertebrate populations since 1970.
United Nations Environment Programme (UNEP) Frontiers 2022 report	Found humanity exceeding planetary boundaries in climate change, biodiversity loss, nitrogen and phosphorus pollution, freshwater use, and land-system change.

Climate Change Performance Index (CCPI) 2024	India ranks 7th, up one spot from the previous year, and remains among the highest performers. India receives a high ranking in the GHG Emissions and Energy Use categories, but a medium ranking in Climate Policy and Renewable Energy.
World Bank Report 2023	Global waste generation to reach 3.4 billion tons by 2050, requiring urgent solutions.
UN World Water Development Report 2023	Highlights global water crisis, with India facing severe water stress.

IMPORTANT FACTS RELATED TO ENVIRONMENT

Clean Energy Milestone	Power sector emissions reached a plateau in 2023, marking a positive tipping point for climate change.
Inflation Reduction Act	Act passed in 2022 boosting clean energy in the US, potentially helping reach climate goals.
Global Plastics Treaty	UN Environment Assembly negotiating treaty to address global plastic pollution.
Record-Setting Spending on Clean Energy	US saw record-setting spending on clean energy in 2023.
Climate Action	Countries projecting 2% annual increase in fossil fuel production between 2020-30, exceeding production consistent with the 1.5°C limit.
Extreme Weather	Increase in frequency of extreme weather events, with more high temperature events and fewer low temperature events.
Future Projections	Current trajectory suggests climate change could cost up to 18% of global GDP by mid-century.
Record-Breaking Temperatures	2023 broke multiple temperature records worldwide, with expectations of continued warmth in 2024.
Voluntary Carbon Trading Scheme	India planning to adopt voluntary carbon trading scheme in 2023.
Renewable Energy Targets	India aims for 500 GW non-fossil capacity by 2030, with NEP 2023 targeting solar and wind capacity expansion.
Climate Policy	India ranks 7th in CCPI 2024, with high rankings in GHG Emissions and Energy Use categories.
National Mission for a Green India	Aims to convert 10 million hectares to increase forest cover and improve carbon sequestration quality.
Carbon Market Mechanism	India planning pilot carbon market mechanism for MSMEs and waste sector.
Energy Efficiency	MoU signed with Growth Triangle Joint Business Council to encourage private investments in MSMEs for energy efficiency adoption.
Air Pollution	India launched National Clean Air Programme (NCAP) to reduce PM2.5 concentration by 20-30% by 2024.
Waste Management	India generates over 380 million tons of waste annually, with significant mismanagement and plastic pollution.

IMPORTANT FLORA IN NEWS

Western Ghats	Climate change threatens 60% of NilgiriTahr habitat, pushing the state animal towards extinction.
India - Unknown	Successful germination of critically endangered "Kadupul" seeds offers hope, but habitat loss and illegal extraction persist.
Eastern Ghats	Mining threatens endemic plant species like critically endangered "Simarouba glauca" and "Shoreatumbuggaia."
Western Ghats	Deforestation and invasive species endanger various endemic plants, including vulnerable "Guttiferae" and "Myrtaceae" families.
California	California wildfires continue to threaten iconic and endangered Giant Sequoia Trees, raising concerns about climate change's impact on vulnerable ecosystems.
Madagascar	Deforestation and climate change contribute to the decline of Madagascar's Baobab Trees, impacting the island's unique biodiversity.
Amazon Rainforest	Deforestation and fires push various Amazonian plant species towards extinction, contributing to biodiversity loss and ecosystem disruption.
Coral Reefs	Bleaching events due to rising sea temperatures threaten coral reefs and the diverse marine life they support.

ANIMAL DIVERSITY IN INDIA

	IUCN STATUS	Significance
Gangetic Dolphin (Platanista gangetica)	Endangered	Found in the Ganges and Brahmaputra river systems. Represents the health of river ecosystems.
Great Indian Bustard (*Ardeotisnigriceps*)	Critically Endangered	Large bird species facing habitat loss. Conservation efforts aim to protect its grassland habitats.
NilgiriTahr (Nilgiritragushylocrius)	Endangered	Endemic to the Western Ghats. Known for its distinctive appearance and adapted to mountainous terrains.
Dhole or Indian Wild Dog (Cuonalpinus)	Endangered	Social carnivores found in diverse habitats. Face threats from habitat loss and diseases.
Red Panda (Ailurus fulgens)	Endangered	Arboreal mammal with distinctive markings. Found in the Eastern Himalayas and considered a flagship species for biodiversity conservation.
Gharial (*Gavialis gangeticus*)	Critically Endangered	A long-snouted crocodile species found in river systems, especially the Ganges. Conservation efforts are vital for its survival.
Indian Pangolin (*Manis crassicaudata*)	Endangered	A scaly anteater with a prehensile tail. Faces threats from illegal wildlife trade.
Asiatic Lion (Panthera leo persica)	Endangered	Found in Gir National Park. Symbolizes conservation success but faces threats due to habitat fragmentation.
Snow Leopard (Panthera uncia)	Vulnerable	Inhabits the high-altitude regions of the Himalayas. Represents the unique fauna of the cold deserts.
Indian Rhinoceros (Rhinoceros unicornis)	Vulnerable	The Greater one-horned rhino is a flagship species for Indian wildlife conservation. Mainly found in Kaziranga National Park.
Indian Elephant (Elephas maximus indicus)	Endangered	Integral to Indian culture and religion. Found in diverse habitats, from grasslands to forests.
Bengal Tiger (Panthera tigristigris)	Endangered	National animal of India, symbolizing strength and grace. Found in various tiger reserves, including Sundarbans and Bandipur.

RAMSAR SITES IN INDIA

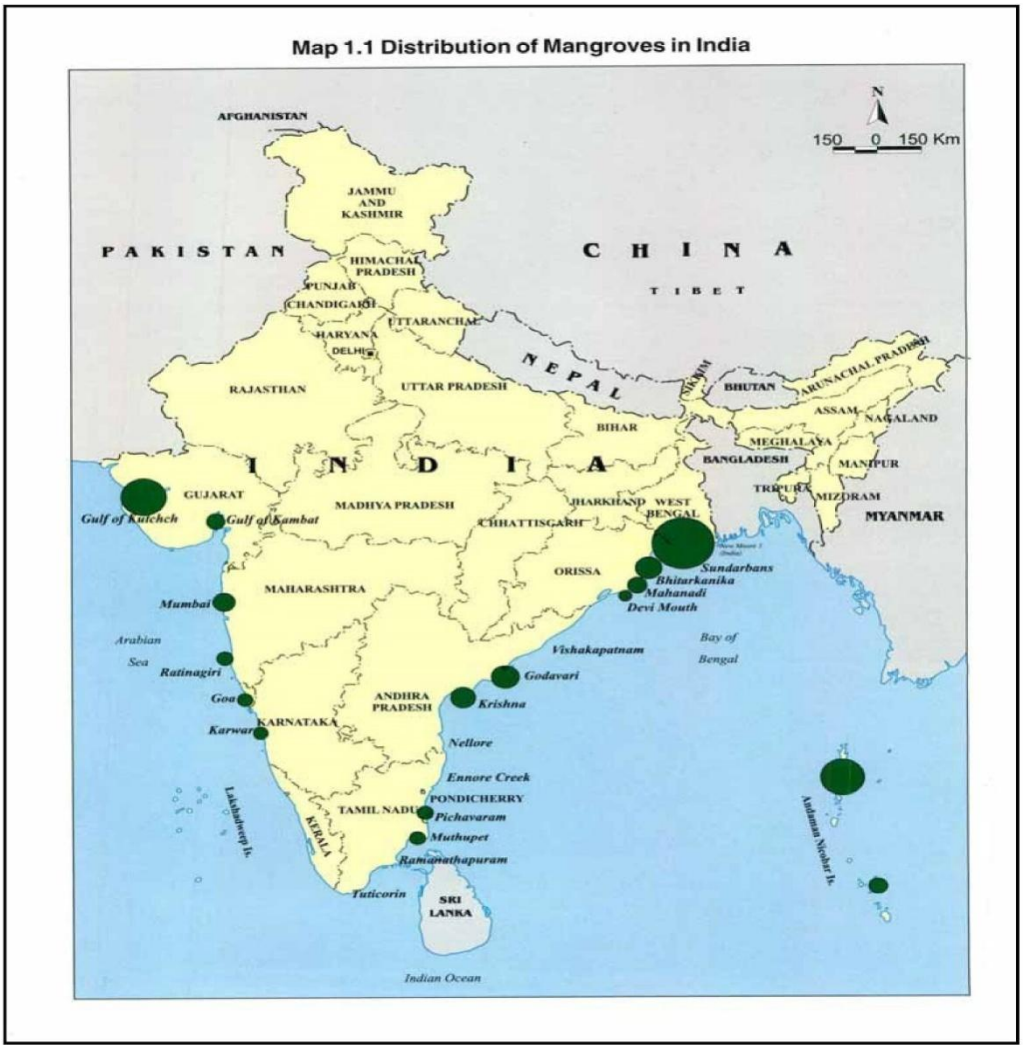
Wetland	Description
Ashtamudi Wetland	Natural backwater in the Kollam district. Estuary formed with Sea at Neendakara. National Waterway 3 passes through it.
Beas Conservation Reserve	185-kilometer stretch of the Beas River. Hosts endangered Indus river dolphin. Program initiated to reintroduce critically endangered gharial.
Bhitarkanika Mangroves	Part of Bhitarkanika Wildlife Sanctuary. Ramsar Wetland of International Importance. Famous for saltwater crocodiles and Olive ridley sea turtle.
Bhoj Wetland	Two lakes in Bhopal: Bhojtal and Lower Lake. Human-made reservoir. Home to the sarus crane.
Chandra Taal	High-altitude lake in Himachal Pradesh. Supports Snow Leopard. Ruddy shelduck found in summer.
Chilika Lake	Brackish water lagoon at the mouth of the Daya River. Largest coastal lagoon in India. Home to Irrawaddy dolphins.
DeeporBeel	Permanent freshwater lake in a former channel of the Brahmaputra river.
East Kolkata Wetlands	Multiple-use wetland serving Kolkata.
Harike Wetland	Shallow water reservoir at the confluence of Beas and Sutlej rivers. Important site for breeding and wintering birds. Planned introduction of amphibious vehicles.
Hokera Wetland	Natural perennial wetland near Srinagar.
Kanjli Wetland	Man-made wetland in Punjab associated with Kanjli Lake.
Keoladeo National Park	Formerly known as Bharatpur Bird Sanctuary. UNESCO World Heritage site.
Keshopur-Miani Community Reserve	Example of wise use of community-managed wetland. Threatened species include common pochard and spotted pond turtle.
Kolleru Lake	Eutrophic lake serving as a flood-balancing reservoir. Declared a Ramsar site in 2002. Home to Grey Pelicans and Painted Storks.
Loktak Lake	Largest freshwater lake in northeastern region. KeibulLamjao, the only floating national park in the world, floats over it.
Nalsarovar Bird Sanctuary	Natural freshwater lake in Thar Desert. Supports satellite population of Indian Wild Ass.
NandurMadhameshwar	Thriving wetland created by NandurMadhameshwar Weir at confluence of Godavari and Kadwa Rivers.
Nangal Wildlife Sanctuary	Located in Shiwalik foothills of Punjab. Supports abundant flora and fauna including

	threatened species like Indian pangolin and Egyptian vulture.
Nawabganj Bird Sanctuary	Renamed as Chandra Shekhar Azad Bird Sanctuary in 2015.
Parvati Arga Bird Sanctuary	Permanent freshwater environment consisting of two oxbow lakes. Refuge for critically endangered white-rumped vulture and Indian vulture.
Point Calimere Wildlife and Bird Sanctuary	One of the last remnants of Dry Evergreen Forests. Habitat: Dry Evergreen Forests, Mangrove & Wetlands.
Pong Dam Lake	Also known as Maharana Pratap Sagar. Pong Dam Lake is a water storage reservoir created in 1975 on the Beas River in the low foothills of the Himalaya. Avian habitats formed by the creation of the Pong Dam are significant. Fauna includes Barking deer, sambar, wild boars, nilgai, leopards, and oriental small-clawed otters.
Renuka Lake	A natural wetland with freshwater springs and inland subterranean karst formations.
Ropar Wetland	A human-made wetland of lake and river formed by the construction of a barrage for diversion of water from the Sutlej River.
Rudrasagar Lake	It is a reservoir fed by three perennial streams discharging to the River Gomti. Ideal habitat for IUCN Red-listed Three-striped Roof Turtle.
Saman Bird Sanctuary	Seasonal oxbow lake on the Ganges floodplain.
Samaspur Bird Sanctuary	Perennial lowland marsh typical of the Indo-Gangetic Plains. Harbors threatened species such as the endangered Egyptian vulture.
Sambhar Lake	India's largest inland saltwater lake. Key wintering area for tens of thousands of flamingos.
Sandi Bird Sanctuary	Wetland typical of the Indo-Gangetic plains.
SarsaiNawarJheel	Permanent marsh, co-habitation of humans and wildlife. Named after the large non-migratory sarus crane.
Sasthamkotta Lake	Largest freshwater lake in Kerala. Depleting due to destruction of replenishing mechanism.
Sundarban Wetland	Located within the largest mangrove forest in the world. Largest Ramsar Site in India.
Surinsar-Mansar Lakes	Freshwater composite lake in semi-arid Panjab Plains, adjoining the Jhelum Basin.
Tsomoriri (Tso Moriri)	Lake in the Changthang Plateau. Breeding ground for endangered Black-necked crane and Bar-headed geese. Endemic species include Great Tibetan Sheep and Tibetan Wild Ass.
Upper Ganga River	Habitat for IUCN Red listed Ganges River Dolphin and Gharial Crocodile.
Vembanad-Kol Wetland	Largest lake in Kerala. Second-largest Ramsar Site in India. Longest lake in India. Famous for exotic fish varieties and Paddy fields below sea level. Kumarakom Bird Sanctuary located on its east coast.
Wular Lake	Largest freshwater lake in India. Formed as a result of tectonic activity, fed by the Jhelum River. Tulbul Project is at its mouth.
Asan Conservation Reserve	Uttarakhand's first Ramsar Site. Bird-friendly habitats supporting various bird species including critically endangered red-headed vulture, white-rumped vulture, and Baer's pochard.
Kabartal Wetland	Also known as Kanwar Jheel. Acts as a vital flood buffer and significant biodiversity hotspot. Migratory stopover for various bird species, including critically endangered vultures and waterbirds.
Soor Sarovar Lake	Also known as Keetham lake. Situated within Soor Sarovar Bird Sanctuary. Home to over 165 species of migratory and resident birds. Also hosts a Bear Rescue center.
Lonar Lake	Situated in the Deccan Plateau's volcanic basalt rock, created by meteor impact 35,000 to 50,000 years ago. Part of Lonar Wildlife Sanctuary in Maharashtra. Saline and alkaline.
Tso Kar Wetland Complex (Tso Kar Lake)	High-altitude wetland complex in Ladakh, with Startsapuk Tso (freshwater) and Tso Kar Lake (hypersaline). Important for Black-necked Crane breeding.
Sultanpur National Park, Haryana	Bird sanctuary in Haryana, home to globally threatened species including sociable lapwing and Egyptian Vulture.
Bhindawas Wildlife Sanctuary	Human-made freshwater wetland in Haryana, part of ecological corridor along Sahibi River. Adjacent to Khaparwas Wildlife Sanctuary.
Thol Lake	Man-made freshwater reservoir in Gujarat, supporting over 320 bird species including threatened ones like White-rumped Vulture.
Wadhvana Wetland	Located in Vadodara district, Gujarat, providing wintering ground to migratory waterbirds, including red-crested pochard.
Haiderpur Wetland	Man-made lake spread over 6908 hectares in Uttar Pradesh. Part of Hastinapur Wildlife Sanctuary, rich in biodiversity including over 300 bird species.
Khijadia Wildlife Sanctuary	Wetland ecosystem in Gujarat, unique habitat with freshwater on one side and salt pans on another. Important nesting ground for migratory birds.
Bakhira Wildlife Sanctuary	Largest natural floodplain wetland in Eastern Uttar Pradesh, home to around 40,000 birds during winters.
Karikili Bird Sanctuary (Tamil Nadu)	Sanctuary in Tamil Nadu home to various bird species including cormorants, egrets, and pelicans.
Pallikaranai Marsh Reserve Forest (Tamil Nadu)	One of the last remaining natural wetlands in Tamil Nadu, encompassing 65 wetlands over 250 square kilometers.
Pichavaram Mangrove (Tamil	One of the last mangrove forests in India, with an expanse of water covered with mangrove

Nadu)	forests.
Sakhya Sagar (Madhya Pradesh)	Man-made lake near Madhav National Park, created from the Manier river.
Pala Wetland in Mizoram	Wetland in Mizoram, part of Palak Wildlife Sanctuary, rich in biodiversity including various animal, bird, and reptile species.
Koothankulam Bird Sanctuary	Reserve in Tamil Nadu on Central Asian Flyway, largest for breeding water birds in South India.
Gulf of Mannar Marine Biosphere Reserve	Coastal region between India and Sri Lanka, first Marine Biosphere Reserve in South and South East Asia, rich in marine biodiversity including coral reefs, seagrass beds, and mangroves.
Vembannur Wetland Complex	Man-made inland tank forming southern tip of peninsular India, part of Important Bird and Biodiversity Area.
Vellode Bird Sanctuary	Sanctuary in Tamil Nadu ideal habitat for birds due to nearby agricultural fields, and aquatic organisms.
Vedanthangal Bird Sanctuary	Oldest water bird sanctuary in India, located in Tamil Nadu, home to various migratory bird species.
Udhayamarthandapuram Bird Sanctuary	Protected area in Tamil Nadu with irrigation tanks fed by Mettur dam, notable for purple moorhen and openbill storks.
Satkosia Gorge	Carved by the Mahanadi River, located within the Satkosia Tiger Reserve, a United Nations Protected area.
Nanda Lake	Intermittent freshwater marshes adjacent to a major tributary of the Zuari River. Supports a variety of migratory waterbirds and other important plants and animals. Enables local water storage, rice cultivation, fishing, and recreation. Protects downstream areas from monsoon floods. Threats include invasive species, garbage, overfishing.
Ranganathittu Bird Sanctuary	Part of the Kaveri River on the Southern Deccan Plateau. Rich in plant and animal species including mugger crocodile, smooth-coated otter, and hump-backed mahseer. Supports significant populations of painted stork, spot-billed pelican, and black-headed ibis. Classified as an Important Bird and Biodiversity Area (IBA) and Eco-Sensitive Zone. Management plan in place.
Sirpur Wetland	Human-made wetland with near-natural characteristics. Located on Indore-Dhar Road in Indore. Shallow, alkaline, nutrient-rich lake flooding during monsoon.
Tampara Lake	Prominent freshwater lake supporting vulnerable species like Cyprinus carpio, common pochard, and river tern.
Hirakud Reservoir	Largest earthen dam in Odisha, operating since 1957. Source of water for hydropower and irrigation. Moderates floods in the Mahanadi delta.
Ansupa Lake	Largest freshwater lake in Odisha, formed by River Mahanadi. Habitat for threatened bird and fish species.
Yashwant Sagar	Important Bird Area and birding site in Malwa region. Used for water supply and fish culture.
Chitrangudi Bird Sanctuary	Protected area since 1989, ideal habitat for winter migratory birds. Surrounded by agricultural fields.
SuchindramTheroor Wetland	Part of the Suchindrum-TheroorManakudi Conservation Reserve. Declared an Important Bird Area. Attracts thousands of birds annually.
Vaduvur Bird Sanctuary	Large human-made irrigation tank serving as a shelter for migratory birds.
Kanjirankulam Bird Sanctuary	Protected area notable for nesting sites of migratory heron species. Breeding population of migratory waterbirds. Classified as an Important Bird Area (IBA) with rich biodiversity. Supports IUCN RedList vulnerable avian species.
Thane Creek	Fringed by mangroves, part of Indian mangrove species. Important part of the Central Asian Flyway for birds. Designated as Thane Creek Flamingo Sanctuary and an Important Bird Area (IBA).
Hygam Wetland Conservation	Significant flood absorption basin, biodiversity conservation site, and eco-tourism site. Home to resident and migratory bird species. Recognized as an Important Bird Area (IBA).
Shallbugh Wetland Conservation	Extensive reedbeds and open water areas. Home to more than four lakh resident and migratory birds.
Ankasamudra Bird Conservation Reserve	Located in Karnataka, this human-made village irrigation tank spans 98.76 hectares and houses over 240 bird species. Notably, it hosts 30,000 water birds, including a significant Painted Stork and Black-headed Ibis population.
Aghanashini Estuary	Situated at the confluence of Aghanashini River and the Arabian Sea in Karnataka, this 4801-hectare estuary provides ecosystem services such as flood mitigation. It supports over 43,000 waterbirds representing 66 species.
Magadi Kere Conservation Reserve	Covering nearly 50 hectares, this human-made wetland in Karnataka is a winter haven for over 166 bird species, including vulnerable and near-threatened ones. Around 8,000 birds visit during the winter season.

Karaivetti Bird Sanctuary	In Tamil Nadu, this 453.72-hectare inland wetland serves as a crucial groundwater recharge source. It is a major congregation site for waterbirds, contributing significantly to Tamil Nadu's avian biodiversity.
Longwood Shola Reserve Forest	Named after the Tamil word for "tropical rainforest," this Tamil Nadu reserve is home to endemic bird species, including the globally endangered Black-chinned Nilgiri Laughingthrush and Nilgiri Wood-pigeon.

MANGROVE AREAS IN INDIA



Location	Mangrove Site	Distinct Features
Andaman and Nicobar Islands	Ritchie's Archipelago	Rich biodiversity with various mangrove species; nesting ground for sea turtles.
Andaman and Nicobar Islands	Mahatma Gandhi Marine National Park	Largest protected area in the Andaman Islands; diverse mangrove ecosystems and coral reefs.
Andaman and Nicobar Islands	North Wandoor	Important bird area with diverse avifauna including migratory birds; scenic beauty.
Andhra Pradesh	Coringa Wildlife Sanctuary	Second largest mangrove vegetation in India; home to the critically endangered white-backed vulture.
Gujarat	Gulf of Kutch	Largest mangrove forest in Gujarat; significant breeding ground for various marine species.
Gujarat	Marine National Park	Located in the Gulf of Kutch; offers opportunities for eco-tourism and birdwatching.
Gujarat	Nalsarovar Bird Sanctuary	Known for its vast wetlands and diverse bird species including flamingos and pelicans.
Maharashtra	Thane Creek Flamingo Sanctuary	Important breeding ground for flamingos; supports a variety of mangrove species.
Odisha	Bhitarkanika National	Second largest mangrove ecosystem in India; home to the endangered

	Park	saltwater crocodile and white-collared kingfisher.
Odisha	Chilika Lake	Asia's largest brackish water lagoon; supports mangrove vegetation along its shores.
Tamil Nadu	Pichavaram	Second largest mangrove forest in India; famous for its interconnected waterways and boat rides.
Tamil Nadu	Muthupet	Ramsar Wetland of International Importance; habitat for various migratory birds and sea turtles.
West Bengal	Sundarbans	UNESCO World Heritage Site; largest tidal mangrove forest in the world; habitat for the Bengal tiger and saltwater crocodile.

MARSHLANDS IN INDIA

Marshland	Location	Distinct Features
Chilika Lake	Odisha	Largest coastal lagoon in India; designated Ramsar site; rich biodiversity with migratory birds and dolphins.
Keoladeo National Park	Rajasthan	Formerly known as Bharatpur Bird Sanctuary; UNESCO World Heritage Site; hosts numerous migratory bird species.
Loktak Lake	Manipur	Largest freshwater lake in Northeast India; floating phumdis (heterogeneous mass of vegetation) are unique.
Sundarbans	West Bengal	Largest tidal mangrove forest in the world; UNESCO World Heritage Site; home to Bengal tigers and saltwater crocodiles.
Vembanad-Kol Wetland	Kerala	Largest wetland system in India; supports rich biodiversity including numerous bird species and aquatic life.
Bhitarkanika Mangroves	Odisha	Second largest mangrove ecosystem in India; habitat for saltwater crocodiles, Indian python, and various bird species.
Point Calimere Wildlife Sanctuary	Tamil Nadu	Located at the southern tip of India; important habitat for migratory birds, especially flamingos and shorebirds.
Kolleru Lake	Andhra Pradesh	Largest freshwater lake in Andhra Pradesh; serves as a vital habitat for resident and migratory birds.
Ashtamudi Wetland	Kerala	Second largest wetland in Kerala; designated Ramsar site; supports rich biodiversity and traditional fishing.
Pulicat Lake	Andhra Pradesh & Tamil Nadu	Second largest brackish water lagoon in India; important habitat for migratory birds and marine life.

MAJOR ALLIGATOR AND CROCODILE CONSERVATION AREAS OF INDIA

National Park/Wildlife Sanctuary	Location	Description
Gundi National Park	Tamil Nadu	Gundi National Park is located in Tamil Nadu, India. It is known for its rich biodiversity and lush forests.
Chambal Wildlife Sanctuary	Rajasthan	Chambal Wildlife Sanctuary, situated in Rajasthan, India, is famous for its conservation efforts for endangered species like the gharial and the Indian skimmer.
Bhitarkanika Wildlife Sanctuary	Odisha	Bhitarkanika Wildlife Sanctuary, located in Odisha, is renowned for its mangrove forests and is home to various species of flora and fauna, including saltwater crocodiles and migratory birds.
Nandankanan Wildlife Sanctuary	Odisha	Nandankanan Wildlife Sanctuary, also in Odisha, is celebrated for its successful breeding programs for white tigers and various other animal species.
Satkosia Gorge Wildlife Sanctuary	Odisha	Satkosia Gorge Wildlife Sanctuary, situated in Odisha, is notable for its picturesque landscapes, deep gorges, and diverse wildlife, including tigers, elephants, and crocodiles.

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6 INTERNATIONAL RELATIONS

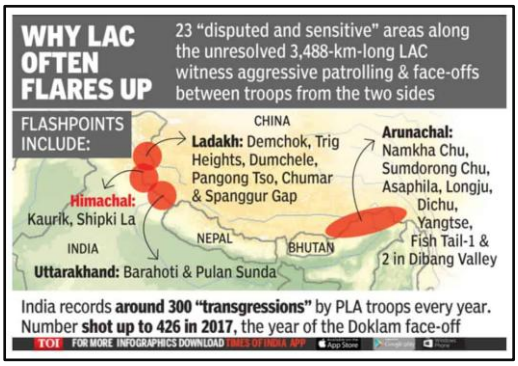
INFRASTRUCTURE OR CONNECTIVITY PROJECTS

Trilateral Highway:	A highway project connecting India, Myanmar, and Thailand, aimed at boosting trade and connectivity.
India-Myanmar-Thailand (IMT) Trilateral Highway:	Connects Moreh in India to Mae Sot in Thailand via Myanmar. Involves construction of roads, bridges.
BBIN (Bangladesh, Bhutan, India, Nepal) Motor Vehicles Agreement	Provides for mutual recognition of driving licenses, permits, and insurance documents. Allows for the movement of vehicles without the need for trans-shipment of goods at the border.
International North-South Transport Corridor (INSTC):	Stretches 7,200 kilometers and includes sea, rail, and road routes. It starts from the Indian Ocean and the Persian Gulf, passes through Iran, and then connects to Azerbaijan. From there, it extends northward to Russia and further into Europe.
Asia-Africa Growth Corridor (AAGC)	Proposed by India and Japan in 2017 as a framework for enhancing connectivity and promoting development cooperation between Asia and Africa.
Sittwe Port	Deepwater port constructed by India in 2016 at Sittwe, the capital of Rakhine State in Myanmar. Situated at the mouth of the Kaladan River, it is a part of the Kaladan Multi-Modal Transit Transport Project. The project involves building a deepwater port in Sittwe, dredging the Kaladan River for cargo vessels to reach Mizoram in India, constructing a river port in Paletwa, Myanmar's Chin State, and upgrading highways from Paletwa to Myeikwa on the Indo-Myanmar border.
Trans-Siberian Railway	Construction of the Trans-Siberian Railway began in 1891. Completed in 1916 the 9,289 kilometers long railway passes through several major cities and regions of Russia, including Moscow, Yekaterinburg, Novosibirsk, Irkutsk, and Vladivostok. It also crosses several major rivers, including the Volga, Ob, Yenisei, and Amur rivers. It spans across Russia from Moscow in the west to Vladivostok in the east.
TAPI Pipeline	TAPI Pipeline also known as the Turkmenistan-Afghanistan-Pakistan-India Pipeline is a natural gas pipeline being developed by the Galkynysh – TAPI Pipeline Company Limited with participation of the Asian Development Bank. It will span 1,814 kilometers, starting from the Galkynysh Gas Field in Turkmenistan, passing through Herat and Kandahar in Afghanistan, Quetta and Multan in Pakistan, and ending at Fazilka near the India-Pakistan border.
Bangladesh-China-India-Myanmar (BCIM) Economic Corridor	BCIM Economic Corridor is proposed to run from Kolkata in India to Kunming in China, passing through Bangladesh and Myanmar. The corridor is expected to include road, rail, and waterway routes.
Chabahar Port	A strategic seaport located in southeastern Iran on the Gulf of Oman. Aim: To create a reliable and robust trade route for Afghanistan, Central Asia, and India, bypassing Pakistan. Strategically located at the crossroads of South Asia, Central Asia, and the Middle East. Provides an alternative route for landlocked Afghanistan and Central Asian countries to access international markets. India has invested in the construction of two berths at the port and is involved in the development of a railway line from Chabahar to Zahedan, which will connect to Afghanistan and Central Asia.
East Coast Economic Corridor (ECEC)	Spans from West Bengal in the north to Tamil Nadu in the south. It includes the states of West Bengal, Odisha, Andhra Pradesh, and Tamil Nadu, as well as the union territory of Puducherry. Key Components: Development of industrial clusters, Upgradation and expansion of existing ports and the development of new ports, Improvement of road, rail, and air connectivity, Development of smart cities and urban infrastructure etc.
Western Dedicated Freight Corridor (WDFC)	Spans 1,504 kilometers, from Dadri near Delhi to Jawaharlal Nehru Port Trust (JNPT) near Mumbai. Passes through the states of Uttar Pradesh, Haryana, Rajasthan, Gujarat, and Maharashtra. Components: Construction of a new broad-gauge double-track railway line dedicated to freight trains. Electrification of the entire corridor. Modern signaling and telecommunication systems for safe train operations. Construction of freight terminals, sidings, and other infrastructure.
SASEC (South Asia Subregional Economic Cooperation) Highway Improvement Project	The SASEC member countries include Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, and Sri Lanka. The project focuses on improving highways that connect these countries and facilitate cross-border trade and movement of goods and people.
Mumbai-Ahmedabad High-Speed Rail Project (MAHSR)/Bullet Train Project	Will stretch approximately 508 kilometers, connecting the Bandra-Kurla Complex in Mumbai with Sabarmati in Ahmedabad. The route will have 12 stations, including Mumbai, Thane, Virar, Boisar, Vapi, Bilimora, Surat, Bharuch, Vadodara, Anand, Ahmedabad, and Sabarmati. The MAHSR project will use **Shinkansen technology, the high-speed rail system from Japan known for its safety, reliability, and efficiency.** The trains will operate at speeds of up to 320 km/h, reducing travel time between Mumbai and Ahmedabad to around 2 hours. Funded through a loan from the Japan International Cooperation Agency (JICA), with the Govt. of India and the respective state governments. The total cost of the project

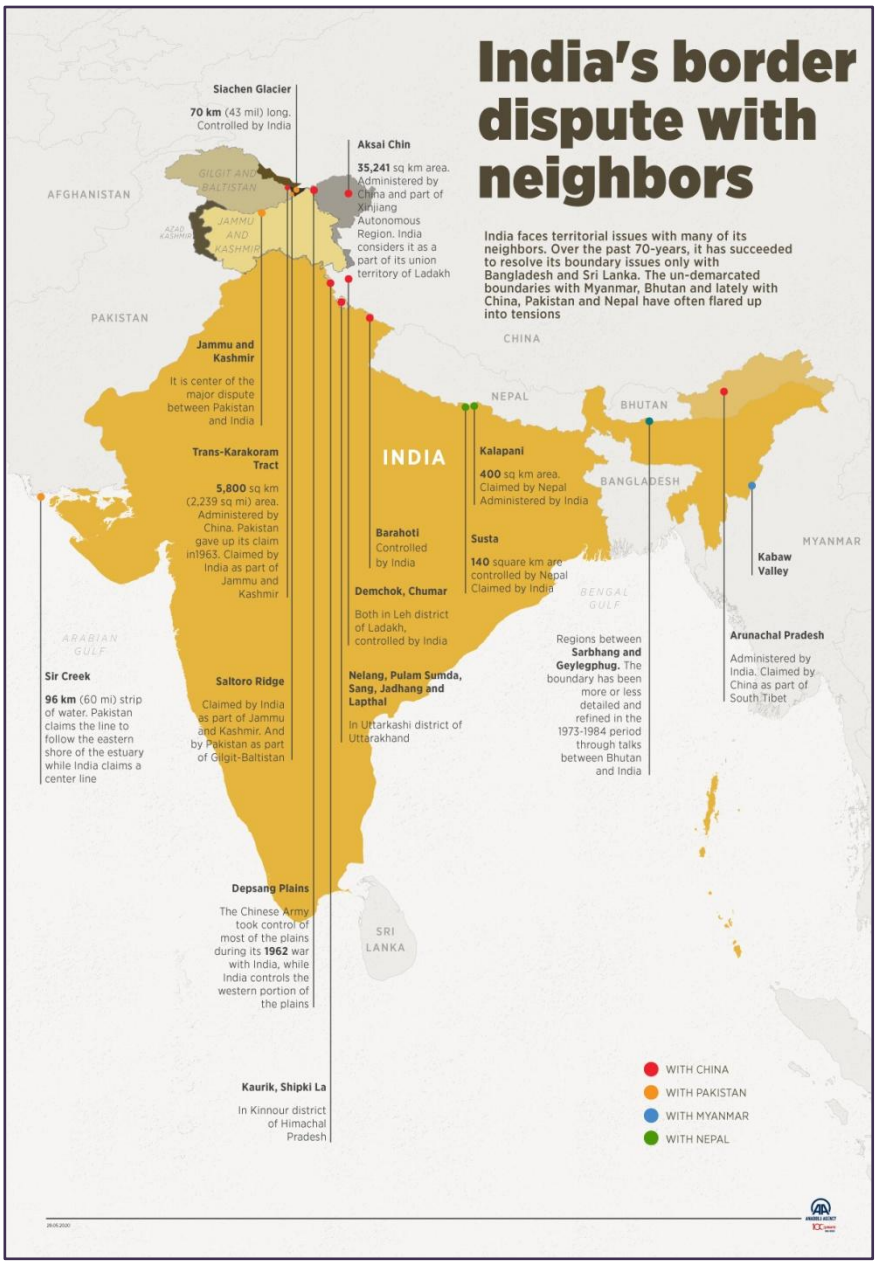
	is estimated to be around ₹1.1 lakh crore (US$15 billion).
Vientiane-Boten Railway	Major infrastructure project in Laos. Aims to connect the capital city of Vientiane with the town of Boten on the border with China.
ASEAN Highway Network	Constructing a network of designated highways that link the major cities and economic centers of ASEAN member countries. Components. Designation of primary routes (AH1 to AH30) that connect major cities and economic centers within ASEAN member countries. Development and improvement of infrastructure, including roads, bridges, and border crossings, to facilitate seamless travel along the network. Harmonization of regulations and standards related to road transportation, including vehicle registration, road signs, and traffic rules.
Trans-Arabian Railway	A proposed railway project that aims to connect the countries of the Arabian Peninsula, stretching from Kuwait in the north to Oman in the south, with potential extensions to Yemen and beyond. Will pass through Kuwait City, Riyadh, Dammam, Abu Dhabi, and Muscat.
India-Bhutan Friendship Road	Spans approximately 1,000 kilometers, running from the border town of Phuentsholing in Bhutan to the capital city of Thimphu and further to other parts of Bhutan.
Chennai-Vladivostok Maritime Corridor	Would span 6,000 kilometers. The route would pass through South China Sea, Strait of Malacca, Andaman Sea, and Bay of Bengal, before entering the Pacific Ocean and reaching Vladivostok, Russia.

INDIA CHINA DISPUTED BORDER AREAS

- The Sino-Indian border, spanning 3,440 km (2,100 miles), is a source of dispute due to an ill-defined border. Four states - Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh - along with the Union Territories of Ladakh share a border with China, divided into three sectors: Western, Middle, and Eastern.
- In the Western sector, India shares a 2152 km border with China, mainly over the Aksai Chin region. The dispute stems from the failure of the British empire to demarcate a legal border. Two proposed borderlines, Johnson's Line and McDonald Line, in 1865 and 1893 respectively, have led to differing claims and perceptions of the Line of Actual Control (LAC), resulting in overlapping areas and patrols causing occasional clashes.



- The Middle sector, spanning about 625 km, runs from Ladakh to Nepal with less disagreement between the countries. In the Eastern sector, India shares a 1140 km boundary with China, where the McMahon Line is considered illegal by China. Disputed areas along the LAC include various regions in Ladakh,



Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.

- In Ladakh, disputed areas include Pangong Tso lake, Galwan Valley, Daulat Beg Oldi (DBO), the Hot Springs-Gogra area, Demchok, Chushul, Spanggur Gap, Samar Lungpa, Trig Heights, Chumar, Dumchele, and Kongka La. Himachal Pradesh has disputes over Kaurik and Shipki La, while Uttarakhand disputes PulamSumda and Barahoti Plains. In Sikkim, North Sikkim and Chumbi Valley are disputed, and in Arunachal Pradesh, disputes include Namkha Chu, Sumdorong Chu, Asaphila, Longju, Dichu, Yangtse, and Fish Tail-1 & 2 in Dibang Valley and Lamang.

BORDER DISPUTE WITH PAKISTAN

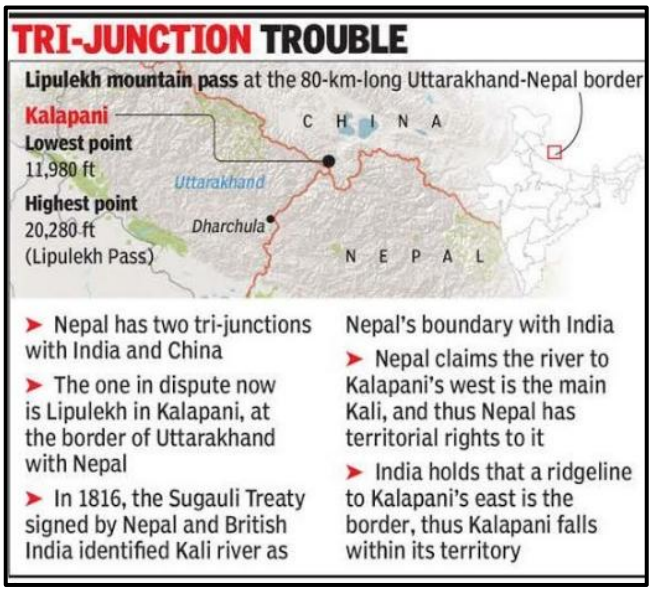
- **Jammu and Kashmir:** This region is at the center of a major dispute between Paki stan and India, leading to three wars between the two countries.
- **Siachen Glacier:** Located in the eastern Karakorams in the Himalayas just east of the Actual Ground Position Line between India and Pakistan, the Siachen Glacier is controlled entirely by India, including all tributary glaciers. It is the longest glacier in the Karakoram and the second-longest in the world outside the polar areas.
- **Saltoro Ridge:** The Saltoro Mountains, a subrange of the Karakoram Heights or Saltoro Ridge, are situated in the heart of the Karakoram, on the southwest side of the Siachen Glacier. India claims them as part of the Ladakh union territory, while Pakistan claims them as part of Gilgit-Baltistan. In 1984, India took military control of the main peaks and passes of the range, with Pakistani forces into the glacial valleys just to the west.
- **Sir Creek:** This 96 km (60 mi) strip of water is disputed between India and Pakistan in the Rann of Kutch marshlands. Pakistan claims the line should follow the eastern shore of the estuary, while India claims a center line.

BORDER DISPUTE WITH MYANMAR

- The dispute concerns land in the Kabaw Valley near Hollenphai village, Moreh, in Manipur state, India, and Namphalong village, Tamu, in the Sagaing Region, Myanmar.

BORDER DISPUTE WITH NEPAL

- **Kalapani:**Kalapani is an area under territorial dispute in Darchula District of Sudurpashchim Pradesh, Nepal, and Pithoragarh District of Uttarakhand, India, covering an area of 400 square km. Administered by India's Indo-Tibetan Border Police since the 1962 border war with China, Kalapani has been claimed by Nepal. The discrepancy in locating the source of the river led to boundary disputes between India and Nepal, with each country producing maps supporting their own claims. India has released a new political map that includes all of Kalapani in India without Nepal's consent, prompting Nepal to issue its own new national map incorporating 300 square kilometers (115 square miles) of mountainous land including Lipulekh, Limpiyadhura, and Kalapani, currently with India.
- **Susta:**Susta, currently in Tribenisusta, Lumbini Zone, Nepal, and near Nichlaul, Uttar Pradesh, India, is an area under territorial dispute totaling over 14,000 hectares (140 square km) and controlled by Nepal.



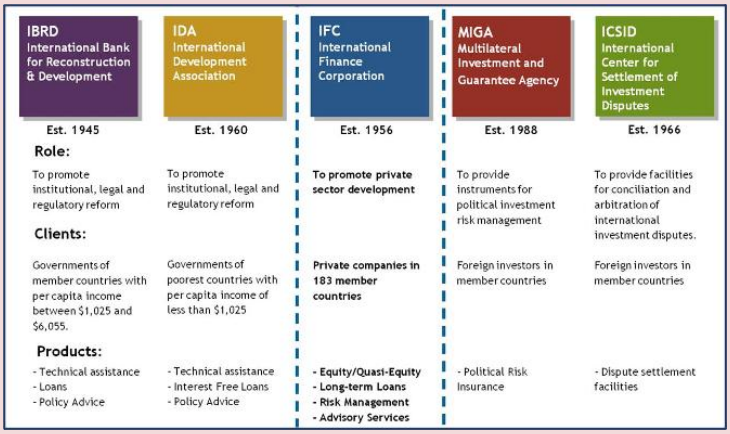
BORDER DISPUTE WITH BHUTAN

- The boundary between Bhutan and India was largely detailed and refined in the 1973-1984 period through talks. However, regions between Sarbhang and Geylegphug remain undefined, bordering the Indian state of Arunachal Pradesh.

INTERNATIONAL GROUPINGS AND ORGANIZATIONS

Organization	Year of Fomation	HQ	Mandate and other details
United Nations (UN)	1945	New York City, United States	UN is an intergovernmental organization established in 1945 to promote international cooperation and maintain peace and security. It has six main organs: the General Assembly, Security Council, Economic and Social Council, Secretariat, International Court of Justice, and Trusteeship Council (currently inactive). The UN conducts peacekeeping operations, provides humanitarian aid, and works towards achieving the Sustainable Development Goals (SDGs) by 2030.
European Union (EU)	1993 (as the EU, but origins trace back to the 1950s)	Brussels, Belgium	Political and economic union of 27 European countries, established in 1993 to promote peace, stability, and prosperity through economic and political integration. A single market, allowing for the free movement of goods, services, capital, and people within its borders.
North Atlantic Treaty Organization (NATO)	1949	Brussels, Belgium	A political and military alliance of 30 countries from North America and Europe, established in 1949 to provide collective security against external threats, during the Cold War. Aim: to promote peace and stability through mutual defense, with its members committed to the principle of collective defense enshrined in Article 5 of the North Atlantic Treaty.
Group of Seven (G7):	1975	No permanent headquarters, meetings held in member countries	An informal forum of seven of the world's largest advanced economies—Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States—along with the European Union. Established in the 1970s.Not based on a treaty and has no permanent secretariat or office. Organized through a presidency that rotates annually among the member states, with the presiding state setting the group's priorities and hosting the summit; Italy presides for 2024.

Group of Twenty (G20)	1999	No permanent headquarters, meetings held in member countries	An intergovernmental forum founded in 1999 comprising 19 sovereign countries, the European Union (EU), and the African Union (AU).Accounts for around 80% of gross world product (GWP), 75% of international trade, two-thirds of the global population,and 60% of the world's land area. Works to address major issues related to the global economy, such as international financial stability, climate change mitigation and sustainable development. Since 2008, it has convened at least once a year, with summits involving each member's head of government or state, finance minister, or foreign minister.
Association of Southeast Asian Nations (ASEAN)	1967	Jakarta, Indonesia	Established in 1967, with the signing of the ASEAN Declaration (Bangkok Declaration) by Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Brunei Darussalam joined in 1984, followed by Vietnam (1995), Laos and Myanmar (1997), and Cambodia (1999), making up the current ten-member grouping. Aim: To promote political and economic cooperation and regional stability. Operates based on the principles of mutual respect, non-interference in internal affairs, peaceful resolution of conflicts, and cooperation for mutual benefit. These principles are enshrined in the ASEAN Charter, adopted in 2007.
ASEAN Plus Three (APT)	1997	No permanent headquarters, meetings held in member countries	A cooperation mechanism between ASEAN countries, China, Japan, and South Korea, aimed at promoting economic integration and cooperation in East Asia.
African Union (AU):	2001	Addis Ababa, Ethiopia	A continental union of 55 member states across Africa, established to replace the Organization of African Unity (OAU). The AU aims to promote unity, peace, and prosperity on the continent through political and economic integration. The AU's secretariat, the African Union Commission, is based in Addis Ababa. Priority: Initiatives like the African Continental Free Trade Area (AfCFTA) and Agenda 2063 framework for Africa's development.
Commonwealth of Nations	1931 (modern form, earlier known as the British Commonwealth)	London, United Kingdom	Political association of 56 member states, primarily former territories of the British Empire, established in 1931 and formally constituted in 1949. Promotes democracy, human rights, economic development, and cultural exchange.
Shanghai Cooperation Organization (SCO) and RATS	2001 RATS:2004 (as part of the SCO)	Beijing, China RATS: Tashkent, Uzbekistan	A Eurasian political, economic, and security alliance comprising nine member states: China, Russia, India, Pakistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. Iran has joined the Shanghai Cooperation Organisation (SCO) as its ninth member. Established in 2001, the SCO aims to enhance cooperation among member states on security, economic, and cultural issues SCO is governed by the Heads of State Council (HSC), its supreme decision-making body, which meets once a year. The Secretariat of the SCO, headquartered in Beijing, China. India and Pakistan became full members in 2017. The major highlight of the 2022 Samarkand Summit was the nomination of Varanasi as the first SCO Tourism and Cultural Capital (2022–23). The organization also contains the so-called Regional Antiterrorist Structure (RATS). RATS headquartered in Tashkent, Uzbekistan, is a permanent organ of the SCO which serves to promote cooperation of member states against the three evils of terrorism, separatism and extremism.
Arab League	1945	Cairo, Egypt	A regional organization of 22 Arab states in North Africa and the Middle East, established in 1945 to promote cooperation in economics, culture, and politics. It aims to coordinate policies,

			support Palestinian rights, and mediate conflicts. Milestone: Taif Agreement-- reached in 1989 to end the civil war in Lebanon.
Organization of Islamic Cooperation (OIC)	1969	Jeddah, Saudi Arabia	An intergovernmental body comprising 57 member states from four continents, established in 1969 to safeguard the interests of the Muslim world. HQ: Jeddah, Saudi Arabia.
IMF	1944	Washington, D.C., United States	Established at the Bretton Woods Conference in 1944, along with the World Bank, to address economic challenges faced by countries after World War II. Headquarters in Washington, D.C. Global lender of last resort to national governments, and a leading supporter of exchange-rate stability. Through a quota system, countries contribute funds to a pool from which countries can borrow if they experience balance of payments problems. The quotas are increased periodically as a means of boosting the IMF's resources in the form of special drawing rights. Key Reports: World Economic Outlook (WEO), the Global Financial Stability Report (GFSR), the Fiscal Monitor, the External Sector Report, the Regional Economic Outlooks, and the Financial Sector Assessment Program (FSAP) reports.
World Bank	1944	Washington, D.C., United States	Established in 1944 at the Breton Woods Conference and headquartered in Washington, D.C. WB consists of five institutions: IBRD, IDA, IFC, MIGA, and ICSID. The mission is to reduce poverty and promote sustainable economic development in developing countries. Has 189 member countries, with each member country having a shareholding in the institution. The United States is the largest shareholder. Governed by a Board of Governors, which is made up of one governor from each member country. Members are shareholders.The number of shares a country has is based roughly on the size of its economy.  To become a member of the Bank, a country must first join the International Monetary Fund (IMF). Membership in IDA, IFC and MIGA is conditional. A country has to first become a member of IBRD for that. Each member nation appoints a Governor and an Alternate Governor. Key Reports, Ease of Doing Business, World Development Report, Global Economic Prospect (GEP) Report, Logistics Performance Index, Remittance Report, Ease of Living Index, India Development Update, Universal Health Coverage Index, Service Trade Restriction Index. India is a member of four of the five constituents of the World Bank Group, International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), International Finance Corporation (IFC) and Multilateral Investment Guarantee

			Agency (MIGA). India is not a member of ICSID (International Centre for Settlement of Investment Disputes). India is one of the founder members of IBRD, IDA and IFC. World Bank assistance in India started from 1948 when a funding for Agricultural Machinery Project was approved.
Organisation for Economic Co-operation and Development (OECD)	1961	Paris, France	An intergovernmental economic organization founded in 1961 to stimulate economic progress and world trade. It aims to shape policies that promote prosperity, equality, opportunity, and well-being for all. Most OECD members are high-income economies with a very high Human Development Index (HDI), and they are generally regarded as developed countries. The OECD is headquartered in Paris, France, and has a total of 38 member countries. India is not a member of the OECD.
Gulf Cooperation Council (GCC)	1981	Riyadh, Saudi Arabia	A political and economic alliance of six countries in the Arabian Peninsula: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). Established on May 25, 1981, in Riyadh, Saudi Arabia, with the signing of the GCC Charter. Aims to enhance economic, social, and cultural cooperation among its member states,
Organization for Security and Co-operation in Europe (OSCE)	1975	Vienna, Austria	World's largest regional security organization, with 57 participating states from Europe, Central Asia, and North America. The OSCE was established as a result of the Helsinki Final Act, which was signed by 35 countries in 1975. Primary mission is to prevent conflicts and promote peace and stability in the region.
South Asian Association for Regional Cooperation (SAARC)	1985	Kathmandu, Nepal	A regional intergovernmental organization and geopolitical union in South Asia established in 1985 by seven countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka. Afghanistan joined the bloc in 2007. Includes nine formally recognised observers including the European Union, the US, Iran and China. Its secretariat is based in Kathmandu, Nepal. It launched the South Asian Free Trade Area in 2006. SAARC maintains permanent diplomatic relations at the United Nations as an observer and has developed links with multilateral entities, including the European Union.
Organization of the Petroleum Exporting Countries (OPEC)	1960	Vienna, Austria	A group of 13 oil-producing nations that coordinate and unify the petroleum policies of its member countries. OPEC was founded on September 14, 1960, in Baghdad, Iraq. OPEC's current member countries are Algeria, Angola, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, and Venezuela. OPEC decisions are made by consensus among its member countries. Note: Angola has opted to withdraw from OPEC. (2024)
OPEC+	2016 (informal grouping within OPEC)	Vienna, Austria	OPEC+ is an informal coalition of oil-producing countries that includes members of OPEC as well as non-OPEC oil-producing countries. OPEC+ was formed in 2016 in response to the global oversupply of oil and falling oil prices. The non-OPEC countries within the OPEC+ framework are Russia, Kazakhstan, Mexico, Oman, Azerbaijan, Bahrain, Brunei, Malaysia, South Sudan, and Sudan. The coalition meets regularly to review market conditions and adjust production levels as necessary.
The Five Eyes (FVEY)	1946 (UKUSA Agreement, formalized later)	No headquarters	The Five Eyes (FVEY) is an intelligence alliance comprising Australia, Canada, New Zealand, the United Kingdom, and the United States. It originated from the 1946 UK-USA Agreement, a treaty for cooperation in signals intelligence between the UK and the US, which was later expanded to include the other three countries.
Benelux Union	1958 (informal	Brussels,	A politico-economic alliance among Belgium, the Netherlands, and

	since 1944)	Belgium	Luxembourg, established in 1944 to promote economic cooperation and the free movement of goods, services, and workers.
Nordic Council	1952	Stockholm, Sweden	A regional inter-parliamentary cooperation consisting of Denmark, Finland, Iceland, Norway, and Sweden, along with the autonomous territories of the Faroe Islands, Greenland, and Åland. Established in 1952, the Council aims to promote cooperation and sustainable development among its members, focusing on areas such as culture, education, environment, and welfare.
Visegrad Group, also known as the V4	1991	No permanent headquarters	A cultural and political alliance of four Central European countries: the Czech Republic, Hungary, Poland, and Slovakia. The group was formed in 1991 to promote cooperation and mutual support in various areas, including economy, culture, education, and defense.
Arctic Council	1996	Tromsø, Norway	The Arctic Council is a high-level forum addressing issues of the Arctic governments and indigenous peoples. Its members are the eight countries with sovereignty over the Arctic Circle: Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States. Observer states, approved by the Council, have no voting rights. The 1996 Ottawa Declaration established the Council to promote cooperation on sustainable development and environmental protection.
Economic Community of West African States (ECOWAS)	1975	Abuja, Nigeria	A regional intergovernmental organization established in1975, with the signing of the Treaty of Lagos by 15 West African countries. ECOWAS currently has 15 member states, including Benin, Burkina Faso, Cabo Verde, Ivory Coast, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. Headquarters: Abuja, Nigeria. Aims to create a "borderless region" with integration and governance based on democracy, rule of law, and good governance. ECOWAS envisions transitioning from an "ECOWAS of States" to an "ECOWAS of the People: Peace and Prosperity to All" by 2050.
Indian Ocean Rim Association (IORA)	1997	Ebene, Mauritius	International organization consisting of 23 states bordering the Indian Ocean. Formerly known as the Indian Ocean Rim Initiative (IORI) and the Indian Ocean Rim Association for Regional Cooperation (IOR-ARC), it was established in Mauritius in March 1995 and formally launched in March 1997. The organization was cemented during Nelson Mandela's visit to India in January 1995, leading to the formation of the Indian Ocean Rim Initiative by South Africa and India. It operates under a multilateral treaty known as the Charter of the Indian Ocean Rim Association for Regional Cooperation. The IORA is a tripartite forum, bringing together representatives of Government, Business, and Academia to promote cooperation and interaction. Its principles are based on strengthening economic cooperation, particularly in trade facilitation and investment promotion, as well as social development. Specialized Agencies of IORA include the Fisheries Support Unit (FSU) in Oman (2003) and the Regional Centre for Science and

			Transfer of Technology (RCSTT) in Iran (2008). Observers to IORA include the Indian Ocean Research Group (IORG) and the Western Indian Ocean Marine Science Association (WIOMSA). IORA itself holds observer status at the UN Conference on Trade and Development (2014), the UN General Assembly (2015), and the African Union (2015).
International Labour Organization (ILO)	1919	Geneva, Switzerland	The ILO was established as part of the Treaty of Versailles, which ended World War I. A specialized agency of the United Nations, it was founded in 1919 to promote social justice and internationally recognized human and labor rights. With 187 member states, the ILO sets international labor standards through conventions and recommendations. As a tripartite organization, it brings together governments, employers, and workers to address labor issues. Its headquarters are in Geneva, Switzerland.
International Telecommunication Union (ITU)	1865 (modern form since 1932)	Geneva, Switzerland	ITU is the United Nations specialized agency for information and communication technologies (ICTs), established on 17 May 1865 as the International Telegraph Union, making it the oldest UN agency. With a membership of 193 countries and over 900 private-sector entities and academic institutions, the ITU promotes the shared global use of the radio spectrum, facilitates international cooperation in assigning satellite orbits, assists in developing and coordinating worldwide technical standards, and works to improve telecommunication infrastructure in the developing world. The World Telecommunications Standardisation Assembly, a four-yearly global conference of the ITU, is dedicated to the standardisation of ICTs. India, an active participant in the ITU, has proposed to host the next WTSA in 2024 and has been contributing significantly to the development of telecom standards, with its 5Gi standards now recognized by the ITU as one of the three technologies for 5G.
Universal Postal Union (UPU)	1874	Geneva, Switzerland	UPU is a United Nations agency that coordinates postal policies among its 192 member countries. Established in 1874, it aims to ensure the smooth flow of international mail and promote cooperation among postal organizations. The UPU sets standards for postage rates, service quality, and international mail exchanges.
World Intellectual Property Organization (WIPO)	1967	Geneva, Switzerland	WIPO is a United Nations specialized agency established in 1967 to promote the protection of intellectual property (IP) worldwide. WIPO administers 26 international treaties and is headquartered in Geneva, Switzerland. WIPO's membership includes 193 countries, with India joining in 1975. WIPO's functions include shaping international IP rules, providing global IP protection and dispute resolution services, connecting IP systems, and offering cooperation and capacity-building programs. India is a party to several WIPO-administered treaties, including the WIPO Copyright Treaty, the Madrid Protocol for the International Registration of Marks, the WIPO Performance and Phonograms Treaty, the Budapest Treaty, the Marrakesh Treaty, and the WIPO Copyright Treaty. WIPO's publications: Global Innovation Index, which ranks countries based on their innovation capacity and success.
INTERPOL	1923	Lyon, France	INTERPOL, the International Criminal Police Organization, is a global entity that facilitates police cooperation and crime control among its 194 member states, making it the largest police organization globally. Established in 1923, INTERPOL's headquarters is located in Lyon, France, and it has regional offices across the globe. It provides a range of services, including secure communication channels, databases of criminal information, coordination of operations, and training programs for law enforcement officials. India is among these member states and even hosted Interpol's 91st

			General Assembly in 2022. INTERPOL is not a law enforcement agency itself but acts as a catalyst for collaboration among law enforcement agencies worldwide. The types of notices issued by INTERPOL include Red Notices for locating and arresting wanted persons, Yellow Notices for finding missing persons or identifying individuals who cannot identify themselves, Blue Notices for collecting additional information about a person's identity or activities in connection with a crime, Black Notices for information on unidentified bodies, Green Notices for warning about the criminal activities of a person considered a possible threat to public safety, Orange Notices for warning about immediate threats to public safety, Purple Notices for sharing information on criminals' methods and concealment, and UN Security Council INTERPOL Special Notices for individuals and groups targeted by UN Security Council sanctions committees.
UNICEF	1946	New York City, United States	Established on December 11, 1946, as the United Nations International Children's Emergency Fund, UNICEF provides humanitarian and developmental aid to children worldwide. Headquartered in New York City, UNICEF operates in over 190 countries and territories, working to improve children's health, nutrition, education, and protection from violence and exploitation.
UNFPA	1969	New York City, United States	A UN agency focused on improving global reproductive and maternal health. It works in over 144 countries. Established in 1969, it is a founding member of the United Nations Development Group and plays a key role in achieving the Sustainable Development Goals. India is a member of UNFPA. HQ: New York City, United States.
UN Women	2010	New York City, United States	United Nations entity dedicated to gender equality and the empowerment of women. It was established in 2010 to accelerate progress on meeting the needs of women and girls worldwide. UN Women supports efforts to end discrimination, violence, and poverty to ensure that women and girls can fully participate in all aspects of life. Its headquarters is in New York City, and it operates in more than 90 countries around the world. India is a member.
WHO	1948	Geneva, Switzerland	A specialized agency of the United Nations responsible for international public health. Established on April 7, 1948, its headquarters are in Geneva, Switzerland. WHO has 194 member states, including India.
International Committee of the Red Cross (ICRC)	1863	Geneva, Switzerland	Founded in 1863 and is based in Geneva, Switzerland. The ICRC's mandate is to ensure respect for the Geneva Conventions and other international humanitarian law in times of war.
International Organization for Standardization (ISO)	1947	Geneva, Switzerland	Established in 1947, ISO is a NGO headquartered in Geneva, Switzerland, with members from 165 countries. Its standards are voluntary but widely adopted to ensure the interoperability and reliability of products and services globally.
Joint United Nations Programme on HIV/AIDS (UNAIDS)	1996	Geneva, Switzerland	Established in 1996, it coordinates efforts of 11 UN organizations to prevent new infections, provide treatment and care, and mitigate the impact of AIDS. Headquartered in Geneva, UNAIDS works with governments, civil society, and partners to end the AIDS epidemic by 2030. India is a member of UNAIDS.
UNESCO	1945	Paris, France	A UN agency promoting peace through international cooperation in education, sciences, and culture. Founded in 1945 and headquartered in Paris, it focuses on education, natural and social sciences, culture, and communication/information. UNESCO aims to foster mutual understanding, protect cultural heritage, promote literacy, and advocate for freedom of expression.
United Nations	1966	Vienna,	A UN agency that promotes inclusive and sustainable industrial

Industrial Development Organization (UNIDO)		Austria	development. Established in 1966 and headquartered in Vienna, Austria, UNIDO works in over 170 countries to create shared prosperity, advance economic competitiveness, and safeguard the environment. India is a member of UNIDO.
International Organization for Standardization (ISO)	1957	Geneva, Switzerland	Established in 1947, ISO is a NGO headquartered in Geneva, Switzerland, with members from 165 countries. Its standards are voluntary but widely adopted to ensure the interoperability and reliability of products and services globally.
International Atomic Energy Agency (IAEA)	1957	Vienna, Austria	It promotes the peaceful use of nuclear energy and works to prevent its use for military purposes. Established in 1957 and based in Vienna, Austria, the IAEA sets nuclear safety standards, conducts inspections, and provides technical assistance to countries. It plays a crucial role in nuclear non-proliferation efforts, ensuring nuclear materials are used safely and for peaceful purposes. India is a member of IAEA.
International Maritime Organization (IMO)	1948	London, United Kingdom	IMO regulates international shipping to ensure safety, security, and environmental protection. Established in 1948 and based in London, the IMO sets global standards for ship design, construction, equipment, and operation. It also works to prevent marine pollution and improve the efficiency of shipping operations. It also deals with legal matters related to liability, compensation, and the facilitation of international maritime traffic. With 175 members, including India since 1959, the IMO is a key player in global seaborne trade. The organization is led by the Secretary-General and governed by the IMO Assembly, consisting of all Member States, and the IMO Council, elected by the Assembly to supervise the Organization's work. Note: India has been re-elected to the IMO Council for the 2024–25 period.
FAO	1945	Rome, Italy	A UN agency working to defeat hunger, improve nutrition, and promote sustainable agriculture. Established in 1945 and based in Rome, FAO provides technical assistance, conducts research, and develops policies to achieve these goals in over 130 countries. Publications include the State of Food and Agriculture reports, the State of World Fisheries and Aquaculture reports, and the FAO Food Price Index.
Universal Postal Union (UPU)	1874	Swiss capital Berne	A specialized agency of the United Nations that coordinates postal policies among member countries, ensuring the smooth and efficient functioning of international postal services. Established in 1874, the UPU is the second oldest international organization worldwide and is headquartered in Bern, Switzerland. India is a member of the UPU.
Transparency International	1993	Berlin, Germany	Founded in 1993, TI works to raise awareness about the damaging effects of corruption and advocates for policies and actions to combat it. TI publishes the Corruption Perceptions Index (CPI) annually. Headquartered in Berlin, Germany.
International Renewable Energy Agency (IRENA)	2009	Abu Dhabi, United Arab Emirates	Established in 2009 and based in Abu Dhabi, IRENA provides policy advice, technical assistance, and capacity building to support countries in their transition to sustainable energy. With 164 member countries, IRENA plays a key role in advancing global renewable energy goals. India is a member of IRENA.
Organization for the Prohibition of Chemical Weapons (OPCW)	1997	The Hague, Netherlands	OPCW enforces the Chemical Weapons Convention (CWC), banning chemical weapons' development, production, stockpiling, and use, requiring their destruction. Established in 1997, based in The Hague, Netherlands, it verifies compliance by inspecting facilities and monitoring chemical industry activities. OPCW offers assistance and protection in case of chemical threats. With 193 member states, including India, OPCW aims for global chemical disarmament.
World Economic	1971	Cologny,	A Swiss nonprofit foundation, established in 1971, committed to

Forum		Switzerland	improving the state of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas. The WEF hosts an annual meeting in Davos, Switzerland, where leaders from around the world discuss pressing issues and challenges facing the global community. The WEF's headquarters are in Cologny, Switzerland.
International Union for Conservation of Nature (IUCN)	1948	Gland, Switzerland	IUCN is a global environmental organization working to conserve nature and ensure sustainable use of natural resources. Founded in 1948 and headquartered in Gland, Switzerland, IUCN is a membership union composed of both government and civil society organizations. India is a member.
International Council on Monuments and Sites (ICOMOS)	1965	Paris, France	ICOMOS is a global NGO dedicated to conserving monuments and sites as part of humanity's cultural heritage. Founded in 1965 and based in Paris, France, it advises UNESCO on heritage conservation. ICOMOS promotes the protection and enhancement of cultural heritage, including monuments, archaeological sites, historic cities, and cultural landscapes.
United Nations Environment Programme (UNEP)	1972	Nairobi, Kenya	Established in 1972, the United Nations Environment Programme (UNEP) is headquartered in Nairobi, Kenya, and has offices worldwide. UNEP's mission is to inspire, inform, and enable nations and peoples to care for the environment and improve quality of life without compromising future generations. India is a member of UNEP, which has a total of 193 member states. UNEP also leads the annual World Environment Day campaign on 5 June to raise awareness and promote action on environmental issues.
United Nations High Commissioner for Refugees (UNHCR)	1950	Geneva, Switzerland	A UN agency mandated to protect and support refugees, asylum seekers, stateless persons, and internally displaced people. Established in 1950, UNHCR is headquartered in Geneva, Switzerland, and works in over 135 countries. Its primary objectives are to ensure access to asylum, provide protection, and offer assistance to rebuild lives. UNHCR's work is guided by international refugee law, including the 1951 Refugee Convention. India is a member of UNHCR.
United Nations Office on Drugs and Crime (UNODC)	1997	Vienna, Austria	Established in 1997 to help member states combat illicit drugs, crime, and terrorism. Based in Vienna, Austria, UNODC assists countries in developing drug control policies, strengthening criminal justice systems, preventing crime, and addressing terrorism. UNODC produces several key reports, including the World Drug Report, Global Report on Trafficking in Persons, Global Study on Homicide, World Wildlife Crime Report, Global SMART Update, and Transnational Organized Crime Threat Assessment.
United Nations Interregional Crime and Justice Research Institute	1968	Turin, Italy	A UN entity established in 1968 to support countries in preventing crime and promoting criminal justice systems that respect human rights. Based in Turin, Italy, UNICRI conducts research, training, and technical cooperation activities globally.
UN Office for Disaster Risk Reduction (UNDRR)	1999		Established in 1999 and is headquartered in Geneva, Switzerland. Its mission is to support countries and communities in implementing the Sendai Framework for Disaster Risk Reduction, which aims to reduce disaster risk and losses in lives, livelihoods, and health. India is a member of UNDRR, which has a total of 193 member states.
International Civil Aviation Organization (ICAO)	1944	Montreal, Canada	A UN agency regulating international air travel, set up in 1944. Based in Montreal, Canada, with 193 member states, it establishes standards for safety, security, efficiency, and environmental protection. ICAO develops global aviation standards, audits member states' aviation systems, and provides support to enhance aviation safety and security worldwide. India is a member of ICAO.
United Nations	1965	New York	Established in 1965, UNDP is headquartered in New York City, USA,

Development Programme (UNDP)		City, United States	and operates in 177 countries and territories. Its primary focus areas include poverty alleviation, democratic governance, crisis prevention and recovery, environment and energy, and gender equality. India is a member of UNDP.
International Fund for Agricultural Development (IFAD)	1977	Rome, Italy	A UN agency focused on eradicating rural poverty in developing countries. Established in 1977, IFAD provides grants and low-interest loans to finance projects that enhance agricultural productivity, and improve food security. Headquartered in Rome, Italy, IFAD collaborates with over 100 countries globally, including India, to achieve its goals.
United Nations Conference on Trade and Development (UNCTAD)	1964	Geneva, Switzerland	Established in 1964, it reports to UNGA and the UN Economic and Social Council. With 195 member states, its permanent secretariat is in Geneva, Switzerland. It formulates policies related to development, including trade, aid, transport, finance, and technology. UNCTAD provides a forum for developing nations to address their economic development issues, and its achievements include implementing the Generalized System of Preferences to promote exports from developing countries. UNCTAD conferences occur every four years, with the most recent in 2021. India is a member. UNCTAD is a founding member of the United Nations Sustainable Stock Exchanges (SSE) initiative along with the Principles for Responsible Investment, the United Nations Environment Programme Finance Initiative (UNEP-FI), and the UN Global Compact.
Financial Action Task Force (FATF)	1989	Paris, France	An intergovernmental organization founded in 1989 to combat money laundering, terrorist financing, and related threats to the international financial system. With 39 member countries and jurisdictions, including India, the FATF works with regional and observer organizations to combat financial crimes. HQ: Paris, France.
International Seabed Authority	1994	Kingston, Jamaica	An autonomous international organization established under the 1982 United Nations Convention on the Law of the Sea (UNCLOS). It is headquartered in Kingston, Jamaica. The ISA is responsible for the regulation of mineral-related activities in the international seabed area, beyond the limits of national jurisdiction. India is a member.
International Whaling Commission (IWC)	1946	Cambridge, United Kingdom	An international body established in 1946 to regulate whaling and conserve whale populations. It is headquartered in Cambridge, United Kingdom. The IWC's main objective is to ensure the proper conservation of whale stocks and the orderly development of the whaling industry. The IWC is composed of 88 member countries including India.
World Food Programme (WFP)	1961	Rome, Italy	Food assistance branch of the United Nations and the world's largest humanitarian organization addressing hunger and promoting food security. Established in 1961, WFP is headquartered in Rome, Italy, and operates in more than 80 countries, providing food assistance to around 100 million people annually. India is a member and partner country of the WFP.
International Energy Forum (IEF)	1991	Riyadh, Saudi Arabia	An inter-governmental organization that serves as a platform for energy-producing and consuming countries to discuss and collaborate on common energy issues. It was established in 1991 and is headquartered in Riyadh, Saudi Arabia. The IEF has 71 member countries including India.
New Development Bank (NDB)	2014	Shanghai, China	Multilateral Development Bank established by the BRICS countries (Brazil, Russia, India, China, and South Africa) in 2014. It is headquartered in Shanghai, China. It provides loans and financial assistance for projects that promote sustainable development, infrastructure development, and poverty reduction.
Permanent Court of	1899	The Hague,	PCA in The Hague, Netherlands, facilitates arbitration and dispute

Arbitration (PCA)		Netherlands	resolution among states, international organizations, and private parties. Established in 1899, it handles disputes in areas like territorial boundaries, human rights, trade, and investment.
UN-Habitat	1978	Nairobi, Kenya	UN agency for sustainable urban development, founded in 1978 and headquartered in Nairobi, Kenya. It promotes socially and environmentally sustainable towns and cities, focusing on urban planning, housing, infrastructure, and resilience. UN-Habitat works towards Sustainable Development Goal 11, aiming to make cities inclusive, safe, resilient, and sustainable.
Asian-African Legal Consultative Organization (AALCO)	1956	New Delhi, India	An intergovernmental organization established in 1956. It aims to promote and strengthen legal cooperation among Asian and African countries. AALCO's activities include organizing conferences, seminars, and workshops on various legal topics, as well as providing technical assistance and advisory services to member states.
Asian Development Bank (ADB)	1966	Mandaluyong, Philippines	Established in 1966 to promote economic and social development in Asia and the Pacific. It is headquartered in Manila, Philippines. ADB has 68 members, including 49 regional members. India is one of the founding members of ADB and is one of its largest shareholders.
African Development Bank (AfDB)	1964	Abidjan, Côte d'Ivoire	A regional multilateral development bank established in 1964 to promote economic and social development in Africa. While its membership is primarily composed of African countries, the AfDB also has non-regional members. Non-regional members of the AfDB include countries such as India, United States, Japan, Canada, and several European countries. These countries provide financial contributions to the AfDB's capital and have a voice in the bank's governance and decision-making processes.
AG - Australia Group	1985	No permanent headquarters	An informal forum of countries established in 1985 to coordinate export controls on dual-use chemicals, biological agents, and related equipment and technologies that could be used in the production of chemical or biological weapons. With the incorporation of India on January 19, 2018, it now has 43 members, including Australia, New Zealand, the European Commission, all 27 member states of the European Union, United Kingdom, the United States, Canada, India, Ukraine, and Argentina.
BIMSTEC	1997	No permanent headquarters	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organization with seven member states around the Bay of Bengal: Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand. Established in 1997, it aims to promote economic cooperation, technological collaboration, and other areas of common interest among its members. Headquarters: Dhaka, Bangladesh.
Bank for International Settlements (BIS)	1930	Basel, Switzerland	An international financial institution owned by central banks that fosters international monetary and financial cooperation. Established in 1930, it is the world's oldest international financial organization, HQ: Basel, Switzerland. India is a member.
Colombo Plan	1951	Colombo, Sri Lanka	A regional intergovernmental organization that promotes economic and social development in the Asia-Pacific region. Established in 1951, it operates through programs focusing on areas like agriculture, education, health, and human resource development. Member countries include Afghanistan, Australia, Bangladesh, Bhutan, Fiji, India, Indonesia, Iran, Japan, Korea, Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, United States, and Vietnam, with headquarters in Colombo, Sri Lanka.
East Asia Summit (EAS)	2005	No permanent headquarters	An annual regional forum among 18 countries in the Asia-Pacific region, including the 10 ASEAN member states and Australia, China,

			India, Japan, New Zealand, South Korea, Russia, and the United States. Established in 2005 it aims to promote peace, stability, and prosperity by providing a platform for leaders to discuss common political, economic, and strategic issues. The summit rotates host countries each year and does not have a permanent headquarters. The 15th East Asia Summit was chaired by Vietnam. There are six priority areas of regional cooperation within the framework of the EAS which are a) Environment and Energy b) Education c) Finance d) Global Health Issues and Pandemic Diseases e) Natural Disaster Management and f) ASEAN Connectivity. The members of the EAS together represent 54% of the world population and account for 58% of the global GDP.
Group of 15 (G-15)	1989	No permanent headquarters	A forum of developing countries established in 1989 to promote cooperation on economic issues. It consists of 17 member countries, including India, Brazil, Egypt, and Nigeria, among others. The G-15 focuses on areas such as trade, investment, technology, and finance, aiming to enhance South-South cooperation and represent developing countries' interests in the global economic system.
ISO - International Organization for Standardization	1947	Geneva, Switzerland	ISO is an independent international organization that develops and publishes voluntary international standards. Established in 1947 and headquartered in Geneva, Switzerland, ISO's membership includes national standards bodies from countries worldwide. These bodies, such as India's Bureau of Indian Standards (BIS), represent their respective countries. ISO standards are widely adopted in various industries to ensure products and services meet certain requirements and specifications. India is a member of ISO through BIS.
Missile Technology Control Regime (MTCR)	1987	No permanent headquarters	An informal political understanding among 35 member countries, aimed at limiting the proliferation of missiles and unmanned aerial vehicles (UAVs) capable of carrying weapons of mass destruction, particularly nuclear weapons. Established in 1987, the MTCR focuses on non-proliferation, national security, and international stability. Member countries commit to controlling the export of missile technology and related equipment, materials, and technologies. India joined the MTCR in June 2016.
Non-Aligned Movement (NAM)	1961	No permanent headquarters	A forum of 120 developing countries that are not formally aligned with any major power bloc. Established in 1961 during the Cold War, NAM was a response to the polarizing influence of the United States and the Soviet Union. India is one of the founding members. The founding principles of NAM include national independence, sovereignty, territorial integrity, and non-interference in the internal affairs of other countries.
South Asia Co-operative Environment Programme (SACEP)	1982	Colombo, Sri Lanka	SACEP, established in 1982, fosters environmental cooperation among South Asian countries—Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. It promotes sustainable development, conserves natural resources, and addresses pollution and climate change through information exchange, technology transfer, and joint projects. Governed by a council of member representatives.
Asia Cooperation Dialogue (ACD)	2002	No permanent headquarters, secretariat in Kuwait City, Kuwait	An intergovernmental organization created in 2002 to promote cooperation among Asian countries. It currently comprises 35 member states and aims to enhance economic and cultural ties among its members. The ACD focuses on issues such as trade, investment, tourism, and agriculture to foster mutual understanding and development in the region.
Mekong-Ganga Cooperation	2000	No permanent headquarters	An initiative between India and five ASEAN countries (Cambodia, Laos, Myanmar, Thailand, Vietnam) to enhance cooperation in

			culture, tourism, education, and transportation. Launched in 2000, its main goals are to promote tourism, culture, education, and transportation links among member countries.
IBSA Dialogue Forum	2003	No permanent headquarters	A trilateral initiative involving India, Brazil, and South Africa, three major democratic countries from Asia, South America, and Africa, respectively. Established in 2003. Aim: promoting South-South cooperation and enhancing coordination on global issues.
Developing 8 (D-8)	1997	No permanent headquarters	An organization of eight developing countries—Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey—focused on fostering economic cooperation to improve living standards and expand trade opportunities.
G-4	2004 (as a formal grouping)	No permanent headquarters	A group of four countries (Brazil, Germany, India, and Japan) that advocate for permanent seats on the United Nations Security Council.
Paris Club	1956	No permanent headquarters	The Paris Club is an informal group of creditor countries that seeks coordinated and sustainable solutions to payment difficulties faced by debtor countries. Established gradually from 1956, it includes 22 permanent members, all OECD countries except India, operating on principles of consensus and solidarity. Agreements reached are not legally binding but serve as the basis for bilateral arrangements between debtor countries and Paris Club creditors.
World Customs Organisation (WCO)	1952	Brussels, Belgium	The World Customs Organisation (WCO) is an intergovernmental organization established in 1952 with the aim of enhancing the effectiveness and efficiency of Customs administrations worldwide. It has 185 member Customs administrations that collectively process approximately 98% of world trade. Headquartered in Brussels, Belgium, the WCO is the only international organization with competence in Customs matters. It has initiated key programs like the SAFE Framework of Standards and the Harmonized System (HS) of tariff nomenclature.
International Solar Alliance (ISA)	2015	Gurgaon, India	The International Solar Alliance (ISA) is an alliance of countries aiming to promote solar energy. It was jointly launched by India and France in 2015 and has since grown to include over 120 member countries, primarily located between the Tropics of Cancer and Capricorn. The ISA seeks to mobilize more than $1 trillion in investment to deploy solar energy on a large scale, facilitate the sharing of knowledge and technology, and promote collaborative solar projects to increase the use of solar power globally. The ISA aims to contribute to the implementation of the Paris Agreement on climate change by promoting solar energy as a clean and sustainable alternative to fossil fuels.
Resilient and Inclusive Supply-chain Enhancement (RISE) initiative	2020	No permanent headquarters	The Resilient and Inclusive Supply-chain Enhancement (RISE) initiative, launched by the World Bank in collaboration with Japan, Italy, Republic of Korea, Canada, and the United Kingdom, aims to address job creation and climate change. It focuses on helping emerging markets and developing countries expand their clean energy production and increase involvement in the minerals industry. This effort is expected to stimulate economic growth, create quality local jobs, and alleviate poverty. The initiative has received significant financial support from the partnering countries.
United Nations Human Rights Council (UNHRC)	2006	Geneva, Switzerland	UNHRC is a key UN body established in 2006 to promote and protect human rights globally. Comprising 47 member states including India, elected for three-year terms, it addresses human rights violations, conducts investigations, and promotes education on human rights. It is headquartered in Geneva, Switzerland.
Office of the High Commissioner for	1993	Geneva, Switzerland	It is a part of the United Nations Secretariat tasked with promoting and protecting human rights around the world. It was established in

<table>
<tr><td>Human Rights (OHCHR)</td><td></td><td></td><td>1993 and is based in Geneva, Switzerland.</td></tr>
<tr><td>ICC VS ICJ</td><td></td><td>The International Criminal Court (ICC) is in The Hague, Netherlands, and the International Court of Justice (ICJ) is also in The Hague, Netherlands</td><td>India is a member of both the International Court of Justice (ICJ) and the International Criminal Court (ICC). India accepted the compulsory jurisdiction of the ICJ in 1974. India is not a party to the Rome Statute, which established the ICC, but it has participated in ICC meetings as an observer.

ICJ vs. ICC
<table><tr><th></th><th>International Court of Justice (ICJ)
La Cour Internationale de Justice (CIJ)</th><th>International Criminal Court (ICC)
La Cour pénale internationale (CPI)</th></tr><tr><td>Year Court Established</td><td>1946</td><td>2002</td></tr><tr><td>UN-Relationship</td><td>Official court of the U.N., commonly referred to as the "World Court."</td><td>Independent. May receive case referrals from the UN Security Council.</td></tr><tr><td>Location</td><td>The Hague, The Netherlands</td><td>The Hague, The Netherlands</td></tr><tr><td>Types of Cases</td><td>Contentious between parties & Advisory opinions</td><td>Criminal prosecution of individuals</td></tr><tr><td>Subject Matter</td><td>Sovereignty, boundary, & maritime disputes, trade, natural resources, human rights, treaty violations, treaty interpretation, and more.</td><td>Genocide, crimes against humanity, war crimes, crimes of aggression</td></tr><tr><td>Funding</td><td>UN-funded.</td><td>Assessed contribution from state parties to the Rome Statute; voluntary contributions from the U.N.; voluntary contributions from governments, international organizations, individuals, corporations and other entities.</td></tr></table>
ICJ Jurisdiction: All UN members are parties to the ICJ statute, but the court only has jurisdiction if both parties in a dispute consent to it.
ICJ Judgments: The ICJ's judgments are final and technically binding, with no provision for appeal. They can only be subject to interpretation or revision upon the discovery of new facts.
ICJ Judges: The ICJ has 15 judges elected to nine-year terms by the UN General Assembly and Security Council. Four Indians have been ICJ members, including Justice Dalveer Bhandari since 2012.
ICC Languages: The International Criminal Court's main working languages are English and French, with six official languages overall, including Arabic, Chinese, Russian, and Spanish.
ICC Structure: The ICC comprises four primary organs: the Presidency, Chambers, Office of the Prosecutor, and Registry. The Assembly of Parties serves as the court's management and oversight body.</td></tr>
<tr><td>Amnesty International</td><td>1961</td><td>London, United Kingdom</td><td>A non-governmental organization focused on human rights. It was founded in 1961 with the aim of promoting and defending human rights worldwide. India is a member of Amnesty International.</td></tr>
<tr><td>Human Rights Watch</td><td>1978</td><td>New York City, United States</td><td>An international non-governmental organization that conducts research and advocacy on human rights. It was founded in 1978 and is known for its accurate fact-finding, impartial reporting, and targeted advocacy. It investigates and exposes human rights violations, including torture, war crimes, and discrimination, and works to hold governments and other actors accountable. India is not a member of Human Rights Watch.</td></tr>
<tr><td>International Federation for Human Rights (FIDH)</td><td>1922</td><td>Paris, France</td><td>A non-governmental organization that works to promote and protect human rights worldwide. It was founded in 1922 and is based in Paris, France. FIDH is composed of 192 member organizations from 117 countries across the globe. India is a member.</td></tr>
<tr><td>International Disability Alliance (IDA)</td><td>1999</td><td>New York City, United States</td><td>India is a member of the IDA, a global network of organizations representing persons with disabilities. IDA was established in 1999 as a network to represent the interests of persons with disabilities at the international level.</td></tr>
<tr><td>Global Alliance of National Human</td><td>1993</td><td>Geneva, Switzerland</td><td>GANHRI was established in 1993, in Paris, France, as the International Coordinating Committee of National Institutions for the</td></tr>
</table>

Rights Institutions (GANHRI)			Promotion and Protection of Human Rights (ICC). It changed its name to GANHRI in 2016. The alliance works closely with the United Nations and other international organizations to promote and protect human rights worldwide. India is a member of GANHRI.
Convention on the Rights of the Child (CRC)	1989	New York City, United States	It came into force in 1990. The CRC defines a child as any human being under the age of eighteen, and it outlines the basic rights that children everywhere are entitled to, including the right to life, identity, family relations, education, health care, and protection from abuse, neglect, and exploitation. The CRC has 196 parties, making it the most widely ratified human rights treaty in history. Countries that ratify the CRC are legally bound to implement its provisions and report regularly to the United Nations on their efforts to do so.

India is a member of the following organizations:

United Nations (UN)	United Nations Environment Programme (UNEP)
Group of Twenty (G20)	United Nations High Commissioner for Refugees (UNHCR)
Association of Southeast Asian Nations (ASEAN) - ASEAN has a regional office in India, and India is a member of ASEAN Regional Forum (ARF), but India is not a full member of ASEAN.	United Nations Office on Drugs and Crime (UNODC)
Shanghai Cooperation Organization (SCO)	United Nations Development Programme (UNDP)
Arab League (India has an observer status)	United Nations Conference on Trade and Development (UNCTAD)
IMF (International Monetary Fund)	Asian Development Bank (ADB)
World Bank	African Development Bank (AfDB) - India is not a member but has contributed funds to the bank.
Organisation for Economic Co-operation and Development (OECD) - India is not a member but has been invited to become a full member.	Bank for International Settlements (BIS)
South Asian Association for Regional Cooperation (SAARC)	Colombo Plan
Organization of the Petroleum Exporting Countries (OPEC) - India is not a member but has observer status.	Group of 15 (G-15)
Commonwealth of Nations	Non-Aligned Movement (NAM)
International Telecommunication Union (ITU)	Paris Club (India is not a member but has participated in meetings)
Universal Postal Union (UPU)	Asian-African Legal Consultative Organization (AALCO)
World Intellectual Property Organization (WIPO)	Missile Technology Control Regime (MTCR) - India became a member in 2016.
UNICEF	South Asia Co-operative Environment Programme (SACEP)
UNFPA	Asia Cooperation Dialogue (ACD)
WHO (World Health Organization)	IBSA Dialogue Forum
International Committee of the Red Cross (ICRC)	Developing 8 (D-8)
International Labour Organization (ILO)	G-4
International Renewable Energy Agency (IRENA)	World Customs Organisation (WCO) - India is a member of the WCO.
International Atomic Energy Agency (IAEA)	International Solar Alliance (ISA)
International Maritime Organization (IMO)	United Nations Human Rights Council (UNHRC) - India is not a member but has been elected several times.
FAO (Food and Agriculture Organization)	ICC VS ICJ - Not an organization; refers to the International Criminal Court (ICC) and the International Court of Justice (ICJ), both of which India recognizes but is not a member of.
INTERPOL (India is a member of INTERPOL but does not have a national central bureau)	Amnesty International
International Union for Conservation of Nature (IUCN) - India is a member of the IUCN but not a party to the IUCN Statute.	Human Rights Watch
International Council on Monuments and Sites (ICOMOS)	International Federation for Human Rights (FIDH)
	Convention on the Rights of the Child (CRC) - India is a signatory but has not ratified the convention.

TYPES OF DIPLOMACIES

Track I and Track II Diplomacy:
Track I Diplomacy: Official, government-led diplomacy conducted by diplomats and government officials.
Track II Diplomacy: Unofficial diplomacy involving non-governmental actors, such as academics, private citizens, and non-profit organizations, often used to facilitate communication and build trust between conflicting parties.
Track III Diplomacy:
Unofficial, people-to-people diplomacy that involves civil society organizations, religious groups, and other non-state actors in conflict resolution and peacebuilding efforts.
Summit Diplomacy:
Diplomacy conducted through high-level meetings, often between heads of state or government, to discuss and negotiate important issues.
Gunboat Diplomacy:
The use of military force or the threat of force to achieve diplomatic objectives, often associated with coercive diplomacy
Shuttle Diplomacy:
Diplomatic negotiations conducted by a mediator who travels back and forth between parties that are reluctant to meet face-to-face.
Track 1.5
Track 1.5 diplomacy combines government officials (Track 1) with non-governmental experts (Track 2) to address issues and build relationships more flexibly and informally than traditional diplomacy.

CONVENTIONS AND TREATIES

Geneva Conventions	The Geneva Conventions are a set of international treaties adopted in 1949 that establish humanitarian standards for the treatment of war victims Four Geneva Conventions protect wounded and sick soldiers, wounded, sick, and shipwrecked military personnel at sea, prisoners of war (POWs), and civilians in occupied territories. Three additional protocols include protecting victims in international conflicts, non-international armed conflicts, and creating the Red Crystal emblem. The Conventions have been ratified by 196 states, and India has ratified them along with the third protocol of 2005. War crimes under the Conventions include wilful killing, torture, and inhuman treatment, with the ICC having jurisdiction over such crimes under the Rome Statute.
Montreal Protocol	The Montreal Protocol is an international treaty aimed at protecting the ozone layer by phasing out ozone-depleting substances. It was agreed upon in 1987 and has been universally ratified by 197 parties. The protocol has led to a significant reduction in the production and consumption of harmful substances like CFCs, ODS and Halons.
Kyoto Protocol	Adopted in 1997, it sets binding targets for developed countries to reduce Greenhouse Gas Emissions by an average of 5.2% below 1990 levels over 2008-2012. It introduced carbon trading and clean development mechanisms.
Paris Agreement	An international treaty on climate change adopted in 2015. Its goal is to limit global warming to well below 2 degrees Celsius, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. It aims to achieve this by reducing greenhouse gas emissions and enhancing climate resilience and adaptation. Unlike the Kyoto Protocol, the Paris Agreement includes all countries, which must submit nationally determined contributions (NDCs) outlining their climate actions.
Treaty on the Non-Proliferation of Nuclear Weapons (NPT)	NPT aims to prevent the spread of nuclear weapons and technology, promote peaceful nuclear energy cooperation, and achieve nuclear disarmament and general disarmament. It **entered into force in 1970 and has 191 state parties**, although North Korea withdrew in 2003. Four UN member states, including India, Israel, Pakistan, and North Korea, have not signed the treaty. The NPT defines nuclear-weapon states as those that tested a nuclear explosive device before January 1, 1967. The treaty undergoes review every five years in Review Conferences. India did not sign the NPT, considering it a flawed treaty that did not recognize states' right to peaceful nuclear energy.
Vienna Convention on Diplomatic Relations (VCDR)	Adopted in 1961 and in force since 1964, it establishes the framework for the establishment and conduct of diplomatic missions, the privileges and immunities of diplomats, and the rules for diplomatic relations. It grants diplomats certain privileges, such as immunity from criminal jurisdiction and inviolability of diplomatic premises, to ensure they can perform their duties effectively. It also outlines the duties of diplomats, including respecting the laws of the host country and not interfering in its internal affairs. With 192 ratifications, the VCDR is a key instrument in maintaining peaceful and cooperative relations among nations.
Rome Statute of the International Criminal Court (ICC)	Adopted in 1998 and in force since 2002, it outlines the ICC's jurisdiction, structure, and functions. It enables the ICC to investigate and prosecute individuals for serious international crimes when national authorities are unable or unwilling to act. The statute defines rights of the accused, roles of

	victims and witnesses, and principles of cooperation with national jurisdictions.
United Nations Convention on Biological Diversity (CBD)	The United Nations Convention on Biological Diversity (CBD), adopted in 1992 and in force since 1993, is a legally binding international treaty. It recognizes, for the first time, that the conservation of biological diversity is "a common concern of humankind" and an integral part of the development process. The CBD's scope covers all ecosystems, species, and genetic resources, emphasizing the importance of their conservation, sustainable use, and the fair sharing of benefits derived from genetic resources. India is a member of CBD.
United Nations Framework Convention on Climate Change (UNFCCC)	UNFCCC is an international environmental treaty adopted on 9 May 1992 and opened for signature at the Earth Summit in Rio de Janeiro, Brazil. The treaty aimed to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It entered into force in 1994 and has 197 parties, including India. The ultimate objective of the UNFCCC is to achieve a stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human interference with the climate system.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	It is an international agreement aimed at ensuring that international trade in specimens of wild animals and plants does not threaten their survival. CITES was adopted in Washington, D.C., on 3 March 1973 and entered into force on 1 July 1975. It is administered by the CITES Secretariat, which is hosted by the United Nations Environment Programme (UNEP) in Geneva, Switzerland. CITES regulates international trade in over 35,000 species of plants and animals, including their parts and derivatives, through a system of permits and certificates. The treaty classifies species into three appendixes based on the degree of protection they need: ▪ Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances. ▪ Appendix II includes species that are not necessarily threatened with extinction but may become so unless trade is closely controlled. Trade in these species requires permits. ▪ Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. CITES currently has 183 Parties, including India, which became a Party on 1 July 1976.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	Adopted in 1989, it regulates the transboundary movement and disposal of hazardous wastes to protect human health and the environment. It requires prior informed consent for waste exports, promotes environmentally sound waste management, and prohibits waste dumping. India is a Party to the Convention, committed to its principles.
Hague Convention on the Civil Aspects of International Child Abduction or Hague Abduction Convention	It is a multilateral treaty that provides an expeditious method to return a child who was wrongfully taken by a parent from one country to another country. For the Convention to apply, both countries (the one the child was removed from, and the one the child has been brought to) must have adopted the Convention. The Convention was developed by the Hague Conference on Private International Law (HCCH). The convention was concluded in 1980 and entered into force in 1983. India is a member of the Convention.
Convention on Cluster Munitions	prohibits the use, production, transfer, and stockpiling of cluster munitions. It also includes provisions for the clearance of contaminated areas and assistance to victims. The treaty was adopted in Dublin, Ireland, in May 2008 and entered into force in August 2010. It has been ratified by over 120 countries, including India.
Ottawa Treaty (Mine Ban Treaty)	Prohibits the use, stockpiling, production, and transfer of anti-personnel mines and requires countries to destroy their existing stockpiles. The treaty was adopted in Ottawa, Canada, in 1997 and entered into force in 1999. It has been ratified by over 160 countries, including India.
International Covenant on Civil and Political Rights (ICCPR)	It is a multilateral treaty adopted by the United Nations General Assembly in 1966, and it entered into force in 1976. The ICCPR is part of the International Bill of Human Rights, along with the Universal Declaration of Human Rights and the International Covenant on Economic, Social, and Cultural Rights. The ICCPR commits its parties to respect the civil and political rights of individuals, including the right to life, freedom of speech, freedom of assembly, electoral rights, and the right to a fair trial. It also establishes the Human Rights Committee, which monitors the implementation of the covenant by its state parties. India is a member of the ICCPR.
Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)	It is an international treaty adopted in 1979 by the United Nations General Assembly. It aims to end discrimination against women and ensure their equal rights in various aspects of life. CEDAW has been ratified by 189 countries, including India, which signed it in 1980 and ratified it in 1993.
Biological Weapons Convention (BWC)	It is an international treaty that prohibits the development, production, and stockpiling of biological and toxin weapons. It was opened for signature in 1972 and entered into force in 1975. The BWC currently has 183 member states, including India, which ratified the treaty in 1974. The BWC aims to eliminate the possibility of the use of biological agents and toxins as weapons of war and terrorism.
Open Skies Treaty	Initiated in 1992 and enforced in 2002, it permits its 34 signatories to conduct unarmed surveillance flights over each other's territories to monitor arms development. It established an aerial

	surveillance system for participants. Both the US and Russia are signatories, while India is not a member.
Intermediate-Range Nuclear Forces Treaty	Agreed upon by the US and the Soviet Union in 1987, it requires them to eliminate their stocks of intermediate and shorter-range land-based missiles carrying nuclear warheads. It covered all land-based missiles carrying nuclear warheads but excluded sea-launched missiles. The US withdrew from the treaty on August 2, 2019.
New START Treaty	Effective on February 5, 2011, between the US and Russia, it aims to further reduce and limit strategic offensive arms. It succeeded the 1991 START framework, which limited both sides to 1,600 strategic delivery vehicles and 6,000 warheads at the end of the Cold War. Concerns have been raised about extending New START, as it could negatively impact arms deal with China and Russia. The US also expressed concerns about China potentially doubling its nuclear stockpile if New START continued without including China. Additionally, the New START Treaty faced issues with verification inadequacies, prompting the US to seek a new arms control regime involving China.
Convention on Long-Range Transboundary Air Pollution	Adopted in 1979 and amended in 2012, it aims to reduce air pollution and its effects across national boundaries in Europe and North America. It addresses pollutants such as sulfur, nitrogen oxides, volatile organic compounds, and persistent organic pollutants
United Nations Convention to Combat Desertification (UNCCD)	Headquartered in Bonn, Germany it is a global treaty adopted in 1994 to address the problem of desertification and land degradation. It emphasizes the participation of local communities in combating desertification and encourages the mobilization of financial resources for sustainable land management projects. It has 197 parties, making it a universally recognized framework for addressing desertification and land degradation worldwide.India is a member of UNCCD.
United Nations Convention against Corruption (UNCAC)	It is a legally binding international anti-corruption instrument negotiated by the UN to address the global issue of corruption. It was adopted by the UNGA in 2003 and entered into force in 2005. The Convention aims to promote and strengthen measures to prevent and combat corruption in both the public and private sectors, including criminalization and law enforcement, international cooperation, asset recovery, and prevention measures such as transparency and integrity in public administration. It has 186 parties, including India-ratified the Convention in 2011. HQ-Vienna, Austria.
Protocol on Environmental Protection to the Antarctic Treaty	Also known as the Madrid Protocol, it is an international treaty dedicated to the protection of the Antarctic environment. It was adopted in 1991 and entered into force in 1998. The Protocol designates Antarctica as a natural reserve, devoted to peace and science, and prohibits all activities relating to mineral resources, except for scientific research. It also establishes environmental principles for the protection of the Antarctic environment and sets out guidelines for waste disposal, environmental impact assessments, and the conservation of flora and fauna. The Protocol has been ratified by 38 countries, including India. HQ- Buenos Aires, Argentina.
United Nations Convention on International Settlement Agreements Resulting from Mediation	Singapore Convention on Mediation, it is an international treaty that aims to facilitate the enforcement of mediated settlement agreements in cross-border disputes. The Convention was adopted in 2018 and entered into force in 2019. It provides a harmonized legal framework for the recognition and enforcement of international settlement agreements resulting from mediation, similar to the framework that exists for international arbitration. The Convention applies to commercial disputes that are considered international in nature. It aims to promote mediation as an effective and efficient method for resolving disputes and to enhance access to justice in international trade and commerce. As of now, India has signed but not yet ratified the Convention. HQ- New York City, United States.
International Convention for the Suppression of Acts of Nuclear Terrorism	Adopted by the UNGA in 2005 to enhance international cooperation in combating nuclear terrorism. It criminalizes certain acts of nuclear terrorism, and establishes a framework for international cooperation in the prevention, investigation, prosecution, and extradition of individuals involved in such acts. It aims to strengthen the global legal framework against nuclear terrorism and promote international security. India is a party to this convention. HQ- Vienna, Austria.
Comprehensive Nuclear-Test-Ban Treaty (CTBT)	It establishes a robust verification regime, including the International Monitoring System (IMS), to detect and monitor nuclear test explosions. Despite being signed by 185 countries and ratified by 170, including major nuclear powers, the treaty has not entered into force due to the required ratification by eight specific states, including the United States, China, and India.

TRADE AGREEMENTS AND COOPERATION

World Trade Organization (WTO)	Established in 1995, replacing the General Agreement on Tariffs and Trade (GATT), which was created in 1948. It has 164 member countries. The WTO's agreements cover goods, services, and intellectual property. Functions include administering trade agreements, providing a forum for trade negotiations, handling trade disputes.
North American Free Trade Agreement (NAFTA):	Signed in 1994, NAFTA is an agreement between the United States, Canada, and Mexico to eliminate tariffs and trade barriers between the three countries.
European Union (EU):	A political and economic union of 27 European countries that have agreed to abolish tariffs and trade barriers among themselves.

Trans-Pacific Partnership (TPP)	A proposed trade agreement among 12 Pacific Rim countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam. The agreement aimed to promote economic growth, create jobs, and enhance trade and investment among member countries. In 2017, the United States withdrew from the TPP, effectively halting its implementation.
Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP):	A revised version of the TPP, signed by 11 countries after the United States withdrew from the original agreement. Countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam. It entered into force on December 30, 2018, for the first six countries to ratify it (Australia, Canada, Japan, Mexico, New Zealand, and Singapore) and has since been ratified by the remaining five countries.
Mercosur:	A South American trade bloc established in 1991. Its members are Argentina, Brazil, Paraguay, and Uruguay. Venezuela joined in 2012 but got suspended. Associate countries are Bolivia, Chile, Colombia, Ecuador, Guyana, Peru, and Suriname. It aims to promote free trade, movement of goods, people, currency, and economic cooperation among members.
South Asian Free Trade Area (SAFTA):	It is an agreement among eight member countries of the SAARC: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. It aims to reduce tariffs and barriers to trade in goods among themselves, promoting economic cooperation and integration. SAFTA came into effect on January 1, 2006.
Asia-Pacific Economic Cooperation (APEC)	An inter-governmental forum for 21 member economies established in 1989 in the Pacific Rim that promotes free trade throughout the Asia-Pacific region. Headquartered in Singapore, APEC's 21 member economies include Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong (China), Indonesia, Japan, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, South Korea, Taiwan, Thailand, the United States, and Vietnam. APEC operates on the basis of non-binding commitments and open dialogue.
Transatlantic Trade and Investment Partnership (TTIP)	A proposed trade agreement between the EU and the United States aimed at reducing trade barriers and increasing market access between the two regions. Negotiations for the TTIP began in 2013 and were officially halted in 2016.
Caribbean Community (CARICOM)	A regional organization of 15 Caribbean countries and dependencies that promotes economic integration and cooperation among its members. Established in 1973, CARICOM's main objectives include enhancing economic growth and development, expanding trade and economic relations, and improving the standard of living and work of its people. CARICOM member states include Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.
Eurasian Economic Union (EEU)	An international organization for regional economic integration, comprising countries in Eastern Europe and Western Asia. The EEU was established in 2015 and is based on the principles of free movement of goods, services, capital, and labor among its members.EEU consists of five member states: Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia. The union has its headquarters in Moscow, Russia.
Regional Comprehensive Economic Partnership (RCEP)	A free trade agreement (FTA) among 15 countries in the Asia-Pacific region. It was signed on November 15, 2020, after years of negotiations. The RCEP countries include the 10 ASEAN member states (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam) as well as Australia, China, Japan, New Zealand, and South Korea. India was initially part of the RCEP negotiations but decided to withdraw from the agreement in 2019, citing concerns about the impact on its domestic industries.

Global South: Refers to countries in Africa, Latin America, Asia, and Oceania that are considered less developed or developing compared to countries in the Global North (North America, Europe, and parts of Asia).

India recently hosted the 2nd Voice of Global South Summit. Theme "Together for Everyone's Growth, Together for Everyone's Trust''.India launched DAKSHIN a Global Centre for excellence for the Global South countries. India called for 5 'Cs' for the Global South: consultation, cooperation, communication, creativity and capacity building.

Note: The Brandt Line is an imaginary division that separates the world into the relatively wealthy "North" (industrialized countries of the Northern Hemisphere) and the poorer "South" (most countries in the Southern Hemisphere), illustrating economic disparities.

South-South cooperation refers to the technical cooperation among developing countries in the Global South.

Least developed countries (LDCs) are low-income countries confronting severe structural impediments to sustainable development. They are highly vulnerable to economic and environmental shocks and have low levels of human assets.

There are currently 45 countries on the list of LDCs which is reviewed every three years by the Committee for Development (CDP).

STRATEGIC PARTNERSHIPS

Quad (Quadrilateral Security Dialogue)	An informal strategic forum among the United States, Japan, Australia, and India, established in 2007 to promote a free and open Indo-Pacific region. It focuses on maritime security, infrastructure development, counterterrorism, and economic integration. While not a formal military alliance, the Quad conducts joint military exercises and engages in regular consultations to enhance regional security.
BRICS	BRICS, an association of five major emerging economies—Brazil, Russia, India, China, and South Africa—was formed in 2006 (originally as "BRIC," adding South Africa in 2010). All BRICS countries are members of the G20. 15th BRICS Summit held in Johannesburg.
AUKUS (Australia, United Kingdom, United States)	AUKUS is a trilateral security partnership between Australia, the United Kingdom, and the United States, announced in September 2021. The partnership focuses on security in the Indo-Pacific region and involves cooperation in areas such as defense, technology, and cybersecurity.

TOPICS IN NEWS

Munich Security Conference 2024	**Context** The Sixtieth Munich Security Conference has gathered world leaders amid concerns about the Ukraine war and NATO cohesion. **Details** Known as the 'Davos of Defence,' it's a premier global forum for discussing security policy, held annually since 1963 in Munich, Germany. It brings together security experts, politicians, military leaders, and defense industry representatives to foster trust and facilitate peaceful conflict resolution through informal dialogue. The conference also serves as a platform for diplomatic initiatives and publishes the annual Munich Security Report on key security challenges.
Weimar Triangle	**Context** Germany, France, and Poland are pitching the 'Weimar Triangle' as a new centrepiece for Europe's joint defence. **Details** The Weimar Triangle is a diplomatic initiative involving France, Germany, and Poland, aimed at promoting cooperation and dialogue between the three countries. Established in 1991, it serves as a platform for discussing regional and European issues, promoting cultural exchanges, and supporting democratic reforms in Central Europe.
UNRWA	**Context** 19 major western donors withheld contributions to UNRWA while Palestinians in Gaza urgently need humanitarian aid. **Details** UNRWA, the United Nations Relief and Works Agency for Palestine Refugees in the Near East, is a UN agency established in 1949 to provide assistance and protection to Palestinian refugees. It operates in five areas: Jordan, Lebanon, Syria, the West Bank, and the Gaza Strip, providing education, health care, relief, and social services to over 5 million registered Palestinian refugees.
Exchange of Nuclear Installations	**Context** India and Pakistan recently exchanged lists of their nuclear installations under a bilateral agreement that bars attacks on each other's atomic facilities. **Details** This agreement, signed on December 31, 1988, prohibits either country from attacking the other's nuclear installations and facilities. It came into force on January 27, 1991, with the first exchange of lists occurring on January 1, 1992. This recent exchange marks the 33rd consecutive year of sharing these lists. Every January 1, both nations must notify each other about their respective nuclear facilities covered under the agreement. The agreement covers a range of facilities, including nuclear power and research reactors, fuel fabrication, uranium enrichment, isotopes separation, reprocessing facilities, and establishments storing substantial quantities of radioactive materials.
Migration and Mobility Agreement between India and Italy	**Context** The Union Cabinet has approved the signing and ratification of the Migration and Mobility Agreement between India and Italy, signed on 2 November 2023. **Details** This agreement aims to facilitate the seamless movement of workers, students, and professionals between the two countries while enhancing cooperation on the issue of illegal migration. It locks in the current Italian visa regime and includes provisions for post-study opportunities, internships, and professional training, benefiting India. The agreement will remain in force for 5 years and will be automatically renewed unless terminated by a participant. Key provisions include allowing Indian students completing academic/vocational training in Italy to obtain temporary residence for up to 12 months for initial professional experience, offering reserved quotas for seasonal and non-seasonal workers, and formalizing

	collaboration in combating irregular migration. A Joint Working Group (JWG) will oversee the agreement's implementation through periodic meetings.
Tax Inspectors Without Borders (TIWB)	**Context** Tax Inspectors Without Borders (TIWB) launched a programme in Saint Lucia on 14 th December, 2023. **Details** Tax Inspectors Without Borders (TIWB) is an initiative that helps countries build tax audit capacity by transferring knowledge and skills through practical approaches. Launched in 2015 by the OECD and UNDP, it supports developing countries' domestic resource mobilization efforts and enhances international tax cooperation. Recently, India partnered with TIWB to launch a program in Saint Lucia, aiming to enhance its tax administration by sharing technical knowledge and best practices, with a focus on the Common Reporting Standard (CRS) framework for the automatic exchange of information. This partnership marks India's seventh TIWB program, demonstrating its commitment to global tax capacity-building efforts.
Article 99 of the UN Charter	**Context** The United Nations Secretary-General has invoked **Article 99 of the UN Charter**, urging the UN Security Council to address the humanitarian crisis in Gaza. **Details** Article 99 grants the Secretary-General the power to bring to the Council's attention any matter that may threaten international peace and security. This is a rare invocation, as Article 99 has been used only four times in the past. However, Article 99 does not give the Secretary-General the authority to compel the Security Council to adopt resolutions. Any resolution would require at least nine votes in favour and no vetoes from the five permanent members, making unanimous support unlikely given the current positions of the United States, Russia, China, France, and Britain.
The ASEAN-India Grassroots Innovation Forum	**Context** The 4th edition of the ASEAN India Grassroots Innovation Forum (AIGIF) was held in Langkawi, Malaysia. **Details** The ASEAN-India Grassroots Innovation Forum promotes collaboration and exchange of grassroots innovations between ASEAN countries and India, supporting inclusive and sustainable development by addressing local and regional challenges.
Golden Gate Declaration and San Francisco Principles	**Context** The 30th Asia-Pacific Economic Cooperation (APEC) Leaders' Summit 2023 in San Francisco concluded with the adoption of the Golden Gate Declaration, focusing on resilience, sustainability, interconnection, innovation, and inclusion. **Details** The declaration emphasizes creating a resilient and sustainable future for all. Member countries committed to integrating inclusivity and sustainability into trade and investment policies (San Francisco Principles), delivering a free, fair, transparent, and predictable trade environment, reforming the WTO by 2024, supporting regional economic integration, strengthening supply chains, tripling renewable energy capacity by 2030, implementing food security measures, supporting MSMEs, and creating an inclusive digital ecosystem.
Treaty on Conventional Armed Forces in Europe (CFE)	**Context** NATO has formally announced the suspension of the Treaty on Conventional Armed Forces in Europe (CFE). **Details** CFE was an agreement signed in 1990 between NATO and Warsaw Pact countries to limit conventional military forces in Europe. It aimed to reduce the risk of war by establishing parity in military capabilities between the two blocs. It was signed in 1990 and fully ratified in 1992.
Innovation Handshake	**Context** India and the US have signed a memorandum of understanding (MoU) on "Enhancing Innovation Ecosystems through an Innovation Handshake. **Details** It is a concept developed under the US-India Commercial Dialogue. The aim is to bring together the two governments, venture capitalists, entrepreneurs, and industry players for open discussions on exploring opportunities and tackling challenges in key sectors highlighted in the US-India Critical and Emerging Technology initiative. The objectives include connecting dynamic startup ecosystems, addressing regulatory hurdles, sharing best practices for fundraising, and promoting innovation and job growth, particularly in critical and emerging technologies (CET).
Indo-Pacific Economic Framework for Prosperity (IPEF)	**Context** India, along with the US and 12 other countries, including Australia, Japan, and Singapore, has joined the Indo-Pacific Economic Framework for Prosperity (IPEF), launched in 2022 in Tokyo, Japan. **Details** The agreement aims to strengthen economic partnerships in the Indo-Pacific region, focusing on trade, supply chains, a clean economy, and fair economic practices. India has opted out of the trade pillar to protect its domestic agricultural, labor, and digital sectors. The IPEF represents about 40% of the world's GDP and 28% of global trade and is seen as a strategic move to reduce dependence on China and safeguard against

	supply chain disruptions, backed by the US to counter China's economic influence in the region.
Bletchely Declaration	**Context** Twenty-nine countries, including the US, the UK, China, Australia, Brazil, India, and the European Union, have joined forces to prevent potential harm from artificially intelligent systems. **Details** The Bletchley Declaration aims to address risks and responsibilities collaboratively related to cutting-edge AI. It emphasizes the need to align AI with human intent and explore its full capabilities. The signatory countries include Australia, Brazil, Canada, Chile, China, France, Germany, India, Indonesia, Ireland, Israel, Italy, Japan, Kenya, Saudi Arabia, the Netherlands, Nigeria, the Philippines, the Republic of Korea, Rwanda, Singapore, Spain, Switzerland, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States, and the European Union.
Global Conference on Cooperation in Enforcement Matters (GCCEM)	**Context** India has inaugurated the Global Conference on Cooperation in Enforcement Matters (GCCEM) in New Delhi. **Details** Hosted by the Directorate of Revenue Intelligence (DRI) under the Central Board of Indirect Taxes and Customs (CBIC) in consultation with the World Customs Organisation (WCO), the conference aims to facilitate the sharing of insights and best practices and enhance collaboration with Indian Customs' partner administrations. The theme of the conference is 'It takes a Network to fight a Network'.
International Migration Outlook	**Context** The OECD has released its International Migration Outlook 2023, focusing on global migration trends. **Details** Key highlights include India becoming the top source of migration to OECD countries, surpassing China; concerns over climate-induced displacement with few OECD nations having clear policies; and a rise in family and labour migration, with the United States, Germany, the United Kingdom, and Spain being top destinations showing significant increases.
Vienna Convention	**Context** India denies violating Vienna Convention on Diplomatic Relations; accuses Canada of interference in internal affairs. **Details** Article 9 of the Vienna Convention on Diplomatic Relations allows the host country to declare a diplomat or their staff as "persona non grata" without needing to provide a detailed explanation, while Article 11 permits the host country to set limits on the number of diplomats in a mission based on the circumstances and needs of the mission and host country.
Asia-Pacific Institute for Broadcasting Development (AIBD)	**Context** India has been re-elected as the President of the Asia-Pacific Institute for Broadcasting Development (AIBD) for a third successive term. **Details** AIBD, established in 1977 under UNESCO, serves countries of the UN-ESCAP in electronic media development. Its mandate is to achieve a vibrant electronic media environment in the Asia-Pacific region through policy and resource development. With 92 member organizations from 44 countries, including 26 government members and 44 affiliates, AIBD is headquartered in Kuala Lumpur, Malaysia. India, a founding member, is represented by Prasar Bharati, its public service broadcaster, under the Ministry of Information & Broadcasting.
Palermo Convention	**Context** The Minister of State for Home Affairs attended a two-day conference in Palermo, Italy, marking the 20th anniversary of the United Nations Convention against Transnational Organized Crime (UNTOC). **Details** Adopted by the UN General Assembly in 2000 and known as the Palermo Convention, it aims to combat transnational organized crime globally. States ratifying UNTOC commit to measures like criminalizing participation in organized crime, money laundering, and corruption, and adopting extradition and legal assistance frameworks. Additionally, the Convention is supplemented by three Protocols addressing specific areas such as trafficking in persons, smuggling of migrants, and illicit firearms trafficking.
Liptako-Gourma Charter	**Context** Mali, Burkina Faso, and Niger have formed the Alliance of Sahel States (AES) through the Liptako-Gourma Charter. **Details** The Liptako-Gourma Charter is a mutual defense pact signed between the military leaders of Mali, Burkina Faso, and Niger, aimed at establishing an Alliance of Sahel States (AES) to create a framework for collective defense and mutual assistance. The alliance combines military and economic efforts, with any attack on one or more signatory states considered an attack on all signatories. This charter was signed due to ongoing jihadist insurgencies and military coups in the Sahel region, particularly affecting the Liptako-Gourma area where the three countries' borders.
International Congress on the Chemistry of	**Context** India has been awarded the opportunity to host the prestigious International Congress on the Chemistry of Cement (ICCC) in New Delhi in 2027.

Cement (ICCC)	**Details** The ICCC is a renowned event that showcases advancements in cement and concrete research, typically held every four to six years since 1918. The 16th ICCC is currently taking place in Bangkok, Thailand. The 9th Congress was previously organized in New Delhi in 1992 by the National Council for Cement and Building Materials (NCCBM). NCCBM, under the Ministry of Commerce & Industry, is dedicated to research, technology development, education, and industrial services for the cement and construction industries, and has a strong track record in organizing similar international seminars and conferences.
International Organization of Legal Metrology (OIML)	**Context** India has joined the ranks of countries capable of issuing globally recognized International Organization of Legal Metrology (OIML) certificates, becoming the 13th country with this capability. **Details** The OIML, established in 1955, is an intergovernmental organization that develops standards and regulations for legal metrology authorities and industry. It plays a crucial role in harmonizing national laws and regulations regarding measuring instruments. With 63 Member States and 64 Corresponding Members, the OIML is headquartered in Paris, France.
India-Saudi Arabia Strategic Partnership Council (SPC)	**Context** Saudi Crown Prince Mohammed bin Salman and Indian Prime Minister Narendra Modi expanded trade and security ties, co-chairing the first India-Saudi Arabia Strategic Partnership Council summit. **Details** The India-Saudi Arabia Strategic Partnership Council (SPC) was established in 2019 to enhance the bilateral relationship. India is the fourth country, after the UK, France, and China, to form such a partnership with Saudi Arabia. The SPC aims to steer the Indo-Saudi relationship through two main pillars: the Committee on Political, Security, Social, and Cultural Cooperation, and the Committee on Economy and Investments. These committees operate at four functional levels of engagement: Summit level, Ministerial level, Senior Officials Meetings, and Joint Working Groups (JWGs).
Global Symposium on Farmers' Rights (GSFR)	**Context** India hosted the first 'Global Symposium on Farmers' Rights' (GSFR) at the ICAR Convention Centre, National Agricultural Science Centre in New Delhi. **Details** The Global Symposium on Farmers' Rights (GSFR) is organized by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (International Treaty) of the Food and Agriculture Organization (FAO), Rome. Hosted by the Ministry of Agriculture and Farmers Welfare in collaboration with the Protection of Plant Varieties and Farmers' Rights (PPVFR) Authority, Indian Council of Agricultural Research (ICAR), and others, the symposium aims to contribute to understanding the challenges and opportunities of implementing farmers' rights by signatory countries and stakeholders. India's hosting of this symposium marks its first such global event on farmers' rights, highlighting its pioneering role in including Farmers' Rights in the context of Plant Variety Registration through the Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001.
Global Biofuel Alliance	**Context** Prime Minister Modi launched the Global Biofuel Alliance at the G20 Summit. **Details** The Global Biofuel Alliance, launched by the Indian Prime Minister during the G20 Summit in New Delhi, aims to develop an alliance of governments, international organizations, and industry to promote the adoption of biofuels. It seeks to position biofuels as a key component of the energy transition, contributing to job creation and economic growth. The alliance will offer capacity-building exercises, technical support for national programs, and promote policy lessons-sharing to support the worldwide development and deployment of sustainable biofuels. Nineteen countries and twelve international organizations have already joined the alliance, including G20 countries, invitee countries, and various international organizations.
G20 'workstreams'	The G20 operates in three main tracks: the Finance Track, the Sherpa Track, and unofficial engagement groups. The Finance Track, led by finance ministers and central bank governors, focuses on fiscal and monetary policies, global economy, financial regulation, and international taxation. The Sherpa Track, consisting of representatives of heads of state, addresses socio-economic issues like agriculture, climate, digital economy, and trade. The unofficial track includes engagement groups such as Business20, Civil20, Labour20, and others, which provide recommendations to the G20 Leaders.
Global IndiaAI 2023	**Context** The Ministry of Electronics and Information Technology organized Global IndiaAI 2023, which aimed to bring together AI experts from India and around the world. **Details** The conference covered various topics, including Next Generation Learning, AI in healthcare and governance, future research trends, and investment opportunities. It also showcased India's AI ecosystem with initiatives like DI Bhashini and IndiaAIFutureSkills. The summit was intended to boost India's AI landscape and innovation ecosystem.

G20 New Delhi Leaders' Declaration	**Context** G-20 members agreed to joint statement, accept African Union membership, iunexpected success for India's Presidency.
Stapled Visa	**Context** The Chinese government reportedly issues 'stapled visas' to Indian citizens from Arunachal Pradesh. **Details** A stapled visa is a type of visa issued by a country that is physically attached or stapled to a traveler's passport rather than being stamped directly onto a passport page. This method is often used for visas issued in certain circumstances, such as for individuals from certain countries or for specific types of travel. The stapled visa serves as proof of permission to enter or stay in the issuing country and must be presented along with the passport during travel and at border crossings. The issue of stapled visas by the Chinese government to Indian citizens from Arunachal Pradesh in 2009 created a diplomatic issue, as India has maintained that these visas are not valid documents for entry into India.
India – Indonesia Economic and Financial Dialogue	**Context** Nirmala Sitharaman announced the "India – Indonesia Economic and Financial Dialogue" during the G20 Finance Ministers and Central Bank Governors (FMCBG) meeting. **Details** India and Indonesia have initiated the "India – Indonesia Economic and Financial Dialogue" during the G20 Finance Ministers and Central Bank Governors (FMCBG) meeting. The dialogue aims to enhance collaboration on economic and financial matters, bringing together policymakers and regulators from both nations. It covers areas such as macroeconomic challenges, bilateral investment, and cooperation in G20 and ASEAN affairs. This dialogue not only strengthens bilateral ties but also contributes to regional and global economic stability. Bilateral trade between India and Indonesia has grown significantly, reaching $38 billion in FY 2022-23, making Indonesia India's largest trading partner in the ASEAN region.
Mineral Security Partnership (MSP)	**Context** India has joined the Mineral Security Partnership (MSP), a US-led initiative aimed at securing critical mineral supply chains and reducing dependency on China. **Details** The MSP seeks to attract investment from governments and the private sector to develop strategic opportunities. Members include the US, Australia, Canada, Finland, France, Germany, Japan, the Republic of Korea, Sweden, the United Kingdom, and the European Commission. The partnership focuses on minerals like Cobalt, Nickel, Lithium, and rare earth elements. Rare earth elements are crucial for various industries but are predominantly sourced from China, making the MSP an alternative supply network.
India-United States Defense Acceleration Ecosystem (INDUS-X)	**Context** U.S. Ambassador emphasizes co-development of military hardware with India to deter adversaries and protect peace at INDUS-X summit. **Details** The INDUS-X was launched in Washington DC, U.S., to promote collaboration and innovation between Indian and US defensestartups. It aims to advance technology in the defense sector through joint initiatives such as prize challenges, roundtable events, mentorship programs, and partnerships with universities. Led

	by India's Innovations for Defense Excellence (iDEX) and the US Office of the Secretary of Defense (OSD), INDUS-X complements existing government-to-government collaborations.
India – United Nations Sustainable Development Cooperation Framework 2023-2027	**Context** NITI Aayog and the United Nations in India signed the Government of India - United Nations Sustainable Development Cooperation Framework 2023-2027. **Details** NITI Aayog and the United Nations in India have signed the Government of India – United Nations Sustainable Development Cooperation Framework 2023-2027. This framework serves as a strategic roadmap for achieving India's sustainable development targets, focusing on gender equality, youth empowerment, human rights, and overall sustainable development. It is built upon four pillars—People, Prosperity, Planet, and Participation—and encompasses key outcome areas such as health, education, economic growth, environment, and empowerment. Implementation, monitoring, and reporting will be co-led by the Government of India and the United Nations through a Joint Steering Committee.
Gender Social Norms Index (GSNI) 2023	**Context** The 2023 Gender Social Norms Index (GSNI) report, released by the United Nations Development Programme (UNDP), shows that nine in ten people globally have biases against women. **Details** The Gender Social Norms Index (GSNI) 2023 has been released by the United Nations Development Programme (UNDP). This index tracks people's attitudes towards women in four dimensions: political, educational, economic, and physical integrity, helping to examine how biased beliefs can obstruct gender equality and human rights.
Atlantic Declaration	**Context** The United States and the United Kingdom have announced the Atlantic Declaration to modernize their longstanding alliance. **Details** It aims to strengthen industry collaboration in defense and renewable energy, establish a "new UK-US Data Bridge" for data transfer, and focus on five pillars: leadership in critical technologies, cooperation on tech protection and economic security, partnership on digital transformation, building a clean energy economy, and strengthening alliance across defense, health security, and space.
Global Slavery Index 2023	**Context** The Global Slavery Index 2023 has been released. **Details** It provides national estimates of modern slavery for 160 countries and is presented by Walk Free, a human rights organization. The index is based on data from the Global Estimates of Modern Slavery, produced by the International Labour Organization (ILO), Walk Free, and the International Organization for Migration (IOM).
Global DPI (Digital Public Infrastructure) Summit	**Context** The Global DPI (Digital Public Infrastructure) Summit was held as a side event of the third meeting of the G20 Digital Economy Working Group. **Details** DPI refers to a set of shared digital systems used to drive development, inclusion, innovation, trust, competition, and respect for human rights. The concept is not new, as the internet and telecom are prime examples of DPI. DPI has three broad objectives: identity, payments, and data management, with India being the first country to develop all three pillars through its India Stack Platform.
India-Pacific Islands Cooperation (FIPIC) Summit	**Context** The third India-Pacific Islands Cooperation (FIPIC) Summit was held in Papua New Guinea. **Details** FIPIC, launched in 2014 during the Indian PM's visit to Fiji, includes 14 island countries located in the Pacific Ocean. The first FIPIC summit was held in 2014 at Suva, Fiji's capital. India's engagement with these countries focuses on development assistance under South-South Cooperation, particularly in capacity building and community development projects.
Washington Declaration	**Context** The Washington Declaration was signed between the US and South Korea to enhance cooperation in nuclear deterrence strategy. **Details** It includes deploying a US nuclear ballistic submarine in the Korean peninsula, forming a nuclear consultative group, and strengthening South Korea's nuclear deterrence capabilities through joint military training programs. The declaration reaffirmed the non-proliferation Treaty, emphasizing South Korea's focus on deterrence measures through an alliance-based approach without developing independent nuclear capabilities. The US President retains sole authority over the use of the US nuclear arsenal in a nuclear confrontation.
World Press Freedom Index 2023	**Context** Reporters Without Borders (RSF) released the World Press Freedom Index 2023, ranking India 161 out of 180 countries. **Details** India's press freedom declined from "problematic" to "very bad," dropping 11 ranks since the 2022 report.

	The index aims to evaluate journalism in different countries, assessing factors like the political, legal, economic, sociocultural context, and security. RSF defines press freedom as journalists' ability to select, produce, and disseminate news independently, without interference or threats.
Markets in Crypto Assets (MiCA) regulations	**Context** The European Parliament has approved the Markets in Crypto Assets (MiCA) regulations, the world's first comprehensive rules for regulating largely unregulated cryptocurrency markets. **Details** MiCA aims to protect investors and ensure financial stability while fostering innovation in the crypto-asset sector. It will regulate traditional cryptocurrencies like Bitcoin and Ethereum, as well as newer ones like stablecoins, but will exclude assets that qualify as transferable securities or financial instruments under existing regulations, as well as non-fungible tokens (NFTs).
Safety Across Asia for the Global Environment (SAFE) project	**Context** The United Nations' Safety Across Asia for the Global Environment (SAFE) project aims to survey high-risk facilities, including Asian wet markets, that may spread infectious diseases from animals to humans. **Details** Launched in 2021, the project focuses on the connection between wildlife trafficking and zoonotic disease transmission to prevent future pandemics. Coordinated by the United Nations Office on Drugs and Crime (UNODC) and funded by the European Union, the project initially included four Asian countries – Thailand, Vietnam, Laos, and the Malaysian state of Sabah on Borneo Island.
United Nations Statistical Commission	**Context** India has been elected to the United Nations Statistical Commission for a four-year term. **Details** Established in 1947, the commission is the highest body of the global statistical system, comprising Chief Statisticians from member states worldwide. It sets statistical standards, develops concepts and methods, and oversees the work of the United Nations Statistics Division. The commission consists of 24 member countries elected by the UN Economic and Social Council for four-year terms, with India returning after a gap of two decades, having last been a member in 2004.
Anti-spyware declaration	**Context** The US and 10 other nations issued the first significant anti-spyware declaration, aiming to control the proliferation and use of spyware technology. **Details** The declaration commits to preventing the export of spyware-related software, technology, and equipment to end-users engaging in malicious cyber activities. Signatory countries also pledged to engage in robust information sharing to better identify and track spyware tools. Countries like Australia, Canada, Costa Rica, Denmark, France, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States have signed this declaration, but India was not part of it.
2023 UN Water Conference	**Context** The 2023 UN Water Conference, was co-hosted by Tajikistan and the Netherlands. **Details** It aimed to support internationally agreed water-related goals and targets, including those in the 2030 Agenda for Sustainable Development. This conference marked the first UN Water Conference in 46 years since the 1977 conference in Mar de Plata, Argentina, which resulted in the first global 'Action Plan' recognizing the right to access drinking water.
Biodiversity Beyond National Jurisdiction Treaty/ High Seas Treaty	**Context** The High Seas Treaty, also known as the agreement on Biodiversity Beyond National Jurisdiction or 'BBNJ', was signed in New York. **Details** A legally binding marine biodiversity agreement was adopted after 15 years of deliberations, discussions, and negotiations. The treaty establishes a legal framework to regulate international waters. It includes provisions for setting up a Conference of Parties to monitor and enforce compliance. The High Seas Treaty includes provisions for Marine-Protected Areas (MPAs), aiming to regulate activities in stressed ocean systems, similar to conservation efforts in terrestrial zones. It also addresses Marine Genetic Resources, ensuring equitable sharing of benefits from their use. The treaty mandates Environmental Impact Assessments for activities with potential marine ecosystem impact and emphasizes capacity building for nations lacking resources or expertise for marine conservation and resource utilization.
Global Terrorism Index (GTI) report	**Context** Tenth edition of the Global Terrorism Index (GTI) was released. **Details** The 2022 Global Terrorism Index (GTI) report has been published, providing a comprehensive analysis of terrorism's impact on 163 countries. Produced by the Institute for Economics & Peace (IEP) using data from the Terrorism Tracker and other sources, the report ranks India 13th on the index, showing a slight decrease from the previous year, and identifies India as one of the 25 worst-hit nations.
'Doha Political Declaration'	**Context** The 5th United Nations Conference on the Least Developed Countries (LDC5) concluded with world leaders adopting the 'Doha Political Declaration'.

	Details This declaration focuses on implementing the Doha Programme of Action (DPoA), a 10-year plan (2022-2031) for the world's 46 most vulnerable countries to achieve the Sustainable Development Goals (SDGs). The DPoA addresses key areas such as eradicating poverty, leveraging science and technology, addressing climate change, recovering from COVID-19.
Raisina Dialogue	**Context** Prime Minister Narendra Modi inaugurated the 9th edition of Raisina Dialogue in New Delhi. **Details** The Raisina Dialogue is a multilateral conference held annually in New Delhi, India, since 2016. It is organized by the Observer Research Foundation (ORF), an independent think tank based in India, in partnership with the Ministry of External Affairs of India. The conference is named after Raisina Hill, an area in New Delhi where the Indian government's most important buildings are located. The Raisina Dialogue serves as a platform for leaders and policymakers from around the world to discuss key issues related to geopolitics and geo-economics.
ENACT Partnership	**Context** Six new countries and a United Nations agency are joining the ENACT Partnership. **Details** The ENACT (Enhancing Nature-based Solutions for an Accelerated Climate Transformation) Partnership has expanded its collaboration at COP 28, welcoming six new countries and UNEP. This global initiative, launched at COP27, aims to synchronize efforts in addressing climate change, land, and ecosystem degradation, and biodiversity loss through Nature-based Solutions. It aims to boost climate resilience for over 1 billion vulnerable people, safeguard 2.4 billion hectares of ecosystems, and intensify global mitigation efforts by protecting and restoring carbon-rich ecosystems. The partnership was launched by Germany and Egypt, along with IUCN, and includes founding members such as Canada, EU, Spain, Malawi, Norway, South Korea, Japan, and Slovenia. New partners France, USA, Belgium, Netherlands, Switzerland, Pakistan, and UNEP joined at COP28. The first State of Nature-based Solutions report, launching in early 2024, will provide a comprehensive quantitative overview of global progress in implementing NbS commitments by state and non-state actors, kicking off the annual series on ENACT's NbS Goals.
World Association of Investment Promotion Agencies (WAIPA)	**Context** India is set to host the 27th World Investment Conference (WIC) in New Delhi, which is the annual flagship event of the World Association of Investment Promotion Agencies (WAIPA). **Details** The conference, themed "Empowering Investors: IPAs Pioneering Future Growth," will be organized by Invest India, India's investment promotion agency under the Ministry of Commerce and Industry, which empowers investors under the 'Make in India' initiative. This will be the largest WIC ever, serving as a platform for global investment promotion and innovation stakeholders to discuss investment policies and trends, and offering networking, knowledge sharing, and partnership-building opportunities. Additionally, Invest India will establish an Experience India Centre (EIC) to showcase India's services, technology, and products using various technologies. WAIPA, established in 1995 by the United Nations Conference on Trade and Development, serves as a forum for investment promotion agencies, facilitating networking, and promoting best practices in investment promotion. With over 120 member agencies representing more than 100 countries, WAIPA aims to promote understanding and cooperation amongst IPAs and assist them in advising their respective governments on investment promotion policies and strategies, acting as a bridge between the public and private sectors.
International Cotton Advisory Committee (ICAC)	**Context** The Ministry of Textiles is hosting the 81st Plenary Meeting of the International Cotton Advisory Committee (ICAC) at the Jio World Convention Centre in Mumbai. **Details** ICAC is an association of members from cotton producing, consuming, and trading countries, formed in 1939 with 28 member countries, including India as a founding member. While most of the world's cotton-producing nations are ICAC members, two of the ten largest producers, China and Turkmenistan, are not members. The headquarters of ICAC is in Washington, United States, and the Plenary Meeting is held annually in member countries. The theme for the 81st meeting is "Cotton Value Chain: Local Innovations for Global Prosperity.
Indian Ocean Tuna Commission (IOTC)	**Context** Indian Ocean Tuna Commission members failed to make progress on key measures to protect declining yellowfin tuna **Details** The Indian Ocean Tuna Commission (IOTC) is an intergovernmental organization established in 1993 (came into force in 1996) with its secretariat in Victoria, Seychelles. It aims to manage tuna and tuna-like species in the Indian Ocean by promoting cooperation among its 30 Contracting Parties, including India (joined in 1995), and Cooperating Non-Contracting Parties. The commission's decisions are binding on all members and non-Contracting Parties, with the goal of conserving and appropriately utilizing fish stocks and encouraging sustainable fisheries development.
Commission on Social	**Context** The World Health Organization (WHO) has launched a Commission on Social Connection to address

Connection	loneliness as a pressing health threat, promote social connection as a priority, and accelerate the scaling up of solutions globally. **Details** The commission, a three-year initiative from 2024 to 2026, aims to define a global agenda on social connection, analyze its role in improving health, raise awareness, and build collaborations for evidence-based solutions. It consists of 11 leading policy-makers, thought leaders, and advocates, with the secretariat based at WHO.
International Sugar Organization (ISO)	**Context** The International Sugar Organization (ISO) has announced that India will chair the organization for 2024. **Details** Established in 1968, ISO is an intergovernmental body aimed at improving conditions on the world's sugar market through debate, discussions, seminars, and workshops. With 88 members, including India, the organization represents 87% of world sugar production, 64% of world sugar consumption, 34% of world imports, and 92% of world exports. Its headquarters are in London, UK.
International Tropical Timber Council (ITTC)	**Context** The 59th International Tropical Timber Council (ITTC) recently concluded in Thailand. **Details** ITTC is the governing body of the International Tropical Timber Organization (ITTO), an intergovernmental organization established in 1986 to promote sustainable management and conservation of tropical forests. ITTC meetings occur at least once a year. ITTO has 85 members, including India, representing about 90% of the global tropical timber trade and more than 80% of the world's tropical forests. Its headquarters are in Yokohama, Japan.
World Organisation for Animal Health (OIE)	**Context** India is set to host the 33rd Conference of the World Organisation for Animal Health (OIE) Regional Commission for Asia and the Pacific in New Delhi. **Details** The OIE has established five Regional Commissions to address specific issues facing its Members in different regions, including the Regional Commission for Asia and the Pacific, which organizes a conference once every two years in one of the countries of the region. These conferences aim to develop technical items and foster regional cooperation for the control of animal diseases. Founded in 1924, OIE is an intergovernmental organization with 183 members, including India, and is headquartered in Paris, France. OIE is recognized as the reference organization for international animal health standards by the World Trade Organization (WTO).
Pharmacopoeial Discussion Group (PDG)	**Context** The Indian Pharmacopoeia Commission (IPC) has become a member of the Pharmacopoeial Discussion Group (PDG), officially joining at the PDG's Annual Meeting in Hyderabad. **Details** PDG, established in 1989 by the European Union (EU), Japan, and the United States Pharmacopeial Convention, aims to reduce the challenges faced by drug manufacturers who must conduct tests differently and meet various quality standards to comply with drug regulations that vary from country to country. The World Health Organization joined PDG as an observer in 2001.
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	**Context** The ICRISAT has joined the One CGIAR integrated partnership, which includes the CGIAR System Organization and 12 other research centers. **Details** This partnership aims to collaborate on addressing climate-related challenges in food, land, and water systems. Established in 1971, Consortium of International Agricultural Research Centres is a network of 15 international agricultural research institutes focused on reducing rural poverty, increasing food security, improving human health and nutrition, and sustainable management of natural resources. ICRISAT, a non-profit organization founded in 1972 with headquarters in Patancheru, Hyderabad, conducts agricultural research for development in Asia and sub-Saharan Africa. It holds a special status as a UN organization in India, making it eligible for special immunities and tax privileges.
Arab League	**Context** Foreign ministers from Arab League member states have agreed to reinstate Syria's membership after its suspension more than 10 years ago. **Details** The Arab League, formed in 1945, is an intergovernmental organization of Arab states in the Middle East and Africa. It aims to draw closer relations between member states, coordinate collaboration, safeguard their independence and sovereignty, and consider the affairs and interests of Arab countries. The league currently has 22 members, including countries like Egypt, Iraq, Jordan, Syria, Lebanon, Saudi Arabia, and Yemen, among others, with observer countries like Brazil, Eritrea, India, Armenia, and Venezuela. Each member state has one vote in the Council of the Arab League, and decisions are binding only for states that have voted for them. The league's administrative headquarters is in Cairo, Egypt.
UN Statistical Commission	**Context** India has been elected to the UN Statistical Commission for a four-year term.

	Details The Commission, established in 1947, is the highest body of the global statistical system, responsible for setting standards and overseeing the work of the United Nations Statistics Division. It consists of 24 member countries elected by the UN Economic and Social Council for four-year terms, with India returning after a gap of two decades, last being a member in 2004.
Asian Pacific Postal Union (APPU)	**Context** India has assumed the leadership of the Asian Pacific Postal Union (APPU), an intergovernmental organization comprising 32 member countries in the Asian-Pacific region. **Details** APPU is the only Restricted Union of the Universal Postal Union (UPU) in the region and aims to enhance postal relations, facilitate cooperation, and improve postal services among its members. Additionally, APPU operates the Asian-Pacific Postal College (APPC), the largest intergovernmental postal training institute in the region, supporting the training and development of postal staff from member states.
International Electrotechnical Commission (IEC)	**Context** India has secured the International Electrotechnical Commission (IEC) Vice Presidency and Strategic Management Board (SMB) Chair for the 2023-25 term. **Details** The IEC, founded in 1906, is the world's premier organization for developing and publishing international standards for electrical, electronic, and related technologies, collectively known as "electrotechnology." It is a global, not-for-profit membership organization with 173 countries and 20,000 experts worldwide. The IEC's headquarters is in Geneva, Switzerland. The Standardization Management Board is the apex governance body of IEC responsible for technical policy matters.
Mangrove Alliance for Climate	**Context** The Mangrove Alliance for Climate (MAC), spearheaded by the UAE, will build a new mangrove centre as part of its global mission to restore and protect 15 million hectares of mangroves by 2030. **Details** At the 27th Session of the COP27, the Mangrove Alliance for Climate was launched with India as a partner. Led by the United Arab Emirates (UAE) and Indonesia, MAC aims to raise global awareness about the role of mangroves in mitigating global warming and their potential as a solution for climate change. The alliance includes UAE, Indonesia, India, Sri Lanka, Australia, Japan, and Spain. It operates on a voluntary basis, allowing members to decide their commitments and deadlines for planting and restoring mangroves. Members will also share expertise and support each other in researching, managing, and protecting coastal areas.
Middle East Green Initiative (MGI)	**Context** The Middle East Green Initiative (MGI) is catalyzing a collaborative regional approach to combating climate change. **Details** The Middle East Green Initiative (MGI) Summit is a Saudi Arabia-led effort to promote unified climate action. Its goal is to create a clear and ambitious roadmap for regional climate action, including planting 50 billion trees across the Middle East region and reducing carbon emissions by more than 10%. The inaugural summit was hosted by Saudi Arabia's Crown Prince in Riyadh in 2021, and the 2022 summit is being held on the sidelines of COP 27 in Sharm El-Sheikh, Egypt.
United Nations World Geospatial Information Congress	**Context** The Second United Nations World Geospatial Information Congress 2022 was recently held in Hyderabad. **Details** The congress aimed to promote dialogue on global geospatial information management among governments, NGOs, academia, and the private sector. With the theme 'Geo-Enabling the Global Village: No one should be left behind,' the event was hosted by the Ministry of Science and Technology. The objective of the UNWGIC is to enhance international collaboration in geospatial information management and capacities, with the congress being conducted every four years, following the first congress organized by China in 2018.
'Partners in the Blue Pacific' Initiative.	**Context** The US and its allies—Australia, New Zealand, Japan, and the United Kingdom—have launched the 'Partners in the Blue Pacific' Initiative. **Details** This initiative, aimed at supporting Pacific islands and strengthening diplomatic and economic ties in the region, serves as an informal mechanism. Its objectives include delivering results for the Pacific more effectively and efficiently, expanding cooperation between the Pacific and the rest of the world, and bolstering Pacific regionalism. Priority areas for cooperation include addressing the climate crisis, enhancing connectivity and transportation, ensuring maritime security and protection, and promoting health, prosperity, and education in the Pacific islands.
I2U2	I2U2 is a grouping formed by India, Israel, UAE, and the US, sharing common global issues like food security crisis and defense. The first summit of I2U2 will be held virtually in July 2022 to discuss these issues and areas of cooperation. The grouping, previously known as the 'International Forum for Economic Cooperation,' met for the first time in October 2021 and is also referred to as the 'West Asian Quad.'
First Movers Coalition	**Context** India has joined the First Movers Coalition, a public-private partnership initiative launched by the President

	of the USA and the World Economic Forum (WEF) at COP26. **Details** The coalition aims to decarbonize the heavy industry and long-distance transport sectors, which account for 30 percent of global emissions. Target sectors include aluminum, aviation, chemicals, concrete, shipping, steel, and trucking, which currently contribute 30% of global emissions and could surpass 50% by mid-century without urgent progress in clean technology innovation.
WHO South East Asia Region	**Context** The 73rd session of the WHO South East Asia Region was chaired by the Minister of Health, Thailand. **Details** Established in 1948, the WHO SEAR aims to address epidemiological and demographic challenges in the region. Its 11 Member States include Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, and Timor-Leste, with its regional office located in New Delhi. The Region focuses on eight flagship priorities, including measles and rubella elimination, preventing non-communicable diseases, reducing maternal and child mortality, universal health coverage, combating antimicrobial resistance, emergency risk management, eliminating neglected tropical diseases, and accelerating efforts to end TB.
Global Partnership on Artificial Intelligence (GPAI)	**Context** The Global Partnership on Artificial Intelligence (GPAI) Summit announced the adoption of the New Delhi Declaration **Details** The Global Partnership on Artificial Intelligence (GPAI) is a global, multi-stakeholder effort aimed at guiding the responsible development and application of artificial intelligence. Its objective is to bridge the gap between theory and practice in AI by supporting cutting-edge research and facilitating applied activities focused on AI-related priorities. Hosted by the OECD in Paris, along with Centers of Expertise in Montreal and Paris, GPAI was officially launched on June 15, 2020, with fifteen founding members, including India. Currently, it has 29 member countries. In 2023, India is hosting the Annual GPAI Summit as the lead chair, featuring sessions on AI and global health, education and skilling, AI and data governance, and an ML Workshop.
Codex Committee on Spices and Culinary Herbs (CCSCH)	**Context** The 7th session of the Codex Committee on Spices and Culinary Herbs (CCSCH) was recently held in Kochi from 29th January to 2nd February 2024. **Details** The CCSCH was established as a Commodity Committee under the Codex Alimentarius Commission (CAC) in 2013, with India hosting the committee and the Spices Board of India serving as the secretariat. The session finalized quality standards for five spices: small cardamom, turmeric, juniper berry, allspice, and star anise. The Codex Alimentarius Commission (CAC), established by FAO and WHO, consists of 189 member countries and is headquartered in Rome. The standards developed by CAC, including those by CCSCH, are voluntary and are recognized by the WTO for resolving trade disputes and harmonizing global food standards, ensuring food safety and consumer protection.

NOTABLE LINES, BORDERS AND DEMARCATIONS

Durand Line:	The border between Afghanistan and Pakistan, drawn in 1893 by Sir Mortimer Durand.
Radcliffe Line:	The boundary demarcation line between India and Pakistan drawn during the Partition of India in 1947 by Sir Cyril Radcliffe.
Mason-Dixon Line:	A demarcation line between four U.S. states, forming part of the borders of Pennsylvania, Maryland, Delaware, and West Virginia.
38th Parallel North:	A circle of latitude that is 38 degrees north of the Earth's equatorial plane, separating North and South Korea
17th Parallel:	The line of latitude that served as the border between North and South Vietnam before the reunification of Vietnam.
Line of Control (LoC):	A military control line between the Indian and Pakistani controlled parts of the former princely state of Jammu and Kashmir.
Line of Actual Control (LAC):	A demarcation line that separates Indian-controlled territory from Chinese-controlled territory in the Sino-Indian border dispute.
Oder-Neisse Line:	The border between Germany and Poland, established after World War II.
Maginot Line:	A line of fortifications built by France in the 1930s to deter invasion by Germany
49th Parallel North:	The circle of latitude that forms the border between the United States and Canada in the west.
Green Line:	The demarcation line set out in the 1949 Armistice Agreements between Israel and its neighbors, including the West Bank, Gaza Strip, and Golan Heights.
McMahon Line:	The boundary line between Tibet and India, originally proposed by British colonial administrator Henry McMahon.

Blue Line:	The border between Israel and Lebanon established by the United Nations after the Israeli withdrawal from Lebanon in 2000.

INTERNATIONAL REPORTS ALONG WITH THEIR PUBLISHERS

Adaptation Gap Report United Nations Environment Programme (UNEP)	**Global Media Monitoring Report** Global Media Monitoring Project	**Global Energy Assessment** International Institute for Applied Systems Analysis (IIASA)
Global Hunger Index **Concern Worldwide and Welthungerhilfe**	**Global Entrepreneurship Monitor (GEM) Report** Global Entrepreneurship Research Association (GERA)	**Global Financial Stability Report** International Monetary Fund (IMF)
Human Development Report **United Nations Development Programme (UNDP)**	**Global Burden of Disease Study** Institute for Health Metrics and Evaluation (IHME)	**Global Entrepreneurship Monitor (GEM) Report** Global Entrepreneurship Research Association (GERA)
World Development Report **World Bank**	**Global Information Society Watch** Association for Progressive Communications (APC)	**Global Findex Database** World Bank
World Happiness Report **United Nations Sustainable Development Solutions Network**	**Global Humanitarian Response Plan** United Nations Office for the Coordination of Humanitarian Affairs (OCHA)	**Global Status of Commercialized Biotech/GM Crops** International Service for the Acquisition of Agri-biotech Applications (ISAAA)
World Investment Report **United Nations Conference on Trade and Development (UNCTAD)**	**Global Gender Gap Report** World Economic Forum (WEF)	**Global Trends Report** The Atlantic Council
Global Financial Stability Report **International Monetary Fund (IMF)**	**Global Peace Index** Institute for Economics and Peace (IEP)	**Global Liveability Index** The Economist Intelligence Unit (EIU)
Global Terrorism Index Institute for Economics and Peace (IEP)	**Global Education Monitoring Report** UNESCO	**Global Cities Index** AT Kearney
Global Corruption Barometer **Transparency International**	**Global Economic Prospects** World Bank	**Levels and Trends in Child Mortality Report** UN Inter-Agency Group
Global Slavery Index **Walk Free Foundation**	**Global Innovation Index** World Intellectual Property Organization (WIPO)	**World Disaster Risk Index** United Nations University Institute for Security
Global Climate Risk Index **Germanwatch**	**Global Peacekeeping Index** Institute for Economics and Peace (IEP)	**World Happiness Report** UN Sustainable Development Solutions Network
Global Sustainable Competitiveness Index **SolAbility**	**Global Wage Report** International Labour Organization (ILO)	**World Social Protection Report** International Labour Organization
Global State of Democracy Report **International Institute for Democracy and Electoral Assistance (IDEA)**	**Global Cities Index** AT Kearney	**World Employment and Social Outlook** ILO
Global State of Tobacco Harm Reduction **Knowledge Action Change**	**Global Financial Development Report** World Bank	**World of Work Report** ILO
Global Nutrition Report **Independent Expert Group on Nutrition**	**Global Status Report on Preventing Violence Against Children** World Health Organization (WHO)	**Global Wage Report** ILO
Global Cities Index **AT Kearney**	**Global Status of Commercialized Biotech/GM Crops** International Service for the Acquisition of Agri-biotech Applications (ISAAA)	**Gender Inequality Index** United Nations Development Program (UNDP)
Global Talent Competitiveness Index	**Global Findex Database** World Bank	**Education Development Index** UNDP

INSEAD		
Global Risks Report **World Economic Forum (WEF)**	**Global Entrepreneurship Monitor (GEM) Report** Global Entrepreneurship Research Association (GERA)	**Actions on Air Quality** United Nations Environment Program (UNEP)
Global Economic Freedom Index **The Heritage Foundation**	**Global Information Society Watch** Association for Progressive Communications (APC)	**Global Environmental Outlook** UNEP
Global Cities Report **JLL (Jones Lang LaSalle)**	**Global Status Report on Trafficking in Persons** United Nations Office on Drugs and Crime (UNODC)	**Emission Gap Report** UNEP
Global Status Report on Alcohol and Health **World Health Organization (WHO)**	**Global Energy Assessment** International Institute for Applied Systems Analysis (IIASA)	**The Rise of Environmental Crime Report** UNEP and INTERPOL
Global Terrorism Report **Institute for Economics and Peace (IEP)**	**Global Media Monitoring Report** Global Media Monitoring Project	**World State of Forest Report** Food and Agricultural Organization of the United Nations (FAO)
Global Drug Survey **Global Drug Survey**	**Global Financial Integrity Report** Global Financial Integrity	**World Health Statistics** World Health Organization
Global Humanitarian Assistance Report **Development Initiatives**	**Global Migration Report** International Organization for Migration (IOM)	**World Tuberculosis Report** WHO
Global Employment Trends Report **International Labour Organization (ILO)**	**Global E-waste Monitor** United Nations University (UNU)	**Ambient Air Pollution Report** WHO
Global Financial Integrity Report **Global Financial Integrity**	**Global Carbon Budget** Global Carbon Project	**Safety Reports** International Civil Aviation Organization (ICAO)
Global Migration Report **International Organization for Migration (IOM)**	**Global Drug Survey** Global Drug Survey	**CORSIA** ICAO
Global Gender Report **United Nations Development Programme (UNDP)**	**Global Humanitarian Assistance Report** Development Initiatives	**World Intellectual Property Index** World Intellectual Property Organization (WIPO)
Global E-waste Monitor **United Nations University (UNU)**	**Global Employment Trends Report** International Labour Organization (ILO)	**Technical Cooperation Report** International Atomic Energy Agency (IAEA)
Global Carbon Budget **Global Carbon Project**	**Global Burden of Disease Study** Institute for Health Metrics and Evaluation (IHME)	**Nuclear Technology Review** IAEA
Global Status Report on Road Safety **World Health Organization (WHO)**	**Global Information Society Watch** Association for Progressive Communications (APC)	**Red Book** IAEA
Global Report on Trafficking in Persons **United Nations Office on Drugs and Crime (UNODC)**		

ORGANIZATION WISE REPORTS

World Economic Forum	Inclusive Development Index Global Environment Performance Index Travel and Tourism Competitiveness Report Global Energy Architecture Performance Index Report Global Competitiveness Report Global Gender Gap Index	**World Wide Fund for Nature (WWF)**	The Energy Report & Living Planet Report

	Human Capital Index		
International Energy Agency (IEA)	World Energy Outlook (WEO)	**UN-Sustainable Development Solutions Network (SDSN)**	World Happiness Report
United Nations Conference on Trade and Development (UNCTAD)	The Technology and Innovation Report World Investment Report The Information Economy Report The Trade & Development Report	**United Nations Industrial Development Organisation (UNIDO)**	Industrial Development Report
UN-Habitat	World Cities Report	**United Nations Office on Drugs and Crime (UNODC)**	World Wildlife Crime Report
International Labour Organisation	World Employment and Social Outlook Global Wage Report World Social protection report	**United Nations Educational, Scientific and Cultural Organisation (UNESCO)**	Global Education Monitoring Report Gender Parity Index
United Nations Environment Programme	Emission Gap Report Global Environment Outlook	**Transparency International**	Corruption Perception Index Global Corruption Report (GCR)
Food and Agriculture Organisation	World State of Forest Report	**World Health Organisation (WHO)**	Ambient Air pollution Report
World Intellectual Property Organisation	World Intellectual Property Report (WIPR)	**Bank for International Settlements (BIS)**	Global Financial System Report
Global Hunger Index Report	International Food Policy Research Institute (IFPRI)	**Financial Action Task Force (FATF)**	Global Money Laundering Report
Reporters Without Borders	World Press Freedom Index	**International Monetary Fund (IMF)**	World Economic Outlook Global Financial Stability Report
UNDP (United Nations Development Programme)	Gender Inequality Index	**World Bank**	Remittance Report Universal Health Coverage Index The Service trade restriction index Ease of Living Index Global Economic Prospect (GEP) Report World Development Report Ease of Doing Business
Organisation for Economic Development (OECD)	The Programme for International Student Assessment (PISA)		

HISTORICAL TREATIES

Treaty of Versailles (1919)	**Ended World War I and imposed harsh penalties on Germany, leading to resentment and contributing to World War II.**
League of Nations Covenant	Established the League of Nations, the first international organization aimed at maintaining world peace (1919).
Yalta Conference	Meeting between Allied leaders Churchill, Roosevelt, and Stalin to discuss post-World War II reorganization and Europe's future (1945).
Helsinki Accords	Agreements signed by 35 nations to improve relations between the Communist bloc and the West, including provisions on human rights (1975).
Peace of Westphalia (1648)	Ended the Thirty Years' War in Europe and established the principle of state sovereignty.
Treaty of Paris (1763)	Ended the Seven Years' War and marked the beginning of British dominance in North America.
Treaty of Paris (1783)	Ended the American Revolutionary War and recognized American independence.
Congress of Vienna (1815)	Redrew the map of Europe after the Napoleonic Wars and established a balance of power.
Treaty of Guadalupe Hidalgo (1848)	Ended the Mexican-American War, with Mexico ceding territory that would become part of the United States.
Treaty of Frankfurt (1871)	Ended the Franco-Prussian War and led to the unification of Germany.
Treaty of Trianon (1920)	Redrew the borders of Hungary after World War I, leading to the loss of significant territory.
Munich Agreement (1938)	Allowed Nazi Germany to annex Czechoslovakia's Sudetenland region, leading to the appeasement policy's criticism.
Charter of the United Nations	Established the United Nations to maintain international peace and security and promote

(1945)	cooperation.
Treaty of Utrecht (1713)	Ended the War of the Spanish Succession and redrew the borders of European countries.
Treaty of Ghent (1814)	Ended the War of 1812 between the United States and Britain, restoring pre-war boundaries.
Treaty of Nanjing (1842)	Ended the First Opium War between Britain and China, ceding Hong Kong to Britain.
Treaty of Waitangi (1840)	Established British sovereignty over New Zealand while guaranteeing Maori rights.
Treaty of Brest-Litovsk (1918)	Ended World War I between Russia and the Central Powers, resulting in significant territorial losses for Russia.
Treaty of Sevres (1920)	Partitioned the Ottoman Empire after World War I but was superseded by the Treaty of Lausanne.
Treaty of Lausanne (1923)	Ended the Turkish War of Independence and defined the borders of modern Turkey.
Geneva Conventions	International treaties that established the standards of humanitarian law for the treatment of war victims.
Warsaw Pact (1955)	Military alliance of Soviet-aligned countries in Eastern Europe, created in response to NATO.
Geneva Accords (1954)	Ended the First Indochina War and divided Vietnam into North and South.
Treaty of Tordesillas (1494)	Divided the newly discovered lands outside Europe between Portugal and Spain along a meridian 370 leagues west of the Cape Verde islands.
Treaty of Portsmouth (1905)	Ended the Russo-Japanese War, with Japan emerging as a dominant power in East Asia.
Treaty of Berlin (1885)	Regulated European colonization and trade in Africa during the New Imperialism period.

CONFLICT ZONES AROUND THE WORLD

Syria: A civil war that began in 2011, involving multiple factions and international intervention. Located in the Middle East, bordering the Mediterranean Sea.	**Sudan:** Conflict in Darfur, South Kordofan, and Blue Nile regions, involving government forces, rebel groups, and ethnic militias. Located in North Africa, bordered by Egypt, Libya, Chad, Central African Republic, South Sudan, Ethiopia, and Eritrea.
Yemen: A complex conflict involving the Yemeni government, Houthi rebels, and regional powers. Located on the southern tip of the Arabian Peninsula.	**Venezuela:** Political and social unrest, including protests and violence, due to economic crisis and political tensions. Located in South America, bordered by Colombia, Brazil, and Guyana.
Afghanistan: Ongoing conflict involving the Afghan government, Taliban insurgents, and international forces. Located in South Asia, bordered by Pakistan, Iran, and Central Asian countries.	**Western Sahara:** Dispute between Morocco and the Polisario Front over the territory's sovereignty.
Iraq: Struggles with terrorism, insurgency, and sectarian violence following the 2003 invasion. Located in the Middle East, bordered by Iran, Syria, and Turkey.	**Northern Ireland:** Historical conflict between nationalist and unionist communities, known as "The Troubles," although violence has significantly decreased since the Good Friday Agreement in 1998.
Myanmar (Burma): Ethnic conflicts and human rights abuses, especially against the Rohingya minority. Located in Southeast Asia, bordered by Bangladesh, India, China, and Thailand.	**Caucasus (Nagorno-Karabakh):** Dispute between Armenia and Azerbaijan over the Nagorno-Karabakh region, leading to periodic flare-ups of violence.
South Sudan: Civil war and ethnic violence since gaining independence in 2011. Located in East Africa, bordered by Sudan, Ethiopia, and Kenya.	**South China Sea:** Territorial disputes between China and several Southeast Asian countries over various islands and maritime claims.
Democratic Republic of the Congo (DRC): Conflict involving government forces, rebel groups, and resource exploitation. Located in Central Africa.	**Sudan-South Sudan Border:** Ongoing tensions and occasional violence along the border between Sudan and South Sudan.
Somalia: Ongoing civil war, terrorism, and piracy. Located in East Africa, bordered by Ethiopia, Kenya, and the Indian Ocean.	**Ethiopia-Eritrea Border:** Historical tensions and occasional clashes along the border between Ethiopia and Eritrea.
Nigeria: Conflict with Boko Haram insurgents in the north and intercommunal violence. Located in West Africa, bordered by Benin, Niger, and Chad.	**Western Balkans:** Although much improved, there are lingering ethnic and political tensions in countries like Bosnia and Herzegovina, Kosovo, and Macedonia.
Ukraine: Conflict between government forces and separatist groups in eastern Ukraine. Located in Eastern Europe, bordered by Russia, Belarus, and Poland.	**Somaliland:** Self-declared independent region of Somalia, which is not internationally recognized, leading to some regional tensions.
Libya: Ongoing conflict involving various factions and international intervention since the overthrow of Muammar Gaddafi in 2011. Located in North Africa, bordered by Egypt, Sudan, Chad, Niger, Algeria, and Tunisia.	**Gaza Strip:** Ongoing conflict between Israel and Palestinian militant groups, such as Hamas, over control of the territory.

Israel-Palestine: Long-standing conflict between Israel and Palestinians over land, borders, and rights. Located in the Middle East, bordered by Egypt, Jordan, Syria, and Lebanon.	**Nagorno-Karabakh:** Territorial conflict between Armenia and Azerbaijan over the Nagorno-Karabakh region.
Central African Republic (CAR): Conflict involving government forces, rebel groups, and ethnic militias. Located in Central Africa, bordered by Chad, Sudan, South Sudan, Congo, and Cameroon.	**Kurdistan Region:** Struggles for independence or autonomy by Kurdish populations in Turkey, Iraq, Iran, and Syria.
Mali: Conflict involving government forces, Tuareg rebels, and Islamist groups. Located in West Africa, bordered by Algeria, Niger, Burkina Faso, Ivory Coast, Guinea, Senegal, and Mauritania.	**Chechnya:** Insurgency and separatist movements in the Chechen Republic of the Russian Federation.
Ethiopia: Internal conflicts and ethnic tensions, particularly in the Tigray region. Located in East Africa, bordered by Eritrea, Djibouti, Somalia, Kenya, South Sudan, and Sudan.	**South Sudan:** Ongoing civil war and ethnic violence since gaining independence in 2011.
Cameroon: Conflict in the Anglophone regions between government forces and separatist groups. Located in Central Africa, bordered by Nigeria, Chad, Central African Republic, Congo, Gabon, and Equatorial Guinea.	**Darfur:** Conflict in the Darfur region of Sudan, involving rebel groups, government forces, and ethnic militias.
Colombia: Despite the peace agreement with the FARC rebel group, there are ongoing conflicts with other rebel groups, drug cartels, and paramilitary groups. Located in South America, bordered by Venezuela, Brazil, Peru, Ecuador, and Panama.	**Côte d'Ivoire (Ivory Coast):** Post-election violence and political instability following the 2010-2011 crisis.
Philippines: Conflict between government forces and various insurgent groups, including the Moro Islamic Liberation Front (MILF) and Abu Sayyaf. Located in Southeast Asia, consisting of thousands of islands.	

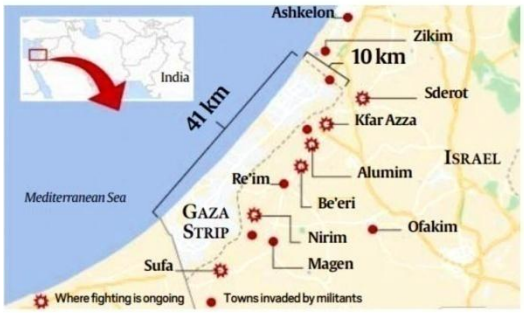
LIST OF ETHNIC COMMUNITIES

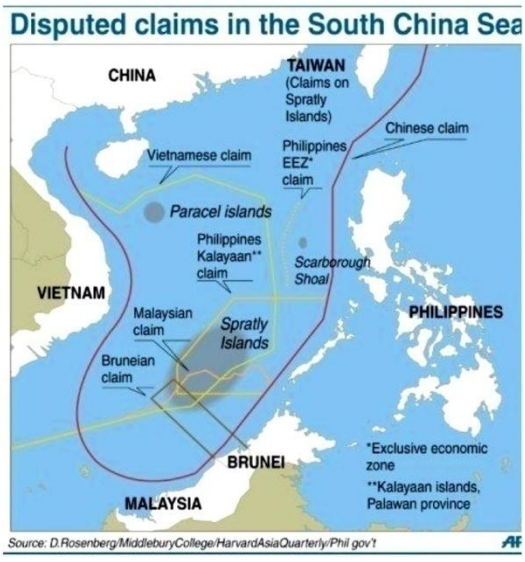
- **Karen Community** - Ethnic group primarily in Myanmar (Burma) and Thailand with distinct language and culture, facing persecution and conflict in Myanmar.
- **Kurdish Community** - Ethnic group spread across Turkey, Iraq, Iran, and Syria with a distinct culture and language, Kurdish, advocating for autonomy and rights.
- **Hazara Community** - Ethnic group primarily in Afghanistan and Pakistan, known for their distinct Central Asian features and facing persecution in some regions.
- **Baha'i Community** - Religious community with a global presence, originating in Iran and advocating for unity, peace, and social justice.
- **Uyghur community** - Turkic ethnic group in China's Xinjiang region, facing cultural suppression and human rights abuses.
- **Yazidi community** - Religious minority in Iraq, Syria, and Turkey, facing persecution and genocide by ISIS.
- **Roma community** - Ethnic group with a diaspora across Europe, facing discrimination and social exclusion.
- **Assyrian community** - Indigenous Christian group in Iraq, Syria, and Turkey, facing persecution and displacement.
- **Druze community** - Religious and ethnic group in the Levant, primarily in Lebanon, Syria, and Israel, with a distinct faith and culture.
- **Tigray community** - Ethnic group in Ethiopia, primarily in the Tigray Region, facing conflict and displacement.
- **Oromo community** - Ethnic group in Ethiopia and Kenya, advocating for cultural and political rights.
- **Amazigh (Berber) community** - Indigenous ethnic group in North Africa, advocating for cultural and linguistic rights.
- **Quechua community** - Indigenous ethnic group in the Andean region of South America, primarily in Peru, Bolivia, and Ecuador. **Adivasi community** - Indigenous ethnic groups in India, facing marginalization and land rights issues.
- **Maori community** - Indigenous ethnic group in New Zealand, advocating for cultural preservation and rights.
- **Sami community** - Indigenous ethnic group in northern Europe, primarily in Norway, Sweden, Finland, and Russia, advocating for cultural and land rights.
- **Inuit community** - Indigenous ethnic group in the Arctic regions of Canada, Greenland, and Alaska, advocating for cultural and environmental rights.
- **Romaniote community** - Jewish ethnic group historically in Greece and the Eastern Mediterranean, with a distinct culture and language.
- **Garifuna community** - Indigenous ethnic group in Central America, primarily in Honduras, Belize, Guatemala, and Nicaragua, facing cultural preservation challenges.
- **Tatar community** - Turkic ethnic group in Russia, primarily in Tatarstan, with a distinct culture and language.

- **Hmong community** - Ethnic group in Southeast Asia, particularly in Laos, Thailand, Vietnam, and China, facing persecution and marginalization.
- **Igbo community** - Ethnic group in Nigeria, advocating for self-determination and cultural rights.
- **Yoruba community** - Ethnic group in Nigeria and Benin, with a rich cultural heritage and language.
- **Zulu community** - Ethnic group in South Africa, with a strong cultural identity and history.
- **Xhosa community** - Ethnic group in South Africa, known for their language and cultural practices.
- **San community** - Indigenous ethnic group in Southern Africa, facing cultural preservation challenges and land rights issues.
- **Nubian community** - Indigenous ethnic group in Egypt and Sudan, with a rich history and culture.
- **Khoisan community** - Indigenous ethnic groups in Southern Africa, known for their click languages and hunter-gatherer lifestyles.
- **Basque community** - Ethnic group in the Basque Country of Spain and France, advocating for self-determination and cultural rights.
- **Catalan community** - Ethnic group in Catalonia, Spain, advocating for independence and cultural rights.

PLACES IN NEWS

- **Chancay Port:**Chancay Port in Peru aims to create a modern, sustainable gateway for import and export activities, especially for Lima and its surroundings.
- **Rafah Crossing** is a border crossing between the Gaza Strip and Egypt. It is the primary connection point for people traveling between Gaza and Egypt.
- The **Akhaura-Agartala rail link** is a railway project that connects Akhaura in Bangladesh with Agartala in the Indian state of Tripura
- **Haifa Port** is a major seaport located in the city of Haifa, Israel.
- **Gaza Strip,** is a small Palestinian territory located on the eastern coast of the Mediterranean Sea. It is bordered by Israel to the east and north, and Egypt to the south-west.
- The **Ben Gurion Canal Project** is a water infrastructure project in Israel. The project aims to transfer water from the Sea of Galilee (also known as Lake Kinneret) to the Negev region in southern Israel.





- The **Black Sea** is a landlocked sea located between southeastern Europe and Asia Minor, connected to the Mediterranean Sea through the Bosporus Strait and the Sea of Marmara.
- The **Sahel Region** is a semi-arid strip of land south of the Sahara Desert, spanning across Africa from the Atlantic Ocean to the Red Sea. It includes countries like Senegal, Mauritania, Mali, Burkina Faso, Niger, Nigeria, Chad, Sudan, and Eritrea.
- **Maghreb:** Includes countries like Morocco, Algeria, Tunisia, Libya, and Mauritania, located in North Africa and characterized by a mix of arid, semi-arid, and Mediterranean climates.

- **Kiel Canal:** Connects the North Sea to the Baltic Sea, allowing ships to bypass the longer route around the Jutland Peninsula.
- **Tripoli** is the capital city of Libya, located in North Africa.
- **Darfur** - Region in western Sudan inhabited by various ethnic groups.
- **Khartoum:** As the capital city of Sudan, Khartoum is often in the news for political developments and protests.
- **Nagorno-Karabakh**: This region is at the center of the conflict between Armenia and Azerbaijan.
- **Zanzibar**: an archipelago off the coast of Tanzania in East Africa.

INDIAN FOREIGN TRADE IN FIGURES

- India used to be a protectionist state for a long time, but the country has become progressively more open to international trade. Currently, trade represents 45.3% of the country's GDP. The country mainly exports petroleum oils (13.7%), diamonds (6.3%), medicaments (4.3%), articles of jewellery (2.7%), and rice (2.4%), while it imports petroleum oils (18.7%), gold (9.8%), diamonds (4.6%), coal and similar solid fuels (4.5%), petroleum gas and other gaseous hydrocarbons (4.2%). According to IMF Foreign Trade Forecasts, the volume of exports of goods and services increased by 3.9% in 2022 and is expected to further increase in 2023, reaching at 4.9%, while the volume of imports of goods and services increased by 10.1% in 2022 and is expected to increase by 7.2% in 2023.
- India's main partners are the United States, China, the United Arab Emirates, Switzerland, Saudi Arabia, Bangladesh, and Hong Kong. The country has recently signed free trade agreements with South Korea and ASEAN, and has entered into negotiations with several partners (EU, MERCOSUR, Australia, New Zealand and South Africa). In 2021, Brazil and India signaled their interest in expanding the FTA that India has with MERCOSUR, but the expansion is still under negotiation, pending approval from other members of the South American bloc. India is currently the world's fastest-growing large economy, as well as the world's eighth largest exporter and tenth largest importer of commercial services. However, India's trade regime and regulatory environment still remains relatively restrictive.
- The country's trade balance is structurally negative, given that the country imports nearly 80% of its energy needs. However, as India benefits from the fluctuations in world hydrocarbon prices for its imports, the country's trade deficit has been oscillating for the past few years. In 2021, India exported USD 395 billion worth of goods, while imports accounted for USD 572 billion, resulting in a negative trade balance of USD 176 billion. According to the WTO, in the same year, exports of services amounted to USD 240 billion, whereas the imports of services stood at USD 195 billion, leading to a decrease of the overall trade deficit, which amounted to USD 74 billion.

Foreign Trade Values	2018	2019	2020	2021	2022
Imports of Goods *(million USD)*	514,464	486,059	373,202	573,092	720,441
Exports of Goods *(million USD)*	324,778	324,340	276,410	395,426	453,400
Imports of Services *(million USD)*	176,059	179,430	153,737	195,956	249,522
Exports of Services *(million USD)*	204,956	214,762	203,145	240,510	309,374

Source: World Trade Organisation (WTO) ; Latest available data

Foreign Trade Indicators	2018	2019	2020	2021	2022
Foreign Trade *(in % of GDP)*	43.6	39.9	37.8	45.7	49.4
Trade Balance *(million USD)*	-186,692	-157,678	-95,450	-176,721	-267,188
Trade Balance (Including Service) *(million USD)*	-105,918	-73,452	-8,342	-74,039	-134,661
Imports of Goods and Services *(Annual % Change)*	8.8	-0.8	-13.7	21.8	18.8
Exports of Goods and Services *(Annual % Change)*	11.9	-3.4	-9.1	29.3	11.5
Imports of Goods and Services *(in % of GDP)*	23.7	21.2	19.1	24.2	26.9
Exports of Goods and Services *(in % of GDP)*	19.9	18.7	18.7	21.5	22.4

Source: World Bank; Latest available data

Foreign Trade Forecasts	2023	2024 (e)	2025 (e)	2026 (e)	2027 (e)
Volume of exports of goods and services (Annual % change)	-0.9	4.7	4.3	4.4	4.4
Volume of imports of goods and services (Annual % change)	2.5	6.0	6.0	6.1	6.7

Source: IMF, World Economic Outlook ; Latest available data
Note: (e) Estimated Data

International Economic Cooperation

- India is a member of the following international economic organisations: IMF, South Asian Association for Regional Cooperation (SAARC), Association of Southeast Asian Nations (ASEAN) (dialogue partner), ICC, Colombo Plan, Commonwealth, G-15, G-20, G-24, G-77, WTO, among others. For the full list of economic and other international organisations in which participates India click here. International organisation membership of India is also outlined here.

Free Trade Agreements

- The complete and up-to-date list of Free Trade Agreements signed by India can be consulted here.
- Main Partner Countries

Main Customers *(% of Exports)*	**2022**	**Main Customers** *(% of Exports)*	**2022**
United States	17.7%	**China**	3.3%
United Arab Emirates	6.9%	**Bangladesh**	3.1%
Netherlands	4.1%	**See More Countries**	64.9%

Main Suppliers *(% of Imports)*	**2022**	**Main Suppliers** *(% of Imports)*	**2022**
China	14.0%	**Saudi Arabia**	6.3%
United Arab Emirates	7.4%	**Russia**	5.5%
United States	7.1%	**See More Countries**	59.8%

Source: Comtrade, Latest Available Data

Main products

452.7 bn USD of products exported in 2022	
Petroleum oils and oils obtained from bituminous...	20.9%
Diamonds, whether or not worked, but not mounted...	5.3%
Medicaments consisting of mixed or unmixed...	3.9%
Articles of jewellery and parts thereof, of...	2.7%
Telephone sets, incl. telephones for cellular...	2.4%
See More Products	64.9%

732.6 bn USD of products imported in 2022	
Petroleum oils and oils obtained from bituminous...	23.7%
Coal; briquettes, ovoids and similar solid fuels...	6.7%
Gold, incl. gold plated with platinum, unwrought...	5.0%
Petroleum gas and other gaseous hydrocarbons	4.4%
Diamonds, whether or not worked, but not mounted...	3.7%
See More Products	56.5%

Source: Comtrade, Latest Available Data

Main Services

308.4 bn USD of services exported in 2022			
Computer and information services	45.85%	Cultural and recreational services	1.24%
Other business services	24.65%	Communications services	1.12%
Transportation	12.14%	Insurance services	1.09%
Travel	6.93%	Construction services	1.08%
Government services	3.29%	Royalties and license fees	0.38%
Financial services	2.23%		

171.5 bn USD of services imported in 2022			
Other business services	33.39%	Government services	2.53%
Transportation	25.02%	Construction services	1.67%
Travel	15.09%	Financial services	1.41%
Computer and information services	9.18%	Insurance services	1.35%
Royalties and license fees	6.08%	Communications services	1.20%
Cultural and recreational services	3.08%		

Source: United Nations Statistics Division, Latest Available Data

Top 5 exporting countries of India in 2022–2023

The top 5 exporting countries of India in 2022-23 are:

1. **United States:** The United States was the top export destination for India in 2022, with exports valued at $112.47 billion. The main exports to the United States were petroleum products, gems and jewellery, engineering goods, and drugs and pharmaceuticals. Also, get **US Imports Data**

2. **United Arab Emirates:** The United Arab Emirates was the second-largest export destination for India in 2022, with exports valued at $56.26 billion. The main exports to the United Arab Emirates were petroleum products, gems and jewellery, and engineering goods.
3. **China:** China was the third-largest export destination for India in 2022, with exports valued at $52.14 billion according to **export import data**. The main exports to China were engineering goods, gems and jewellery, and textiles.
4. **Bangladesh:** Bangladesh was the fourth-largest export destination for India in 2022, with exports valued at $44.31 billion. The main exports to Bangladesh were textiles, ready-made garments, and leather goods.
5. **Saudi Arabia:** Saudi Arabia was the fifth largest export destination for India in 2022, with exports valued at $39.14 billion. The main exports to Saudi Arabia were petroleum products, engineering goods, and chemicals.

India's Top 10 Exports in 2022-23

The fiscal year 2022-23 has witnessed a remarkable surge in India's export sector, contributing significantly to the nation's economic growth. From Petroleum products to cotton yarns, India has a diverse range of export items. Now explore India's top 10 exports in detail:

1. **Gems and Jewellery ($28.6 billion):** India's rich history and craftsmanship in jewellery-making have made it a global leader in the export of precious gems and jewellery. The country offers a diverse range of exquisitely designed pieces, including diamonds, gemstones, and gold, catering to the demands of international markets.
2. **Petroleum Products ($25.3 billion):** India's refining capabilities and substantial crude oil imports enable it to export a significant volume of petroleum products. Refined fuels like gasoline, diesel, and petrochemicals are sought after by various countries, contributing significantly to India's export revenue.
3. **Pharmaceutical Products ($23.8 billion):** India is a major player in the global pharmaceutical industry and produces high-quality generic medicines. Its competitive pricing and adherence to international quality standards have driven export demand for Indian pharmaceutical products.
4. **Organic Chemicals ($19.6 billion):** India's chemical industry has witnessed remarkable growth, and organic chemicals are a major contributor to its export portfolio. These chemicals find applications in diverse industries, including pharmaceuticals, plastics, and agriculture, making them crucial for global supply chains.
5. **Machinery and Mechanical Appliances ($17.6 billion):** Indian manufacturers excel in producing a wide range of machinery and mechanical appliances, including industrial equipment, engines, and pumps. These products are in demand globally due to their quality, reliability, and competitive pricing.
6. **Iron and Steel ($16.6 billion):** India's iron and steel industry is a significant contributor to its export earnings. The country produces various steel products, such as sheets, pipes, and rods, which are used in the construction, automotive, and manufacturing sectors worldwide.
7. **Vehicles, Parts, and Accessories ($15.2 billion):** India's automobile industry has expanded considerably, leading to increased exports of vehicles, parts, and accessories. With a reputation for producing economical and fuel-efficient vehicles, India caters to the needs of diverse international markets.
8. **Cereal Preparations and Miscellaneous Processed Items ($14.6 billion):** Indian food processing industries export a variety of cereal preparations, including ready-to-eat meals and processed grains. These products cater to the growing demand for convenient and nutritious food globally.
9. **Rice ($13.7 billion):** India is one of the largest rice exporters in the world, offering a wide range of rice varieties to international markets. The country's diverse agro-climatic regions ensure the production of different types of rice, meeting the preferences of consumers worldwide.
10. **Cotton Yarn ($12.9 billion):** With a robust textile industry, India exports significant quantities of cotton yarn. This raw material is used by various countries' textile manufacturers to produce fabrics and garments, making it a crucial component of the global textile supply chain.

INDIA AND FTAs

India is actively negotiating Regional Trade Agreements (RTAs)/Free Trade Agreements (FTAs) with the following countries/regions:

Sl.	Countries/Regions	Name of the Agreement
1	UAE	India-UAE CEPA
2	Australia	India - Australia Comprehensive Economic Cooperation Agreement (CECA)
3	Canada	India – Canada Comprehensive Economic Partnership Agreement
4	Israel	India – Israel Free Trade Agreement (FTA)
5	United Kingdom	India-UK Enhanced Trade Partnership (ETP)
6	Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia	India-Eurasian Economic Union (EAEU) Free Trade Agreement (FTA)
7	European Union	India - EU Broad Based Trade and Investment Agreement (BTIA)
8	South Africa, Botswana, Lesotho, Swaziland and Namibia	India - SACU PTA

IMPORTANT AGREEMENTS BETWEEN INDIA AND OTHER COUNTRIES

Indo-US Nuclear Deal (2008)

- **Civil Nuclear Cooperation:** India agreed to separate its civil and military nuclear facilities and to place its civil facilities under International Atomic Energy Agency (IAEA) safeguards.
- **Nuclear Suppliers Group (NSG) Waiver:** The Nuclear Suppliers Group granted a waiver to India, allowing it to engage in nuclear trade despite not being a signatory to the Nuclear Non-Proliferation Treaty (NPT).
- **Fuel Supply:** The US agreed to supply nuclear fuel and technology to India's civilian nuclear program, which was previously restricted due to India's nuclear weapons status.
- **Strategic Partnership:** The agreement aimed to strengthen strategic ties between India and the US, particularly in areas of defense, energy, and technology.

India-ASEAN Free Trade Agreement (FTA) (2009)

- **Tariff Reduction:** The agreement aimed to reduce and eliminate tariffs on goods traded between India and the ASEAN member countries.
- **Trade in Services:** It included provisions for promoting trade in services and enhancing cooperation in areas such as tourism, telecommunications, and financial services.
- **Investment:** The agreement aimed to facilitate investment flows between India and ASEAN countries by providing a predictable and transparent investment regime.

India-Russia Strategic Partnership

- **Defense Cooperation:** Both countries agreed to enhance defense cooperation, including joint military exercises, technology transfer, and cooperation in defense production.
- **Energy Cooperation:** The agreement included cooperation in the oil and gas sector, with Russia supplying energy resources to India.
- **Space Cooperation:** Both countries agreed to cooperate in space exploration and satellite technology.

India-Japan Civil Nuclear Agreement (2016)

- **Nuclear Cooperation:** Japan agreed to supply nuclear reactors, fuel, and technology to India for peaceful purposes.
- **Non-Proliferation:** India reiterated its commitment to nuclear non-proliferation and peaceful use of nuclear energy.
- **Safety and Security:** The agreement included provisions for cooperation in nuclear safety and security.

India-Australia Civil Nuclear Cooperation Agreement (2014)

- **Uranium Supply:** Australia agreed to supply uranium to India for use in its civilian nuclear program.
- **Safeguards:** India agreed to place its civil nuclear facilities under IAEA safeguards and to ensure that Australian uranium is used only for peaceful purposes.

India-Bangladesh Land Boundary Agreement (2015)

- **Land Boundary Resolution:** The agreement resolved long-standing border issues between India and Bangladesh, including the exchange of enclaves and simplification of the border.
- **Citizenship:** It provided for the granting of citizenship to residents of enclaves who chose to stay in the respective countries.
- **Border Management:** Both countries agreed to cooperate in border management and security along the India-Bangladesh border.

India-China Border Peace and Tranquility Agreement

- **Border Dispute Mechanism:** The agreement established mechanisms for maintaining peace and tranquility along the India-China border, including regular meetings between military and diplomatic officials.
- **Border Confidence-Building Measures:** It included confidence-building measures such as joint military exercises and cultural exchanges to reduce tensions along the border.
- **Dispute Resolution:** The agreement aimed to resolve border disputes through peaceful dialogue and negotiations.

India-Pakistan Indus Waters Treaty

- **Water Sharing:** The treaty governs the sharing of waters from the Indus river system between India and Pakistan, with the waters being allocated to each country for their respective uses.
- **Permanent Indus Commission:** The treaty established the Permanent Indus Commission to oversee the implementation of the treaty and resolve disputes related to its interpretation.

India-United Arab Emirates (UAE) Comprehensive Strategic Partnership (2015)

- **Economic Cooperation:** The partnership aims to enhance economic ties between India and the UAE, including cooperation in trade, investment, and infrastructure development.
- **Security Cooperation:** It includes cooperation in counter-terrorism, defense, and maritime security.
- **People-to-People Contacts:** The partnership seeks to promote cultural exchanges and tourism between the two countries.

India-France Rafale Aircraft Deal (2016)

- **Aircraft Purchase:** India signed a deal with France to purchase Rafale fighter jets, enhancing India's defense capabilities.

- **Technology Transfer:** The agreement includes provisions for technology transfer and cooperation in defense manufacturing.

India-Sri Lanka Economic and Technology Cooperation Agreement (2003)

- **Trade and Investment:** The agreement aims to promote trade and investment between India and Sri Lanka by reducing tariffs and trade barriers.
- **Technology Cooperation:** It includes provisions for cooperation in technology transfer and capacity-building in various sectors.

India-Germany Intergovernmental Consultations (IGC) (2011)

- **Bilateral Cooperation:** The IGC is a forum for high-level dialogue and cooperation between India and Germany on various issues, including trade, investment, and technology.
- **Agreements and MoUs:** It has led to the signing of several agreements and memoranda of understanding (MoUs) between the two countries in areas such as renewable energy, vocational training, and urban development.

India-Canada Comprehensive Economic Partnership Agreement (CEPA) (2009)

- **Trade and Investment:** The agreement aims to enhance trade and investment between India and Canada by reducing tariffs and trade barriers.
- **Services and Investment:** It includes provisions for promoting trade in services and enhancing cooperation in investment.

India-Afghanistan Strategic Partnership Agreement (2011)

- **Security Cooperation:** The agreement includes provisions for security cooperation and capacity-building in Afghanistan.
- **Development Cooperation:** It aims to enhance cooperation in areas such as infrastructure development, education, and healthcare.

India-Myanmar Border Agreement (2014)

- **Border Management:** The agreement aims to enhance cooperation in border management and security along the India-Myanmar border.
- **Cross-Border Trade:** It includes provisions for promoting cross-border trade and economic cooperation between the two countries.

India-Brazil-South Africa (IBSA) Dialogue Forum (2003)

- **Trilateral Cooperation:** The IBSA forum aims to promote cooperation and dialogue between India, Brazil, and South Africa on various global issues, including trade, development, and climate change.
- **Annual Meetings:** The forum operates through annual meetings of the foreign ministers of the three countries.

India-Nepal Treaty of Peace and Friendship (1950)

- **Bilateral Relations:** The treaty forms the basis of the special relationship between India and Nepal, including provisions for cooperation in defense and security.
- **Open Border:** It allows for the free movement of people and goods between India and Nepal.

India-Iran Chabahar Port Agreement (2016)

- **Port Development:** The agreement aims to develop the Chabahar port in Iran as a transit hub for trade between India, Iran, and Afghanistan.
- **Connectivity:** It seeks to enhance connectivity and trade opportunities for landlocked Afghanistan through the Chabahar port.

India-United Kingdom (UK) Migration and Mobility Partnership Agreement (2021)

- **Migration and Mobility:** The agreement aims to enhance cooperation between India and the UK in areas such as migration, mobility, and border security, including provisions for facilitating legal migration and addressing irregular migration.

India-Australia Framework Arrangement on Cyber and Cyber-Enabled Critical Technology Cooperation (2020)

- **Cyber Cooperation:** The agreement aims to enhance cooperation between India and Australia in the field of cybersecurity and cyber-enabled critical technology, including information sharing and capacity-building.

India-South Korea Comprehensive Economic Partnership Agreement (CEPA) (2009)

- **Trade and Investment:** The agreement aims to enhance trade and investment between India and South Korea by reducing tariffs and trade barriers, including provisions for cooperation in services and investment.

India-Maldives Agreement on Cooperation in Health (2020)

- **Health Cooperation:** The agreement aims to enhance cooperation between India and Maldives in the field of health, including collaboration in healthcare services, capacity-building, and disease control.

India-France Agreement on the Reciprocal Protection of Classified or Protected Information (2018):

- **Information Protection:** The agreement aims to protect classified or protected information shared between India and France, including provisions for information security and confidentiality.

INDIA US FOUNDATIONAL DEFENCE AGREEMENTS

India and the United States have strengthened their defense cooperation through the signing of four foundational defense agreements. These agreements provide a framework for cooperation and enable the two countries to share military information, conduct joint military exercises, and enhance interoperability. Here's an elaboration on each of these agreements:

1. Basic Exchange and Cooperation Agreement for Geospatial Intelligence (BECA): BECA enables the exchange of geospatial information between India and the United States for defense and security purposes. This agreement enhances the accuracy of navigation and targeting, improving the effectiveness of military operations.
2. General Security of Military Information Agreement (GSOMIA): GSOMIA facilitates the sharing of classified military information between India and the United States. This agreement enhances the security of sensitive military information and promotes greater trust and cooperation between the two countries.
3. Logistics Exchange Memorandum of Agreement (LEMOA): LEMOA allows the militaries of India and the United States to use each other's facilities for refueling, replenishment, and other logistical support. This agreement enhances operational readiness and enables more efficient and cost-effective military operations.
4. Communication Compatibility and Security Agreement (COMCASA): COMCASA enables secure communication and data sharing between the armed forces of India and the United States. This agreement enhances interoperability between the two militaries and strengthens their ability to conduct joint military operations.

Overall, these foundational defense agreements reflect the growing strategic partnership between India and the United States and demonstrate their commitment to enhancing defense cooperation and ensuring regional security and stability.

UNITED NATIONS CONVENTION ON THE LAW OF THE SEA (UNCLOS)

The United Nations Convention on the Law of the Sea (UNCLOS) is an international treaty that establishes rules for ocean use. It was adopted in 1982 and entered into force in 1994.

- Territorial Sea: Up to 12 nautical miles from a nation's coast, it gives full sovereignty.
- Exclusive Economic Zone (EEZ): Extends up to 200 nautical miles, granting rights to resources.
- Continental Shelf: The seabed and subsoil beyond the EEZ.
- High Seas: Areas beyond national jurisdiction, open to all states for navigation and fishing.
- Environmental Protection: Includes measures to prevent marine pollution and protect marine life.
- Dispute Resolution: Provides mechanisms for resolving disputes among nations.

INDIA'S FOREIGN POLICIES

- **Neighborhood First Policy**: India gives priority to its relations with neighboring countries such as Nepal, Bhutan, Bangladesh, Sri Lanka, and the Maldives. This policy aims to enhance regional cooperation and address common challenges.
- **Act East Policy**: India's Act East Policy focuses on strengthening ties with countries in East Asia, particularly ASEAN nations. This policy aims to enhance economic, strategic, and cultural relations with countries like Japan, South Korea, Singapore, and Vietnam.
- **Strategic Partnerships**: India has strategic partnerships with countries like the United States, Russia, France, and Israel. These partnerships involve cooperation in areas such as defense, counter-terrorism, and economic development.
- **Africa Outreach**: India has been actively engaging with African countries to enhance economic cooperation and address common challenges. India-Africa Forum Summit is a key platform for this engagement.
- **Middle East Engagement**: India has strong ties with countries in the Middle East, including Saudi Arabia, UAE, and Iran. These ties are based on energy cooperation, economic interests, and cultural exchanges.
- **Central Asia Relations**: India seeks to enhance ties with countries in Central Asia, including Kazakhstan, Uzbekistan, and Turkmenistan. These ties focus on energy cooperation, trade, and connectivity.
- **Strategic Autonomy**: India maintains strategic autonomy in its foreign policy, seeking to balance its relations with major powers like the United States, China, and Russia, based on its national interests.
- **Global South Solidarity**: India has historically supported the interests of developing countries, often referred to as the Global South. This includes advocating for fair trade practices, addressing climate change, and promoting South-South cooperation.
- **International Organizations**: India is an active member of various international organizations, including the United Nations (UN), where it plays a role in peacekeeping operations and contributes to global governance. India is also a member of the World Trade Organization (WTO), where it advocates for its trade interests.
- **Security and Counterterrorism**: India's foreign policy emphasizes cooperation on security issues and counterterrorism efforts. This includes collaboration with countries such as the United States, Israel, and European nations.
- **Maritime Security**: Given its strategic location, India has a keen interest in maritime security. It has engaged in partnerships and dialogues with countries in the Indian Ocean region and beyond to ensure freedom of navigation and secure sea lanes.

- **Cultural Diplomacy**: India uses cultural diplomacy as a tool to enhance its soft power and strengthen ties with other countries. This includes promoting Indian art, music, dance, cuisine, and yoga globally.
- **Bilateral Relations**: India maintains bilateral relations with a wide range of countries, each with its own set of priorities and objectives. These relations are based on mutual respect, cooperation, and shared interests.
- **Regional Cooperation**: India is actively engaged in regional cooperation initiatives such as the South Asian Association for Regional Cooperation (SAARC), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), and the Indian Ocean Rim Association (IORA).
- **Economic Diplomacy**: India's foreign policy places a strong emphasis on economic diplomacy to promote trade, investment, and economic cooperation. This includes engaging with countries and international organizations to enhance economic ties.
- **Health Diplomacy**: In recent years, India has emerged as a key player in global health diplomacy, particularly through initiatives like the International Solar Alliance and the Coalition for Disaster Resilient Infrastructure.

INDIA'S TRADE POLICIES

- **Trade Agreements**: India has signed free trade agreements (FTAs) with several countries and regional blocs, including Japan, South Korea, ASEAN, and Mercosur. These agreements aim to reduce tariffs and other trade barriers to promote bilateral and regional trade.
- **WTO Commitments**: India is a member of the World Trade Organization (WTO) and is committed to adhering to its rules and regulations. India actively participates in WTO negotiations and disputes to protect its trade interests.
- **Export Promotion Schemes**: In addition to the MEIS and EPCG schemes, India also has the Services Exports from India Scheme (SEIS) to promote exports of services. These schemes provide incentives and benefits to exporters.
- **Trade Facilitation Measures**: India has implemented several trade facilitation measures to simplify customs procedures, reduce documentation requirements, and improve logistics infrastructure. The introduction of the Goods and Services Tax (GST) has also streamlined the tax system and reduced trade barriers.
- **Focus on Key Sectors**: India's trade policy focuses on promoting exports in key sectors such as pharmaceuticals, textiles, automotive, and agriculture. Special Economic Zones (SEZs) have been set up to promote exports in these sectors.
- **Intellectual Property Rights (IPR) Protection**: India has strengthened its IPR regime to comply with international standards and protect the rights of innovators and creators. This includes amendments to patent laws and the establishment of specialized IPR courts.
- **Trade Remedies**: India has a robust trade remedies framework to address unfair trade practices, including anti-dumping, countervailing, and safeguard measures. These measures help protect domestic industries from import surges and unfair competition.
- **Digital Trade**: India is increasingly focusing on digital trade and e-commerce, with initiatives like the National e-Commerce Policy aimed at promoting online trade and digital exports.
- **Regional Economic Integration**: India is actively involved in regional economic integration efforts, such as the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC).
- **Trade Promotion Organizations**: India has trade promotion organizations like the Export-Import Bank of India (EXIM Bank) and the Federation of Indian Export Organizations (FIEO) that provide support and assistance to exporters.

INDIA'S APPROACH TO NON-PROLIFERATION AND THE GLOBAL NUCLEAR REGIME

- **Peaceful Uses of Nuclear Energy**: India emphasizes the peaceful uses of nuclear energy for economic development, energy security, and addressing climate change. India has a well-established nuclear energy program that includes research, development, and utilization of nuclear technology for various sectors, including healthcare, agriculture, and industry.
- **Nuclear Doctrine:** India's nuclear doctrine, officially declared in 2003, outlines the principles that guide its nuclear policy. These include a credible minimum deterrence posture, a no-first-use policy, and a commitment to non-use against non-nuclear-weapon states.
- **Regional Nuclear Cooperation**: India has engaged in regional nuclear cooperation initiatives, such as the South Asian Association for Regional Cooperation (SAARC) Regional Nuclear Safety Regime, to enhance nuclear safety, security, and cooperation among South Asian countries.
- **Nuclear Weapons**: India possesses nuclear weapons but maintains a policy of credible minimum deterrence, stating that it will not be the first to use nuclear weapons and will only use them in retaliation to a nuclear attack.
- **Non-Proliferation Treaty (NPT)**: India is not a signatory to the NPT, which aims to prevent the spread of nuclear weapons and promote disarmament. India argues that the NPT is discriminatory as it recognizes five nuclear-armed states (China, France, Russia, the UK, and the US) while denying the same status to others.
- **Comprehensive Nuclear-Test-Ban Treaty (CTBT)**: India has not signed the CTBT, citing concerns about the treaty's verification mechanisms and the need for global disarmament efforts to be more inclusive.

- **Fissile Material Cut-off Treaty (FMCT):** India supports the negotiation of an FMCT, which would prohibit the production of fissile material for nuclear weapons. However, India has emphasized the need for such a treaty to be non-discriminatory and include existing stockpiles of fissile material.
- **Nuclear Suppliers Group (NSG):** India has sought membership in the NSG, a group of countries that controls the export of nuclear materials and technology. India's bid for NSG membership is based on its non-proliferation record, its adherence to global nuclear norms, and its commitment to disarmament.
- **Global Nuclear Security Architecture:** India is committed to strengthening global nuclear security architecture to prevent nuclear terrorism and secure nuclear materials. India has ratified the Convention on the Physical Protection of Nuclear Material (CPPNM) and its 2005 Amendment.
- **Nuclear Energy:** India is a proponent of nuclear energy for peaceful purposes and has signed civil nuclear cooperation agreements with several countries. India has also committed to developing its nuclear energy capabilities in a safe, secure, and sustainable manner.
- **Disarmament:** India supports global efforts towards nuclear disarmament but emphasizes the need for a step-by-step approach that addresses the security concerns of all states and ensures a balance of obligations between nuclear-weapon states and non-nuclear-weapon states.
- **Nuclear Safeguards:** India has entered into a safeguards agreement with the International Atomic Energy Agency (IAEA) for its civilian nuclear facilities. This agreement ensures that India's nuclear program is used exclusively for peaceful purposes and is subject to international scrutiny.
- **Bilateral Agreements:** India has signed bilateral agreements with several countries for civil nuclear cooperation. These agreements include provisions for nuclear safety, security, and non-proliferation, demonstrating India's commitment to responsible nuclear practices.
- **Nuclear Disarmament Initiatives:** India has been a vocal advocate for nuclear disarmament and has called for the complete elimination of nuclear weapons. India has participated in international disarmament forums and has put forward proposals for nuclear disarmament, including a no-first-use policy.
- **Nuclear Security:** India has taken steps to enhance nuclear security and prevent the illicit trafficking of nuclear materials. India has also participated in international initiatives, such as the Global Initiative to Combat Nuclear Terrorism (GICNT), to strengthen nuclear security cooperation.
- **Regional Stability:** India's nuclear policy is also shaped by regional security dynamics. India maintains a credible nuclear deterrent to deter potential threats and ensure regional stability. India has also engaged in confidence-building measures with its neighbors, such as the Lahore Declaration with Pakistan in 1999.

INTERNATIONAL AGREEMENTS AND SANCTIONS

JCPOA (Joint Comprehensive Plan of Action): The JCPOA, also known as the Iran nuclear deal, is an agreement reached in 2015 between Iran and the P5+1 (the United States, United Kingdom, France, Russia, China, and Germany) aimed at limiting Iran's nuclear program in exchange for sanctions relief.

CAATSA (Countering America's Adversaries Through Sanctions Act): CAATSA is a United States federal law that imposes sanctions on Iran, Russia, and North Korea. It was enacted in 2017 in response to Russia's interference in the 2016 US presidential election and its activities in Ukraine, as well as Iran's ballistic missile program and support for terrorism.

Iran Sanctions Act: The Iran Sanctions Act is a United States federal law that imposes sanctions on Iran's energy, financial, and defense sectors in response to Iran's nuclear program and support for terrorism.

The Ashgabat Declaration is an agreement signed in 2018 by the leaders of five Central Asian countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. The declaration aims to promote regional cooperation and integration in Central Asia, focusing on areas such as trade, transport, and security. It emphasizes the importance of maintaining peace and stability in the region and resolving conflicts through dialogue and diplomacy. The Ashgabat Declaration is seen as a step towards strengthening ties between the Central Asian countries and enhancing their role in the global community.

The TIR Convention, or Transports Internationaux Routiers, is an international customs transit system that facilitates the movement of goods across international borders.

The Central Asia Regional Economic Cooperation (CAREC) Program is a partnership of 11 countries and development partners working together to promote economic growth and development in the Central Asia region.The 11 CAREC countries are Afghanistan, Azerbaijan, the People's Republic of China, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.The CAREC Program aims to promote economic cooperation and integration among its member countries, with a focus on improving trade and investment, enhancing regional connectivity, and reducing poverty.

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade: This convention, adopted in 1998, aims to promote shared responsibility and cooperative efforts among parties in the international trade of certain hazardous chemicals.

Convention on the Physical Protection of Nuclear Material: This convention, adopted in 1979 and amended in 2005, aims to ensure the physical protection of nuclear material used for peaceful purposes.

Convention on Cluster Munitions: This convention, adopted in 2008, prohibits the use, production, transfer, and stockpiling of cluster munitions and requires their clearance and the provision of assistance to victims.

Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer: This amendment, adopted in 2016, aims to phase down the production and consumption of hydrofluorocarbons (HFCs), which are potent greenhouse gases.

Protocol on Environmental Protection to the Antarctic Treaty: This protocol, adopted in 1991, sets out environmental principles and obligations for activities in the Antarctic Treaty area.

Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes: This protocol, adopted in 1999, aims to protect human health and the environment by ensuring the supply of safe drinking water and sanitation.

Convention on Cybercrime (Budapest Convention): This convention, adopted in 2001, aims to address the issues of cybercrime through international cooperation.

United Nations Convention on International Settlement Agreements Resulting from Mediation (Singapore Convention on Mediation): This convention, adopted in 2018, aims to facilitate the enforcement of international settlement agreements resulting from mediation.

International Convention for the Protection of New Varieties of Plants (UPOV Convention): This convention, adopted in 1961 and revised in 1978 and 1991, aims to protect plant breeders' rights by establishing a system of intellectual property rights for new plant varieties.

United Nations Convention on Contracts for the International Sale of Goods (CISG): This convention, adopted in 1980, establishes a uniform international sales law that governs contracts for the sale of goods between parties from different countries.

International Tropical Timber Agreement: This agreement, first adopted in 1983 and subsequently revised, aims to promote the conservation and sustainable management of tropical forests and the expansion and diversification of international trade in tropical timber from sustainably managed sources.

International Convention on the Control of Harmful Anti-fouling Systems on Ships: This convention, adopted in 2001, prohibits the use of harmful anti-fouling systems on ships.

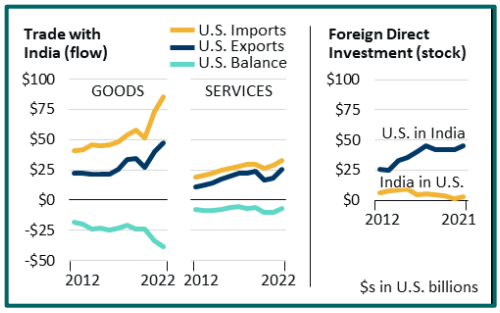
International Convention on the Control of Harmful Aquatic Organisms in Ballast Water: This convention, adopted in 2004, aims to prevent the spread of harmful aquatic organisms from ships' ballast water.

The Cartagena Protocol on Biosafety is an international agreement that aims to ensure the safe handling, transport, and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking into account risks to human health. The protocol was adopted on January 29, 2000, in Cartagena, Colombia, and entered into force on September 11, 2003. It is a supplementary agreement to the Convention on Biological Diversity (CBD) and has been ratified by over 170 countries.

INDIA'S KEY TRADE STATISTICS WITH MAJOR PARTNERS

INDIA-USA TRADE

In FY23, India-US bilateral trade reached a record US$ 128.78 billion, with India having a trade surplus of US$ 28.30 billion. India exported 7,758 commodities to the US, and its exports increased to US$ 78.54 billion. Major exports include pearls, semiprecious stones, drug formulations, petroleum products, and gold jewelry. India's exports to the US in April-May 2023 stood at US$ 12.47 billion. India imported 6,229 commodities from the USA in FY21, with imports rising to US$ 43.31 billion in 2021-22. Major imports include mineral fuels, oils, pearls, precious stones, and imitation jewelry. The US is the third-largest source of foreign direct investment (US$ 6.04 billion) in India, accounting for 9% of total FDI equity inflow.



INDIA-CHINA TRADE

In FY23, bilateral trade between India and China was US$ 113.83 billion. As of 2022-23, China was India's third-largest trading partner. Bilateral trade between the two countries reached US$ 115.83 billion in 2021, growing 34% from US$ 86.39 billion in 2020. India became China's 16th largest trade partner in 2020. Total trade between India and China has increased by 29% in the last five years, reaching US$ 115 billion in FY22 from US$ 89.72 billion in FY18. In FY22, China accounted for 15.4% of India's total imports, with India importing goods worth US$ 94.2 billion from China. India exported 4,459 commodities to China in FY23, with exports totaling US$ 15.33 billion. Major exports from India to China include petroleum products, marine products, iron ore, spices, and organic chemicals.India imported 7,484 commodities from China in FY23, with imports totaling US$ 98.50 billion. Major imports from China include electronic components, computer hardware, telecom instruments, organic chemicals, and machinery for dairy.

INDIA-UAE TRADE (STATE VISIT TO INDIA)

India is UAE's second-largest trading partner, accounting for 9% of its total foreign trade and 14% of non-oil exports. The UAE is India's third-biggest trade partner. India-UAE trade has grown significantly from US$ 180 million per year in the 1970s to US$ 72.8 billion in FY21, reaching US$ 84.84 billion in 2022-23, making UAE India's third-largest trading partner after the USA and China. The UAE is the 7th largest investor in India, with cumulative FDI inflows of US$ 15.57 billion. The UAE is home to 3.5 million Indians, constituting 30% of the Emirate's population, with their remittances being a significant source of foreign earnings. India exported goods worth US$ 16.7 billion to the UAE in FY21, while imports aggregated at US$ 26.7 billion. India's exports to UAE in 2022-23 stood at US$ 31.60 billion, including petroleum products, gold jewelry, telecom instruments, and more. India imported goods worth US$ 53.23 billion from UAE in 2022-23, including petroleum crude, petroleum products, and pearls.

INDIA FRANCE TRADE (STATE VISIT TO INDIA)

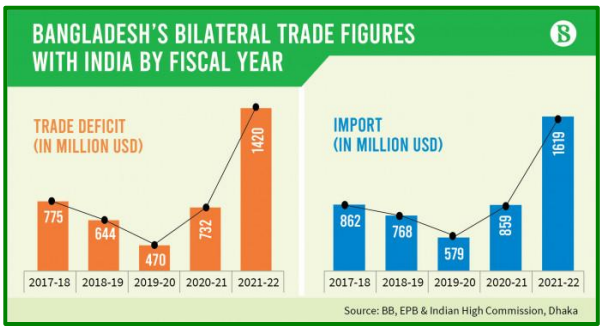
Trade relations between India and France have seen steady growth, with bilateral trade reaching US$ 13.4 billion in 2022-23, marking a 7.72% increase from the previous year. France is the 11th largest investor in India, with an FDI inflow of US$ 10.5 billion. From January-December 2021, bilateral trade in goods (excluding military equipment) stood at US$ 12.14 billion, showing a 39.17% increase compared to the previous year. India exported 4,715 commodities to France in FY23, with exports totalling US$ 7.61 billion, including petroleum products, electrical machinery, drug formulations, and cotton. India imported 4,253 commodities from France in FY23, with imports totalling US$ 5.77 billion, including aircraft, electrical machinery, petroleum products, and electronics components.

INDIA-NEPAL (STATE VISIT TO INDIA)

Over the last 26 years, Nepal's exports to India have grown at an annualized rate of 13.9%, reaching $1.34 billion in 2021 from $45.3 million in 1995. The main products exported from Nepal to India include Soybean Oil ($591 million), Palm Oil ($252 million), and Non-Retail Synthetic Staple Fibers Yarn ($53.1 million). In 2021, India exported $9.4 billion worth of goods to Nepal, with the main products being Refined Petroleum ($1.48 billion), Semi-Finished Iron ($591 million), and Rice ($428 million).

INDIA-BANGLADESH

Bangladesh is India's biggest trading partner in the subcontinent, with India being the second-biggest export partner, accounting for 12% of total exports to Bangladesh. The total trade turnover in FY23 between India and Bangladesh was US$ 14.22 billion. India exported 6,050 commodities to Bangladesh in FY23, with exports totalling US$ 12.20 billion, including cotton yarn, petroleum products, and other cereals. India imported 1,155 commodities from Bangladesh in FY23, with imports totaling US$ 2.02 billion, including RMG cotton, cotton fabrics, and spices.



INDIA-JAPAN

Japan's bilateral trade with India totaled US$ 21.96 billion in FY23, with exports from Japan to India at US$ 16.49 billion and imports at US$ 5.46 billion. Japan's exports to India accounted for 2.35% of India's total imports, while India's exports to Japan were 1.46% of India's total exports. India exported 4,508 commodities to Japan in FY21, with exports totaling US$ 5.46 billion, including marine products, petroleum products, and organic chemicals. Japan's exports to India have increased at an annualized rate of 6.44% over the last 26 years, from $2.62 billion in 1995 to $13.3 billion in 2021.

INDIA-OMAN (STATE VISIT TO INDIA)

Bilateral trade between India and Oman stood at USD 5.4432 billion in FY 2020-2021 and increased to US$ 9.988 billion in 2021-2022. India is the 2nd largest market for Oman's crude oil exports in 2022 after China and the 4th largest market for non-oil exports after UAE, US, and Saudi Arabia. India is also the 2nd largest source of Oman's imports after UAE.

India's exports to Oman in FY 2021-2022 were US$ 3.148 billion, making Oman India's 34th largest export market. India's imports from Oman in the same period were US$ 6.840 billion, making Oman India's 24th largest import source. Overall, Oman is India's 31st largest trading partner in FY 2021-2022, with total trade of US$ 9.988 billion.

Main items of India's exports to Oman include mineral fuels, iron and steel articles, cereals, machinery, electrical machinery, rice, organic chemicals, tea, coffee, spices, dairy produce, and apparel. Main items of India's imports from Oman include petroleum oils, liquefied natural gas, petroleum gases, fertilizers, salt, sulphur, earths, stone, cement, asbestos, mica, ores, slag, ash, and other chemicals.

Year	Export from India	Import by India	Total trade
2017-2018	2,439.46	4,264.29	6,703.76
2018-2019	2,246.31	2,759.00	5,005.31
2019-2020	2,261.81	3,669.33	5,931.14
2020-2021	2,355.30	3,087.93	5,442.22
2021-2022	3,148.33	6,840.65	9,988.98.

(Values in US $ Millions- Source DoC, GOI)

INDIA-SAUDI ARABIA TRADE (STATE VISIT TO INDIA)

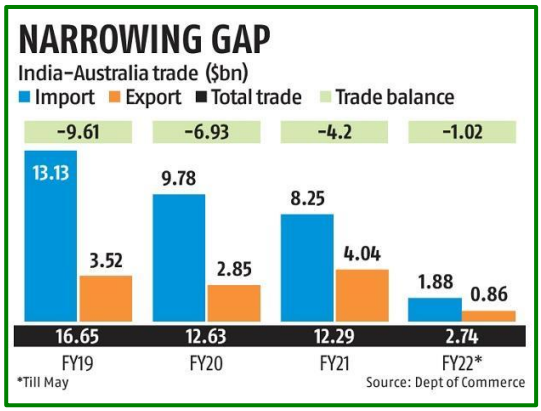
Saudi Arabia is India's 4th largest trading partner, with bilateral trade reaching US$ 52.76 billion in 2022-23. Over 18% of India's crude oil imports come from Saudi Arabia. Saudi Arabia is also the 19th largest investor in India, with a cumulative FDI of US$ 3.20 billion. India exported goods worth US$ 10.72 billion to Saudi Arabia in 2022-23, with major items including petroleum products, basmati rice, motor vehicles, organic chemicals, and telecom instruments. India imported goods worth US$ 42.03 billion from Saudi Arabia in the same period, with major imports including crude petroleum, petroleum products, fertilizers, plastic raw materials, and organic chemicals.

INDIA-SINGAPORE

India was Singapore's 12th largest trade partner in 2021-22, accounting for 2.3% of Singapore's total trade. Singapore, in turn, is India's 6th largest trade partner, representing 2.9% of India's overall trade in the same period. Bilateral trade between India and Singapore reached US$ 35.58 billion in 2022-23. Singapore is also the 2nd largest investor in India, with cumulative FDI inflows of US$ 148.16 billion from April 2000 to March 2023. India exported goods worth US$ 11.99 billion to Singapore in 2022-23, with major items including petroleum products, ships, precious stones, gold jewelry, and electric machinery. India imported goods worth US$ 23.59 billion from Singapore in the same period, with major imports including petroleum products, ships, electric machinery, organic chemicals, and gold jewelry.

INDIA-AUSTRALIA

Australia's exports to India reached $32.4 billion, while imports from India amounted to $12.6 billion in 2022-23. By the end of 2022, Australia's investment in India stood at $17.6 billion, while India's investment in Australia was $34.5 billion. Bilateral trade between India and Australia in goods and services was US$ 27.5 billion in 2021, up from US$ 18 billion in 2020. India's goods exports to Australia were worth US$ 6.9 billion, and imports totalled US$ 19.0 billion in FY23. Australia is the 29th largest investor in India, with a cumulative FDI of US$ 1.1 billion from April 2000 to March 2023. India exported 5,418 commodities to Australia in FY23. Major Indian exports to Australia include petroleum products, drug formulations, electrical machinery, products of iron and steel, and cotton. India's exports to Australia stood at US$ 6.9 billion in FY23. India imported 1,928 commodities from Australia in FY23, with major imports including coal, gold, minerals, petroleum products, and processed minerals.



INDIA-TANZANIA (STATE VISIT TO INDIA)

India is the largest destination for Tanzania's exports, with two-way trade worth USD 6.4 billion in 2022-23, including Indian exports of USD 3.9 billion. India is also the fifth largest investor in Tanzania. Major exports from India to Tanzania include petroleum products, pharmaceutical products, machinery, nuclear reactors, boilers, electrical and electronic equipment, and sugars and sugar confectionery. Tanzania's major exports to India include gold ore, cashew nuts, spices (mainly cloves), ores and metal scrap, and gemstones.

INDIA-KENYA (STATE VISIT TO INDIA)

India's exports to Kenya in 2021 amounted to $2.55 billion, with major exports including Refined Petroleum, Packaged Medicaments, and Semi-Finished Iron. Over the last 26 years, India's exports to Kenya have grown at an annualized rate of 9.46%.Kenya's exports to India in 2021 totaled $107 million, with major exports including Dried Legumes, Carbonates, and Tea. Kenya's exports to India have grown at an annualized rate of 8.34% over the last 26 years.

INDIA-DOMINICAN REPUBLIC (STATE VISIT TO INDIA)

In 2021, India exported $385 million worth of goods to the Dominican Republic. The main products were Packaged Medicaments ($101M), Raw Aluminium ($24.3M), and Crustaceans ($22M). Over the last 26 years, India's exports to the Dominican Republic have grown at an annualized rate of 19.6%, from $3.64 million in 1995 to $385 million in 2021.
In the same year, the Dominican Republic exported $693 million worth of goods to India. The main products were Gold ($655M), Ferroalloys ($12M), and Recovered Paper ($6.84M). Over the last 26 years, the Dominican Republic's exports to India have grown at an annualized rate of 46.8%, from $32.3k in 1995 to $693M in 2021.

INDIA-GREECE (STATE VISIT TO INDIA)

Bilateral trade between India and Greece reached USD 2 billion in 2022-23. India primarily exports aluminum, organic chemicals, fish, crustaceans, and iron and steel to Greece. Greece, on the other hand, exports minerals fuels, mineral oils, products, sulphur, and aluminium foil to India. India was the 'Honoured Country' at the 84th Thessaloniki International Fair (TIF) in 2019, Greece's largest annual commercial exposition.

INDIA-VIETNAM

Vietnam ranks 97th in India's FDI equity inflows, totaling US$ 5.45 million from April 2000-March 2023. In FY 2022-23, bilateral trade between India and Vietnam reached US$ 14.14 billion. Indian exports amounted to US$ 5.90 billion, including iron and steel, textile materials, fishery products, and pharmaceuticals. Vietnam's key exports to India are mobile phones, computers, chemicals, coffee, and cashew.
India exported 3,923 commodities to Vietnam in FY23. Major exports from India to Vietnam include iron and steel, buffalo meat, marine products, and auto components. India's imports from Vietnam in FY23 totaled US$ 8.79 billion, including telecom instruments, consumer electronics, and copper products.

INDIA - INDONESIA

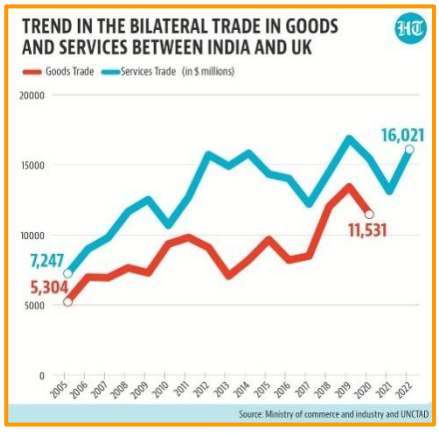
Indonesia is India's 2nd largest trading partner in ASEAN. Bilateral trade has grown significantly, from US$ 6.9 billion in 2007 to US$ 38.84 billion in 2023.Indonesia ranks 33rd in FDI equity inflows into India.India imported 2,221 commodities from Indonesia in FY23, totaling US$ 28.82 billion. Major imports include coal, vegetable oils, iron and steel, minerals, and cosmetics.

INDIA AND SOUTH KOREA

India and South Korea have a strong and growing trade relationship. Bilateral trade between the two countries reached US$ 23.7 billion in 2021, marking a significant increase from US$ 16.9 billion in 2020. In the first half of 2022, the bilateral trade volume reached US$ 14.2 billion, the highest ever for that period.South Korea is the 13th largest investor in India, with investments in sectors such as metallurgy, automobile, electronics, prime movers, machine tools, hospitals, and diagnostic centers.India exports a variety of commodities to South Korea, including petroleum products, aluminum, iron and steel, organic chemicals, and oil meals. In 2022-23, India's exports to South Korea stood at US$ 6.65 billion.Imports from South Korea to India include petroleum products, aluminum, iron and steel, organic chemicals, and lead products. Imports from South Korea stood at US$ 21.22 billion in 2022-23.

INDIA UK (STATE VISIT TO INDIA)

India and the UK have a significant and growing bilateral trade relationship. In the fiscal year 2022/23, the total bilateral trade (goods and services) between the two countries stood at £36.3 billion, marking a 34.2% increase from the previous year. India's total exports to the UK amounted to £21.6 billion, while India's total imports from the UK amounted to £14.7 billion.
India was the UK's 12th largest trading partner in this period, accounting for 2.1% of the UK's total trade. In terms of goods (merchandise) trade, the total bilateral trade was £18.6 billion, with India exporting £10.5 billion to the UK and importing £8.1 billion from the UK. Additionally, total trade in services between India and the UK was £17.7 billion, with India exporting services worth £11.0 billion and importing services worth £6.7 billion from the UK.



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INDIA GERMANY (STATE VISIT TO INDIA)

The bilateral trade between India and Germany has been robust, reaching US$ 24.8 billion in FY22, up from US$ 21.76 billion in FY21. Germany is a key investor in India, with cumulative FDI inflows of US$ 14.13 billion from April 2000-March 2023. In FY23, India's exports to Germany stood at US$ 10.13 billion, while imports from Germany were valued at US$ 15.93 billion. India exported a wide range of commodities to Germany, including electrical machinery & equipment, RMG cotton, and telecom instruments. Meanwhile, India's imports from Germany included machinery for dairy, aircraft, spacecraft, medical and scientific instruments, and auto components.

INDIA RUSSIA (STATE VISIT TO INDIA)

The bilateral trade between India and Russia during 2022-23 amounted to US$ 49.36 billion.Indian exports amounted to US$ 3.14 billion while imports from Russia amounted to US$ 46.21 billion.India exported 3,139 commodities to Russia in FY22.

India's export to Russia stood at US$ 3.14 billion in 2022-23.

Major exported items from India to Russia include drug formulations, biologicals (US$ 416 million), residual chemical and allied products (US$ 182 million), iron and steel (US$ 159 million), marine products (US$ 148 million), bulk drugs and drug intermediates (US$ 128 million), coffee (US$ 105 million), etc during 2022-23.

Major exported items from India to Russia include iron and steel (US$ 68 million), drug formulations, biologicals (US$ 54 million), residual chemicals and allied products (US$ 31 million), marine products (US$ 27 million), chemical and allied products (US$ 24 million), industrial machinery for dairy (US$ 21 million), etc. during April-May 2023-24.

India imported 1,225 commodities from Russia in FY22.

Imports from Russia to India stood at US$ 46.21 billion in 2022-23.

India's imports from Russia include petroleum; crude (US$ 31.02 billion), coal, coke and briquettes (US$ 4.82 billion), fertilizers manufacturers (US$ 3.04 billion), petroleum products (US$ 2.96 billion), pearl, precious and semi-precious stones (US$ 1.19 billion), vegetable oils (US$ 1.00 billion), etc. during 2022-23.

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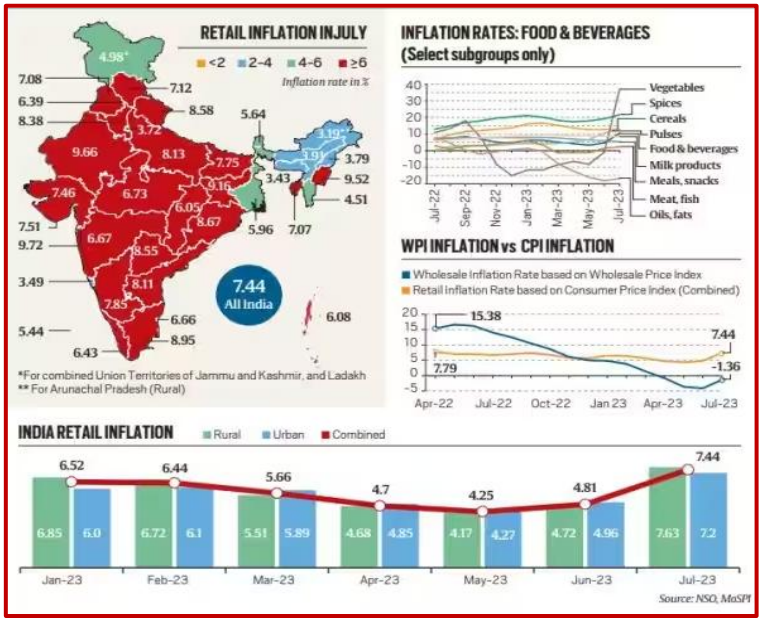
7 ECONOMY

Fiscal policy- Status of Government Finances, Taxation, Key concepts, and information on Fiscal Policy

STATUS OF GOVERNMENT FINANCES

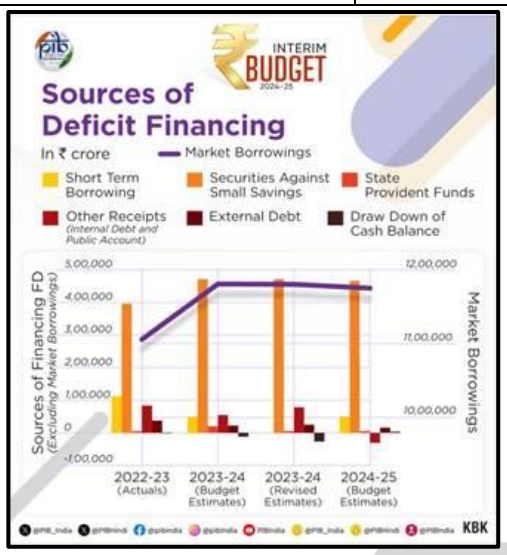
Fiscal Deficit and Debt:

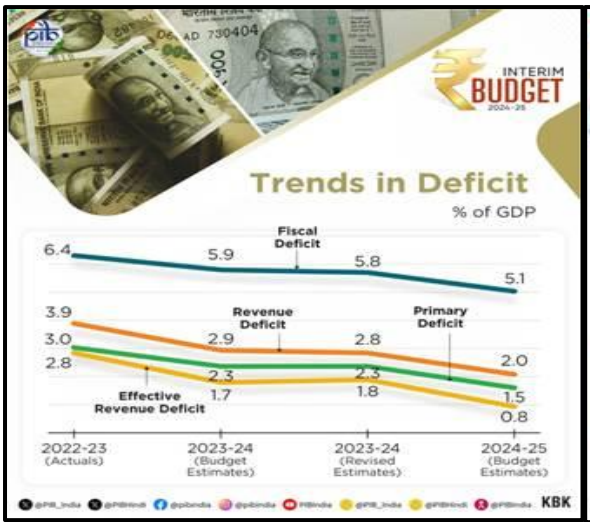


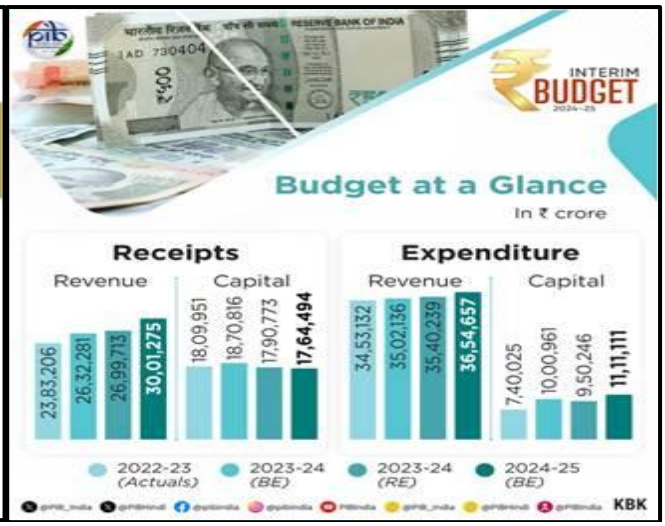
Estimated Fiscal Deficit (2024-25):	5.1 percent of GDP
Fiscal Deficit (2023-24):	5.8 percent of GDP
Expected Debt-to-GDP ratio (2024-25):	54 per cent
Recommended Fiscal Deficit by the NK Singh Committee:	2.5% of GDP
Recommended Tax-to-GDP ratio the NK Singh Committee:	Less than 60% as tax-to-GDP ratio

Fiscal Indicators - Rolling Targets as a Percentage of GDP

	Revised Estimates 2023-24	Budget Estimates 2024-25
1. Fiscal Deficit	5.8	5.1
2. Revenue Deficit	2.8	2.0
3. Primary Deficit	2.3	1.5
4. Tax Revenue (Gross)	11.6	11.7
5. Non-tax Revenue	1.3	1.2
6. Central Government Debt	57.8	56.8

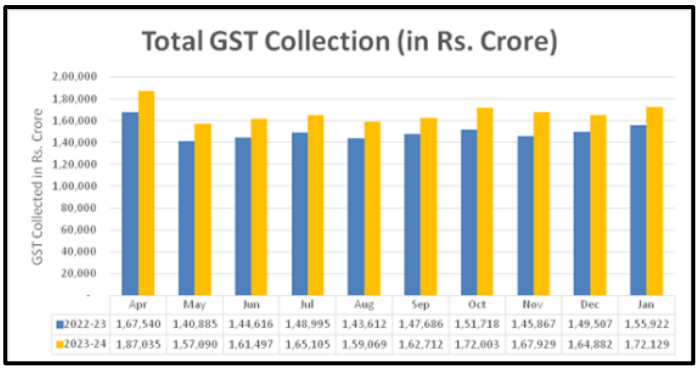






Expenditure and Borrowing:

- In 2024-25, the total receipts other than borrowings are estimated to be ₹ 30.80 lakh crore.
- Total expenditure is estimated at ₹ 47.66 lakh crore.
- Gross and net market borrowings through dated securities are estimated at ₹ 14.13 lakh crore and ₹ 11.75 lakh crore respectively.



TAXATION

Indirect Taxation:

GST Growth	10.4% Year-o-Year (Y-oY) growth
Custom Duty Growth	Reduction in number of basic customs duty rates from 21 to 13 for goods, other than textiles and agriculture.
Excise Duty on petroleum and diesel	Rs 8 per litre and Rs 6 per litre

Direct Taxation:

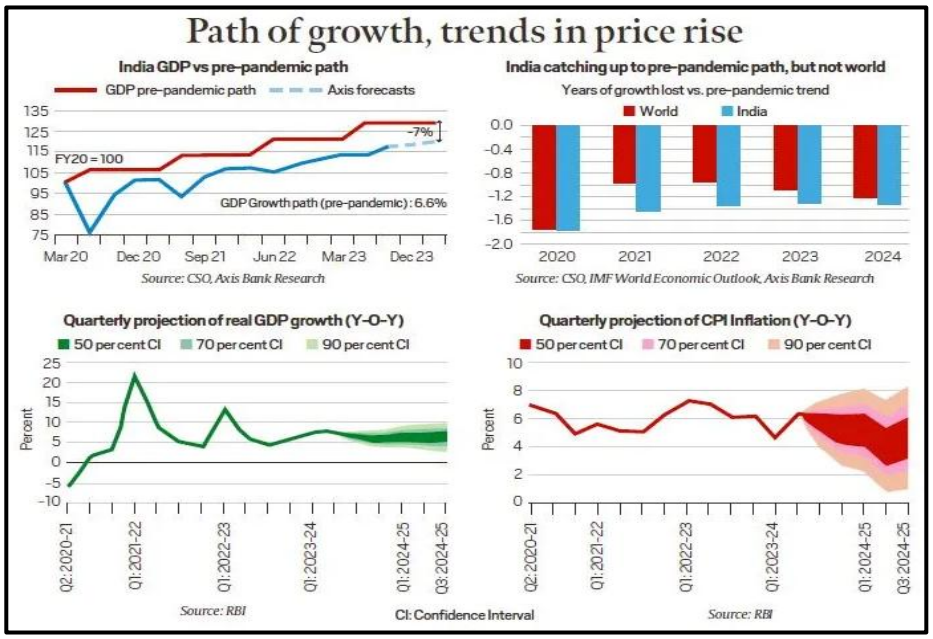
Direct Tax Collection (FY24):	The direct tax collection has seen a 160% growth in the past 10 years. From 6.38 lakh crores to 16.63 lakh crores
Share of direct tax:	In 2022-23, direct taxes made up 54.62 percent of the government's total tax revenue.

Financial Mobilization:

Disinvestment Target (2024-25):	₹30,000 crore
Non tax revenue is expected to exceed budget estimates by ₹50,000 crore.	
National Monetization Pipeline (NMP):	Estimated at Rs 6.0 lakh crore over FY 2022-2025.

State Finance:

Borrowing Limits	3% of Gross State Domestic Product (GSDP) borrowing limit for States set by the 15th Finance Commission for 2024-25
Expected State Fiscal Deficit (by 2024-25):	4.5 per cent by 2025-26
15th Finance Commission	The share of states in the central taxes for the 2021-26 period is recommended to be 41%, same as that for 2020-21



KEY CONCEPTS

Fiscal Policy	Government's use of taxation and spending to influence the economy's performance and achieve macroeconomic objectives.
Expansionary Fiscal Policy	Policy measures aimed at increasing government spending or reducing taxes to stimulate economic activity, typically during periods of recession or low growth.
Contractionary Fiscal Policy	Policy measures aimed at reducing government spending or increasing taxes to slow down economic activity, typically during periods of inflation or overheating.
Budget Deficit	Situation where government spending exceeds its revenue, leading to a shortfall that is financed through borrowing.
Budget Surplus	Situation where government revenue exceeds its spending, resulting in excess funds that can be used for debt reduction or other purposes.
Public Debt	Accumulated debt owed by the government resulting from budget deficits over time.
Automatic Stabilizers	Features of fiscal policy that automatically respond to economic fluctuations, such as progressive taxation and unemployment benefits.
Discretionary Fiscal Policy	Deliberate changes in government spending or taxation implemented through legislative action to achieve specific economic goals.
Multiplier Effect	Phenomenon where an initial change in spending or taxation leads to larger changes in aggregate demand and economic output.
Crowding Out Effect	Situation where increased government borrowing leads to higher interest rates, reducing private sector investment and spending.
Fiscal Sustainability	Ability of a government to maintain its fiscal policy without jeopardizing its long-term financial stability or solvency.

Summary of 5 YPs:

Five Year Plan	Time Period	Salient Features	Achievements
First	1951-1956	Emphasis on agriculture, price stability, power, and transport development.	Achieved an average annual growth rate of 3.6% in GDP.
Second	1956-1961	Focus on heavy industries, emphasizing the development of the public sector.	Achieved an average annual growth rate of 4.1% in GDP.
Third	1961-1966	Introduced 'Gadgil Formula' for financial assistance to states.	Average annual GDP growth rate of 2.8%.
Fourth	1969-1974	Adoption of Indira Gandhi's 20 Point Programme to reduce poverty.	Growth in agriculture and industrial sectors; increase in per capita income.

Fifth	1974-1979	'Removal of Poverty' as the main objective, emphasis on employment generation.	Improved food production; strengthened infrastructure; increased foreign exchange reserves.
Sixth	1980-1985	Introduced Integrated Rural Development Programme (IRDP) to alleviate rural poverty.	Encouraged the growth of small scale industries; enhanced agricultural production; increased national income.
Seventh	1985-1990	Emphasis on balanced regional development, social justice, and poverty alleviation.	Significant progress in agriculture, industry, and infrastructure development.
Eighth	1992-1997	Introduction of economic reforms focusing on liberalization, privatization, and globalization (LPG).	High GDP growth rate; increased industrial output; improved foreign exchange reserves.
Ninth	1997-2002	Focus on infrastructure development, poverty alleviation, and human development.	Expansion of telecommunications and information technology; growth in service sector; reduction in poverty.
Tenth	2002-2007	Targeted rural development, employment generation, and social sector development.	Significant increase in GDP growth; improvement in infrastructure; progress in poverty reduction and human development indices.
Eleventh	2007-2012	Emphasis on inclusive growth, infrastructure development, and rural development.	Average annual GDP growth rate of around 8%; significant progress in infrastructure development; focus on social welfare schemes.
Twelfth	2012-2017	Focus on faster, sustainable, and inclusive growth, addressing issues like poverty, health, and education.	Average annual GDP growth rate of around 7%; introduction of initiatives like Make in India, Digital India, and Skill India.

Banking asset quality restructuring and monetary policy- Important provisions and key concepts

BANKING

Type	Description
Central Bank	The leading economic and financial authority responsible for regulating the money market (banking sector). Examples include the Reserve Bank of India established under the Reserve Bank of India Act, 1934.
Commercial Bank	Economic intermediaries offering services such as savings accounts, checking accounts, time deposits, and money market accounts to the public, business houses, and corporate sectors. Regulated under the Banking Regulation Act, 1949, and classified as Scheduled and Unscheduled Banks in India.
Cooperative Bank	Economic sectors maintained by stakeholders and shareholders, providing services to top clients. Divided into urban and rural banks, governed by State Cooperative Societies Act, Banking Laws (Cooperative Societies) Act, 1955, and Banking Regulation Act, 1949.
Regional Rural Banks	Established to provide credit and other services to marginalized sections such as laborers, small farmers, artisans, and entrepreneurs in rural areas. Originated in 1976 based on recommendations from Regional Rural Banks and Narasimham Working Group (1975).
Payments Banks	Licensed by the Reserve Bank of India to promote financial inclusion and provide services like remittance, payments to low-income households, and small businesses. Structured as Public limited companies under the Companies Act, 2013, and authorized by the Banking Regulation Act, 1949.
Investment Bank	Institutions providing economic consultancy services, acting as intermediaries between investors and securities issues. Services include trading securities, mergers and acquisitions advisory, IPOs, etc.
Small Financial Banks or Private Banks	Also known as Private banks in India, aimed at reducing financial exclusion by providing essential banking services to underserved sections. Concept proposed by Dr. Raghuram Rajan and aimed at capturing essential banking functions.
Universal Banks	Banks offering a wide range of financial services, including both Commercial and Investment banking activities along with insurance services. Promotes economic efficiency at a relatively low cost.

ASSET QUALITY RESTRUCTURING

Asset Classification	Description
Standard Assets	Assets that do not have any identified weaknesses or defaults and are fully performing as per the terms of the loan agreement.

Substandard Assets	Assets that have remained NPA (Non-Performing Asset) for a period less than or equal to 12 months as of the balance sheet date.
Doubtful Assets	Assets that have remained in the substandard category for 12 months or more.
Loss Assets	Assets where loss has been identified by the bank or internal or external auditors or the RBI inspection but the amount has not been written off wholly.

Term	Description
CRR (Cash Reserve Ratio)	Percentage of deposits banks are required to maintain with the Reserve Bank of India (RBI) in the form of cash reserves, which ensures liquidity and monetary stability.
NPA (Non-Performing Asset)	Loans or advances where the interest and/or installment of principal remains overdue for a specified period of time, usually 90 days, and is not being serviced as per the terms of the loan agreement.
PCR (Provision Coverage Ratio)	Ratio of provisions made by banks to cover potential losses from NPAs, expressed as a percentage of the total NPAs. It reflects the adequacy of provisions against bad loans.
Open Market Operations (OMO)	Monetary policy tool used by the central bank (RBI) to regulate the money supply in the economy by buying and selling government securities in the open market.
Treasury Bills (T-Bills)	Short-term debt instruments issued by the government to meet its short-term financing requirements. T-Bills are highly liquid and considered risk-free as they are backed by the government's credit.
Commercial Bill	Short-term negotiable instruments issued by corporations or firms to finance their short-term credit needs. Commercial bills are used for trade transactions and typically have a maturity period ranging from 30 to 180 days.
Call Money	Short-term finance borrowed or lent on a day-to-day basis in the interbank market. Call money rates reflect the liquidity conditions in the banking system and are influenced by factors such as RBI's monetary policy stance and demand for funds from banks.
Gilt-Edged Securities	High-grade, low-risk debt securities issued by the government, usually with a fixed interest rate and long-term maturity. Gilt-edged securities are considered safe investments and serve as benchmarks for pricing other fixed-income securities.
Money Multiplier	The ratio of the change in the money supply to the change in the monetary base. It measures the expansion of the money supply through fractional reserve banking. The money multiplier indicates the effectiveness of monetary policy in influencing the money supply and credit creation in the economy.

Payment system and financial market-related aspects such as Fintech, Insurance Sector, Pension sector

Payments Vision 2025 builds on the foundation of Payments Vision 2021, introducing five anchor goalposts: Integrity, Inclusion, Innovation, Institutionalization, and Internationalization. The core theme, "E-payments for everyone, everywhere, every time (4Es)," aims to ensure safe, secure, fast, convenient, accessible, and affordable e-payment options for all users.

RBI'S 'LIGHTWEIGHT' PAYMENT AND SETTLEMENT SYSTEM (LPSS)

Objective	To provide resilience and continuity of payment and settlement systems during emergencies while ensuring efficiency.
Background	As part of the 'Utkarsh 2.0' initiative, RBI aims to establish a resilient framework for overseeing Centralized Payment Systems such as NEFT and RTGS.
	RBI intends to upgrade the RTGS system, including enhancements to existing functionalities and the introduction of new features.
Features	Independent of conventional technologies and wired networks used in existing payment systems like UPI, NEFT, and RTGS. - Ensures resilience and continuity during extreme and volatile situations, reducing vulnerability to disruptions.
	Portable and easily activated, requiring minimal resources to operate remotely. - Serves as a backup option for critical transactions, maintaining stability and ensuring the availability of essential payment services.
Significance	Conventional payment systems like UPI, NEFT, and RTGS are vulnerable to disruptions caused by natural calamities or war due to their dependence on complex wired networks and advanced IT infrastructure.
	Disruptions in existing systems can impact liquidity pipelines and essential payment services.
Implementation	The LPSS for emergencies will be introduced as part of RBI's efforts to enhance the resilience and efficiency of payment and settlement systems.

RBI Digital Payment Index (RBI-DPI)	**Launched on January 1, 2021, with March 2018 as the base period. Demonstrated significant growth between March 2021 and March 2022. RBI-DPI surged to 418.77 in September 2023, showing a robust growth trajectory. Reflects a 10.94% annual rise in digital payments by the end of March 2023.**
Storage of Payment System Data (SPSD)	RBI directive issued in 2018. Advises payment system providers to store data in India. Applies to Payment System providers, banks, and entities in the payments ecosystem. Requires system and data audits by CERT-In empaneled auditor. Data sharing with overseas regulators only after RBI approval.
Bharat Bill Payment System (BBPS)	Conceptualized by RBI, driven by NPCI. Minimum net worth requirement for non-bank BBPOUs reduced from ₹100 crore to ₹25 crore. Aims to provide interoperable bill payment services through a network of agents. Enables multiple payment modes with instant confirmation. Has a centralized grievance redress mechanism and a uniform customer convenience fee.
Merchant Discount Rate (MDR)	Cost paid by a merchant to a bank for accepting digital payments. Expressed as a percentage of the transaction amount. MDR on transactions using RuPay debit cards and UPI abolished by the government from January 1, 2020.
Financial Intelligence Unit India (FIU-IND)	Set up in 2004, an independent central national agency. Responsible for receiving, processing, analyzing, and disseminating information on suspect financial transactions. Reports to the Economic Intelligence Council (EIC) headed by the Finance Minister. Member of the Egmont Group, a united body of 166 FIUs.
Compliance Action Against Offshore Virtual Digital Assets Service Providers (VDA SPs)	FIU-IND issued compliance Show Cause Notices to nine offshore VDA SPs. Action taken under the Prevention of Money Laundering Act, 2002 (PMLA). VDA defined by the Income Tax Act includes information, code, number, or token generated through cryptographic means and blockchain technologies. Includes NFTs or any similar tokens.

FINANCIAL MARKET- IMPORTANT CONCEPT

Stock Market	Platforms for companies to list shares, facilitating trading between traders and investors. Enables companies to raise capital through IPOs and secondary market trading. Stocks traded on listed exchanges like NYSE or Nasdaq.
Over-the-Counter Market	Decentralized, electronic markets where participants directly trade securities without brokers. Handle certain stock trades but most trading occurs on regulated exchanges. Significant in certain derivatives trading.
Bond Market	Involves securities where investors lend money at a predefined interest rate for a specified period. Bonds issued by corporations, municipalities, states, and governments to finance projects. Includes U.S. Treasury notes and bills.
Money Market	Trades highly liquid, short-term instruments with low returns like money market mutual funds, CDs, and U.S. Treasury bills. Involves large-volume wholesale trades between institutions and retail investments by individuals.
Derivatives Market	Contracts whose value derives from underlying financial assets or indices. Trades in futures and options contracts and other complex financial products. Futures markets well-regulated with standardized contracts. Options markets list and regulate options contracts.
Forex Market	Deals with currency pairs' exchange rates, the most liquid market globally. Handles over $7.5 trillion in daily transactions. Operates through a global network of computers and brokers.
Commodities Market	Facilitates the exchange of physical commodities including agricultural products, energy products, precious metals, and soft commodities. Most trading occurs on derivatives markets. Spot commodity markets exchange physical goods.
Cryptocurrency Market	Involves digital assets like Bitcoin and Ethereum, traded on online crypto exchanges. Exchanges can be centralized or decentralized, allowing users to swap cryptocurrencies and engage in futures and options trading.

Fintech- Current status

- India is amongst the fastest growing Fintech markets in the world. Indian FinTech industry's market size is $50 Bn in 2021 and is estimated at ~$150 Bn by 2025.
- The Indian Fintech industry's Total Addressable Market is estimated to be $1.3 Tn by 2025 and Assets Under Management & Revenue to be $1 Tn and $ 200 Bn by 2030, respectively.

Major segments under Fintech include Payments, Digital Lending, InsurTech, WealthTech

- The Payments landscape in India is expected to reach $100 Tn in transaction volume and $50 Bn in terms of revenue by 2030
- India's digital lending market was worth $270 Bn in 2022 and is expected to reach $350 Bn by 2023
- India is the 2nd largest Insurtech market in Asia-Pacific and is expected to grow by ~15X to reach $88.4 Bn by 2030; India is poised to emerge as one of the fastest-growing insurance markets in the world
- The Indian WealthTech market is expected to grow to $237 Bn by 2030 on the back of a growing base of retail investors.

Rapid Growth and Valuation of India's Fintech Market	Valuation of India's fintech market was 50-60 billion USD in FY20. Expected to reach 150 billion USD by 2025.
Increasing Number of Fintech Companies in India	Over 2,100 fintech companies in India. More than 67% established in the last five years.
Diverse Sub-Segments in India's Fintech Sector	Payments, lending, WealthTech, personal finance management, InsurTech, RegTech, and more.
Shift in Investment Focus within the Fintech Sector	Initially focused on payments and alternative finance. Equitable distribution across InsurTech and RegTech now.
Significant Growth in Digital Payments Segment	Monthly transaction volumes exceeded 5.7 billion. Value around 2 trillion USD in 2021.
India's Leadership in Digital Payment Adoption	Leads in real-time online transactions globally. Surpasses combined numbers of the USA, UK, and China.
Widely Accepted Fintech Services in India	Mobile banking, mobile wallets, paperless lending, secure payment, etc.

Government Initiative	Details
Jan Dhan Yojana	Facilitated financial inclusion with over 450 million beneficiaries gaining access to various financial services. Fintech players have leveraged this initiative to develop technology products for the large consumer base in India.
India Stack	A collection of APIs empowering governments, businesses, startups, and developers to address India's challenges through digital solutions. Catalyst for the rapid evolution of fintech in India.
Unified Payments Interface (UPI)	Mobile app-based payment system enabling fund transfers between bank accounts.
Digital Rupee	Introduction of Central Bank Digital Currency (CBDC) known as the digital rupee or e-rupee. Expected to accelerate the growth of the fintech market in India as an electronic version of cash.
India Post Payments Bank (IPPB) Launches 'Fincluvation'	IPPB, a government-owned entity under the Department of Posts (DoP), introduced Fincluvation. A collaborative initiative with the Fintech Startup community aimed at co-creating and innovating financial inclusion solutions.

INSURANCE SECTOR

Overall Insurance Market Growth	**India's insurance market is expected to become one of the fastest-growing globally in the next decade, as per the Economic Survey 2022-23.**
Insurance Penetration	Insurance penetration in India increased from 3.76% in 2019-20 to 4.20% in 2020-21, marking a growth of 11.70%. - Life insurance penetration in 2021 stood at 3.2%, nearly double the emerging markets and slightly above the global average.
Insurance Density	Insurance density rose from USD 78 in 2020-21 to USD 91 in 2021-22.

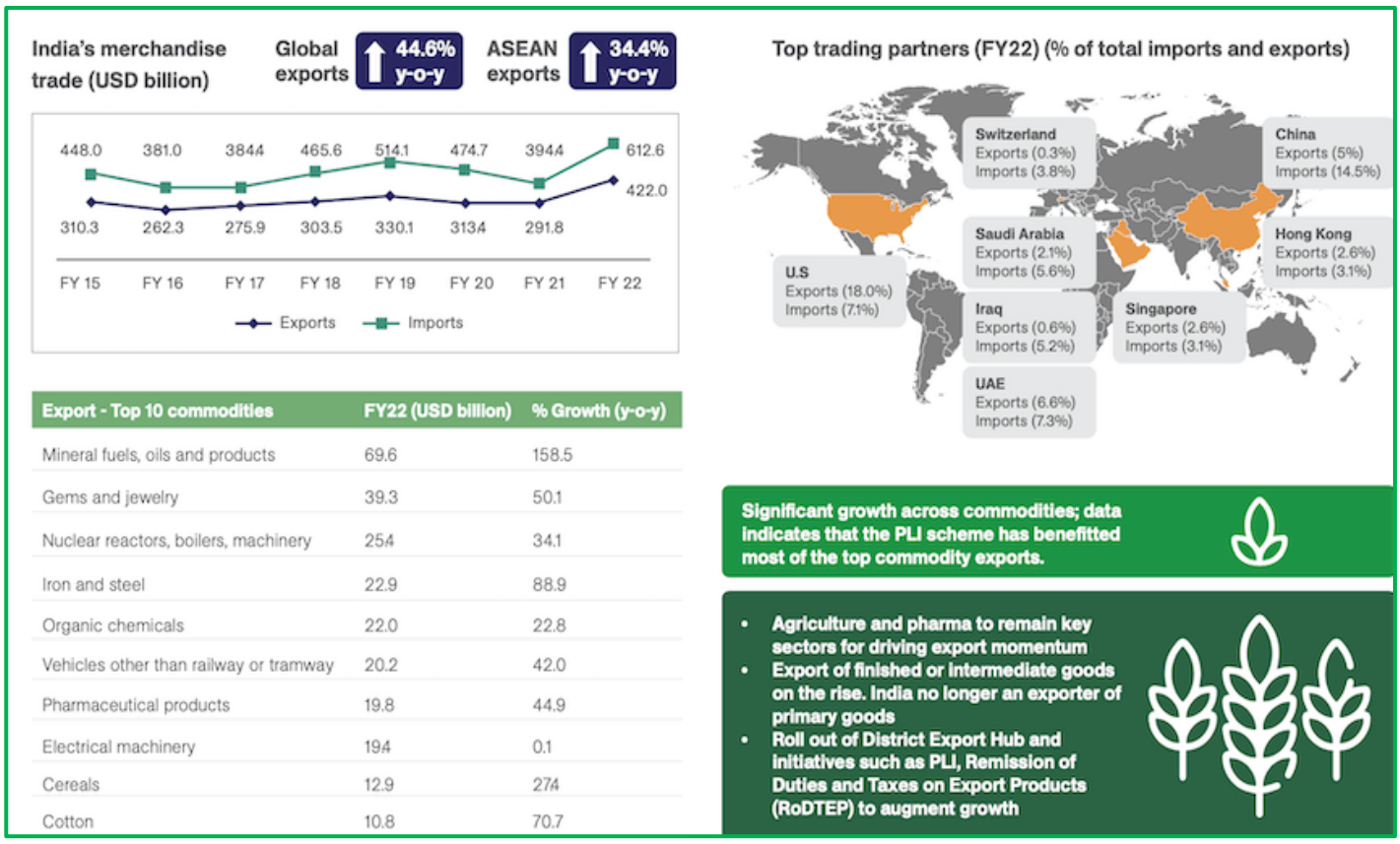
PENSION SECTOR

National Pension System (NPS)

About	**Retirement benefit scheme introduced by the Government of India to facilitate regular income post-retirement for all subscribers.**
Launch Date	January 1, 2004
Eligibility	Initially for new government recruits (except armed forces). Since May 1, 2009, provided for all citizens, including unorganized sector workers, on a voluntary basis.

Voluntary Participation	Open to all citizens of India; individuals can invest any amount in their NPS account at any time.
Permanent Retirement Account Number (PRAN)	Unique PRAN allotted to every subscriber.
Portability	NPS account or PRAN remains the same regardless of employment, city, or state changes; accessible from any location in India.
Regulatory Body	PFRDA (Pension Fund Regulatory and Development Authority) governs NPS.
Benefit Structure	No defined benefit available at exit; accumulated wealth depends on contributions made and income generated from investments.
Investment Strategy	Individual savings pooled into pension fund invested by PFRDA-regulated professional fund managers into diversified portfolios comprising Government Bonds, Bills, Corporate Debentures, and Shares.
Account Types	PRAN provides access to two personal accounts: - Tier I Account: Non-withdrawable account for retirement savings. - Tier II Account: Voluntary savings facility; withdrawals permitted at any time; no tax benefit available.
Corpus Growth	Contributions accumulated until retirement; corpus growth via market-linked returns; option to exit before retirement or opt for superannuation.

External sector- Trade investment global institutions, along with key concepts and information on the external sector

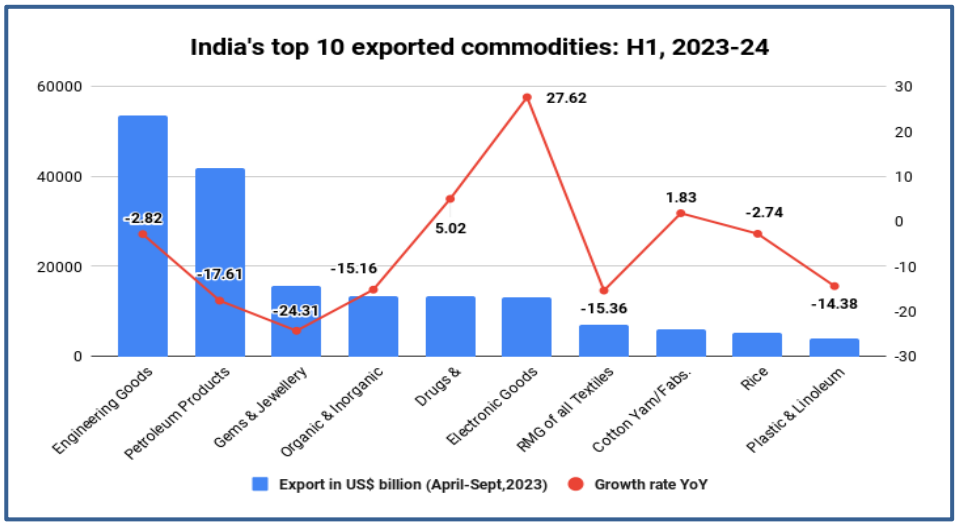


Trade status:
Trade during January 2024*

		January 2024 (USD Billion)	January 2023 (USD Billion)
Merchandise	Exports	36.92	35.80
	Imports	54.41	52.83
*Services**	Exports	32.80	28.00
	Imports	16.05	14.83
*Overall Trade (Merchandise +Services) **	Exports	69.72	63.80
	Imports	70.46	67.65
	Trade Balance	**-0.74**	**-3.85**

India's merchandise exports in Jan 2024 registers 3.12 % growth at USD 36.92 Billion over USD 35.80 Billion in Jan 2023
Main drivers of merchandise export growth in Jan 2024 include Petroleum Products, Engineering Goods, Iron Ore, Electronic Goods, Drugs & Pharmaceuticals, etc.
Petroleum Products exports in Jan 2024 register growth of 6.57% at USD 8.21 Billion from USD 7.70 Billion in Jan 2023
Engineering Goods exports in Jan 2024 record an increase of 4.20% at USD 8.77 Billion over USD 8.41 Billion in Jan 2023
Electronic Goods exports register an increase of 9.31% at USD 2.30 Billion in Jan 2024 over USD 2.11 Billion in Jan 2023
Exports of Drugs and Pharmaceutical Products in Jan 2024 recorded at USD 2.13 Billion; an increase of 6.84% over USD 2.00 Billion in Jan 2023
Exports of Agricultural products including Tobacco (47.32%), Meat, Dairy & Poultry Products (26.12%), Spices (20.50%), Cereal Preparations & Miscellaneous Processed Items (18.69%), Oil Meals (14.66%), Oil Seeds (11.34%) and Fruits & Vegetables (10.61%) continue to grow in Jan 2024
Overall trade deficit improves by 37.11% from USD 111.99 Billion in April-Jan 2022-23 to USD 70.43 Billion in April-Jan 2023-24; merchandise trade deficit improves by 9.66% from USD 229.37 Billion in April-Jan 2022-23 to USD 207.20 Billion in April-Jan 2023-24

Overall Exports (April-November 2023)	Estimated at USD 499.46 Billion, exhibiting a negative growth of (-) 1.39% over the same period in 2022.
Overall Imports (April-November 2023)	Estimated at USD 560.90 Billion, showing a negative growth of (-) 7.58% compared to April-November 2022.
Merchandise Exports (November 2023)	USD 33.90 Billion, compared to USD 34.89 Billion in November 2022.
Non-petroleum and non-gems & jewellery exports (November 2023)	USD 23.61 Billion, compared to USD 24.30 Billion in November 2022.
Services Export (November 2023)	Estimated at USD 28.69 Billion, compared to USD 26.93 Billion in November 2022.
Sectors with Positive Growth (November 2023)	15 of the 30 key sectors exhibited positive growth, including Iron Ore (2207.38%), Fruits & Vegetables (31.14%), Meat, Dairy & Poultry Products (19.91%), etc.
Trade Deficit (April-November 2023)	Estimated at USD 61.44 Billion, a decline of (-) 38.79% compared to the same period in 2022 (USD 100.38 Billion).
Foreign Trade Policy (FTP)	Unveiled and came into force on April 1, 2023. Aims at process re-engineering, facilitating ease of doing business, focusing on emerging areas, introducing Amnesty Scheme, and encouraging exports.
FTP 2023 Objectives	To achieve a total export of USD 2 trillion by 2030, with services and goods exports accounting for a trillion dollars each.



Key concepts and information on Innovation, Skill Development and Entrepreneurship

According to the India Skills Report 2015, it was found that there is a significant gap in skill development in India. Only 33% of students applying for positions in the labor market possessed the necessary skills required by employers.
The Ministry for Skill Development and Entrepreneurship (MSDE) reports that among individuals aged 15-29, merely 2% have undergone formal vocational training, while 8% have received non-formal vocational training. This indicates a scarcity of marketable skills among new entrants to the workforce in this age group.
In comparison, data from developed economies reveal higher rates of vocational training. In Korea, 96% of the population has undergone formal vocational training, while in Germany, the figure stands at 75%. Japan reports 80%, and the United Kingdom reports 68%.

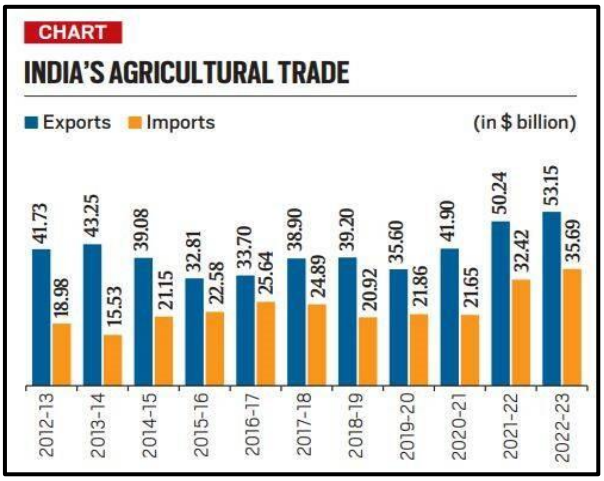
INDIA SKILLS REPORT 2024

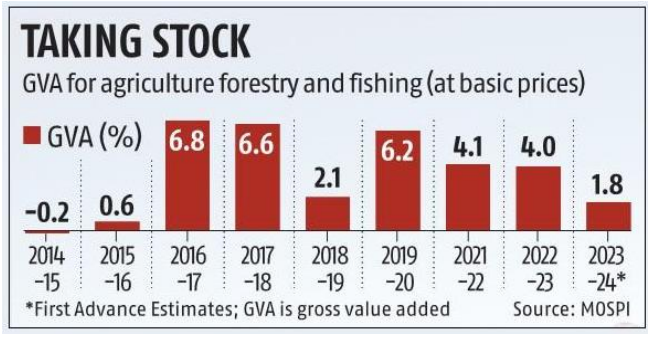
- **Theme:** Impact of AI on the Future of Work, Skilling & Mobility.
- **Partnerships:** Wheebox collaborated with various organizations including the All India Council for Technical Education (AICTE), Confederation of Indian Industry, and Association of Indian Universities to publish the report.
- **Scope:** The report evaluates the skill landscape of India and assesses the impact of Artificial Intelligence (AI) on the workforce.
- **Data Source:** The findings are based on the evaluation of 3.88 lakh candidates who participated in the Wheebox National Employability Test (WNET) conducted across academic institutions in India.

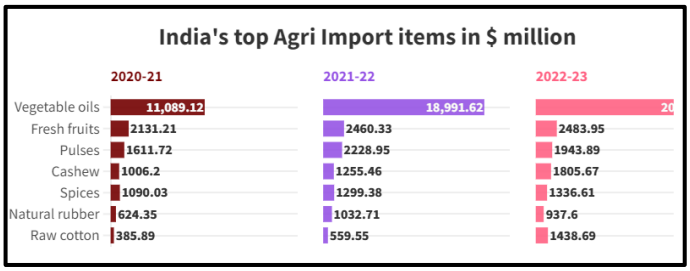
Scheme	Ministry	Key Features
Pradhan Mantri Kaushal Vikas Yojana	Ministry of Skill Development and Entrepreneurship	Offers skill development training to youth across various sectors. Aims to enhance employability and entrepreneurial skills. Provides financial rewards and placement assistance to successful candidates.
SANKALP Scheme	Ministry of Skill Development and Entrepreneurship	Seeks to enhance institutional capacity at the state level for skill development. Focuses on improving the quality and relevance of vocational education and training. Aims to strengthen the skilling ecosystem through collaboration with industries and other stakeholders.
TEJAS Skilling Project	Ministry of Skill Development and Entrepreneurship	Focuses on providing skill development training in emerging areas like artificial intelligence, machine learning, and data science. Aims to bridge the skill gap in high-growth sectors and promote innovation and entrepreneurship. Provides industry-relevant training and certification to enhance employability.
Skill India Digital	Ministry of Skill Development and Entrepreneurship	Aims to promote digital literacy and skills among Indian citizens. Offers online courses and training programs in various digital skills such as computer literacy, digital marketing, and coding. Provides certification upon completion to enhance employability in the digital economy.

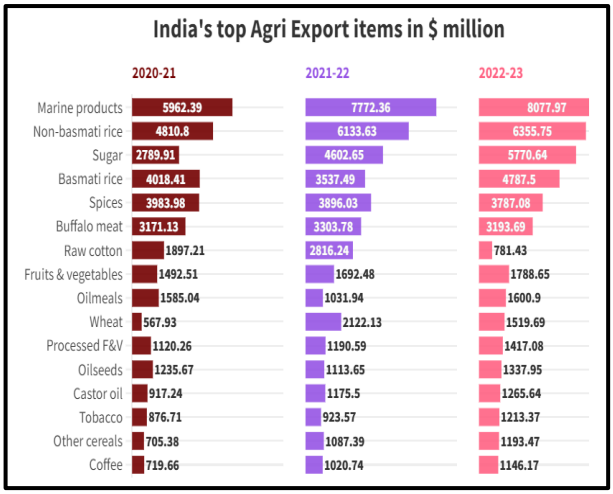
Agriculture sector- Facts, Trends, Schemes, Policies, Acts

- India rank 2nd in the world in agriculture production. India is one of the major players in the agriculture sector worldwide and it is the primary source of livelihood for ~55% of India's population.
- India's world rank in services and industry sector is 9th and 5th respectively.
- Indian agricultural production has increased from 87 USD bn to 459 USD bn in the past 15 years (12% annual growth).
- Foodgrain production in India touched 330.5 million metric tonnes (MT) in 2022-23 (3rd Advance Estimate). India is the world's 2nd largest producer of food grains, fruits and vegetables and the 2nd largest exporter of sugar.
- Globally India ranks 9th for the agricultural exports.
- India is the largest producer of milk, coconuts, black tea, ginger, and turmeric; and the 2nd largest producer of cashew nuts, and tea in the world.







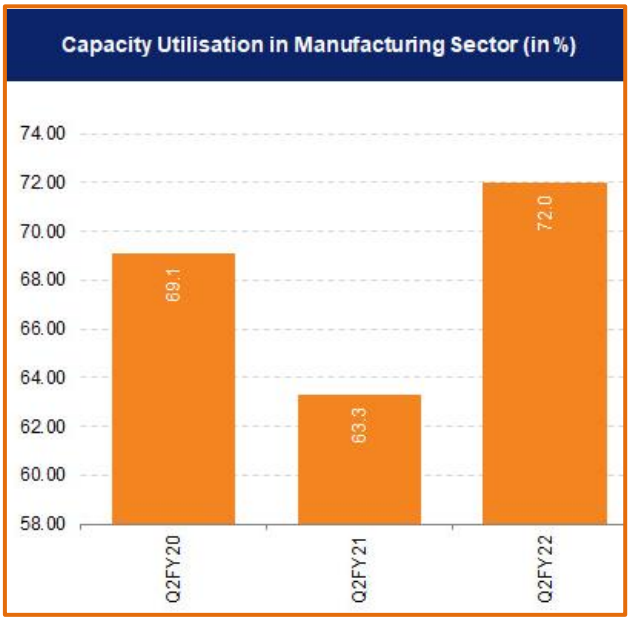


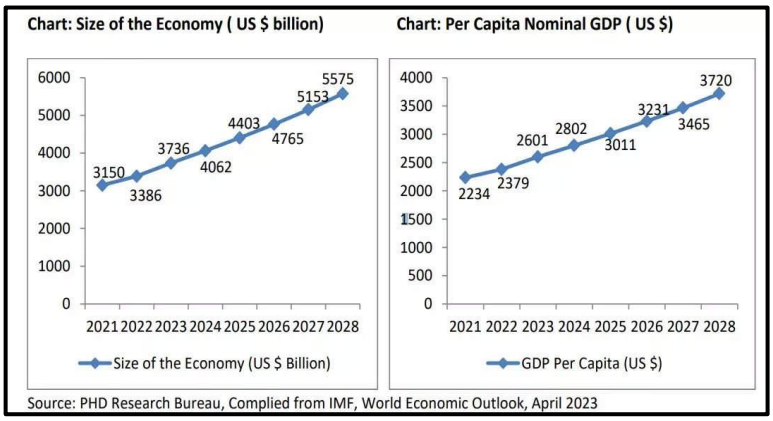
Government Initiatives	Key Features
Union Budget 2023-24	Rs. 1.24 lakh crore allocated to Department of Agriculture, Cooperation, and Farmers' Welfare. Rs. 8,514 crore allocated to Department of Agricultural Research and Education. Focus on digital initiatives like National e-Governance Plan in Agriculture (NeGP-A).
Soil Health Card Site Update	Integration with Geographic Information System (GIS) for test results mapping. Mobile application for sample collection since April 2023.
Agricultural Technology Management Agency (ATMA) Scheme	Implemented in 704 districts across 28 states and 5 UTs. Aims to educate farmers and support the adoption of modern agricultural technologies and practices.
Agricultural Marketing Infrastructure (AMI)	42,164 storage infrastructure projects assisted since April 2001, with a capacity of 740.43 Lakh MT. Under AMI sub-scheme of ISAM.
Cluster Farming Pilot Program	Permission granted to five private companies for cluster farming of specified horticulture crops on trial basis. Total investment of US$ 91.75 million in approximately 50,000 hectares.
Kisan Drones Initiative	Planned for crop assessment, digitization of land records, and spraying of insecticides and nutrients. Aimed at improving agricultural practices and productivity.
Krishi Vigyan Kendras	Network of 729 Kendras established at district level. Focus on disseminating newer agricultural technologies and practices to farmers.
Dairy Sahakar Scheme	Launched in October 2021 to support dairy sector in Anand, Gujarat. Aims to boost dairy production and enhance livelihoods in the sector.
Krishi UDAN 2.0 Scheme	Launched in October 2021 to provide air transport assistance for agricultural produce. Focus on Northeast and tribal regions to benefit farmers and freight forwarders.
Production-Linked Incentive Scheme for Food Processing Industry (PLISFPI)	Approved with a budget of US$ 1.46 billion to develop food manufacturing champions. Aims to support Indian food brands in international markets.
Pradhan Mantri Krishi Sinchai Yojana (PMKSY)	Launched with Rs. 50,000 crore investment for irrigation source development. Aims to provide a permanent solution to drought and enhance agricultural productivity.
Digital Agriculture Mission	Aimed at implementing agriculture projects based on new technologies like AI, blockchain,

2021-25	and drones. Focus on improving efficiency and sustainability in agriculture.
Pradhan Mantri Kisan Samman Nidhi Yojana (PM-Kisan)	Rs. 65,000 crore allocated in Union Budget 2021-22 for PM-Kisan. Aimed at providing income support to farmers through direct cash transfers.
Agriculture Export Policy, 2018	Aimed to increase agricultural exports to US$ 60 billion by 2022 and US$ 100 billion thereafter. Focus on creating a stable trade policy regime to boost exports.
Computerisation of PACS	Initiative to digitize 63,000 Primary Agricultural Credit Societies with Rs. 2,516 crore investment. Aims to enhance access to credit and improve efficiency in rural credit system.
Global Hub for 'Shree Anna'	Support to Indian Institute of Millet Research, Hyderabad as Centre of Excellence for millet research and technologies. Aimed at promoting millets internationally.

Industry sector- Facts, Trends, Schemes, Policies, Acts

- India is the third most sought-after manufacturing destination in the world and has the potential to export goods worth US$ 1 trillion by 2030
- In 2023, the industrial and logistics sector experienced a notable increase in absorption, reaching 49.4 million sq ft, reflecting a growth of 6.7% compared to the 2022 absorption of 46.3 million sq ft, as reported by Savills India.
- The Indian manufacturing industry generated 16-17% of India's GDP pre-pandemic and is projected to be one of the fastest growing sectors.
- By 2030, Indian middle class is expected to have the second-largest share in global consumption at 17%.
- The manufacturing GVA at current prices was estimated at US$ 110.48 billion in the first quarter of FY24.



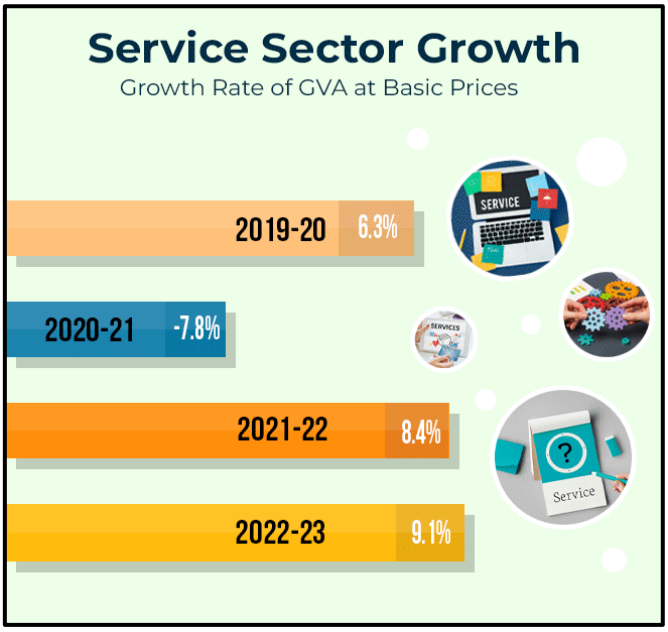


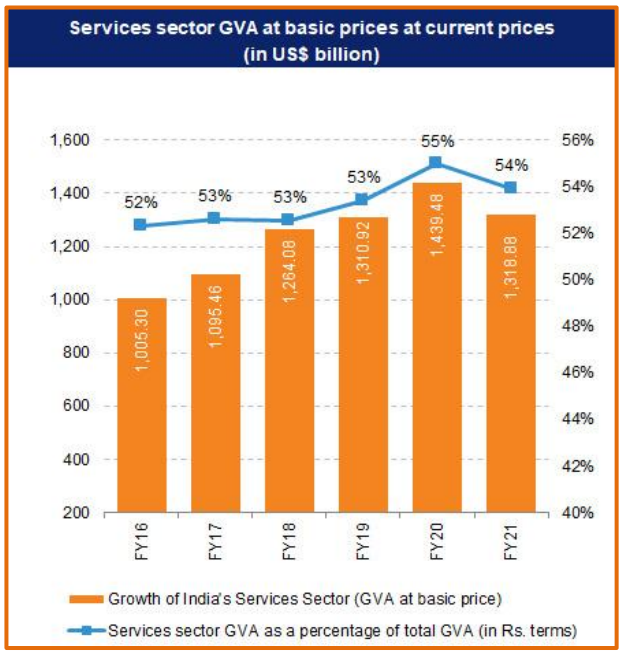
Government Initiatives	Key Features
Union Budget 2023-24	Startups can deduct up to 100% of profits until March 31, 2024. Income tax rate for new co-operative societies engaged in manufacturing reduced to 15%. Upper limit for presumptive taxation raised for MSMEs and professionals. Fertilizer subsidy expenditure estimated at Rs. 1,75,100 crore. One crore farmers to adopt natural farming with 10,000 Bio-Input Resource Centres set up.
Ministry of Defence Target	Target of US$ 25 million turnover in aerospace and defence manufacturing by 2025, including US$ 5 billion exports. Introduction of 'Buy {Indian-IDDM}' category in Defence Procurement Procedure. 595 Industrial Licences issued in Defence Sector.
Electronics Manufacturing	By 2030, electronics manufacturing sector expected to reach US$ 300 billion. Various initiatives like Make in India, Digital India, Startup India, and PLI schemes boosting ESDM sector. Introduction of SPECS to strengthen electronic products manufacturing value chain. Budgetary allocation for electronics manufacturing and PLI for semiconductor manufacturing in Union Budget 2022-23.
National Logistics Policy	Launched in September 2022 by Prime Minister Narendra Modi. Aims to ensure quick last-mile delivery and resolve transport-related challenges.
Start-up India Seed Fund	Approved Rs. 3 crore for Atal Incubation Centre under Start-up India Seed Fund scheme in

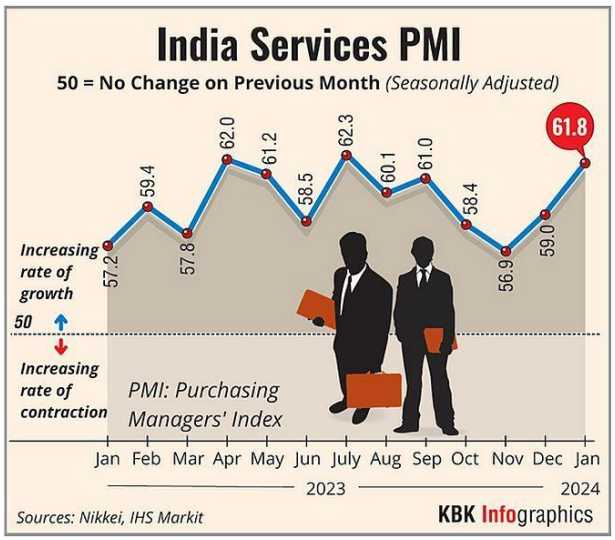
	November 2021.
Production-Linked Incentives	PLI scheme launched for textiles sector in September 2021 with an estimated outlay of Rs. 10,683 crore. PLI schemes for chemical cell batteries and textiles announced earlier to boost manufacturing. MITRA scheme to establish Mega Investment Textiles Parks.
Operation Green Expansion	Operation Green scheme expanded to cover 22 perishable products to boost exports from agricultural sector. Infrastructure projects for horticulture products under Operation Green.

Service sector- Facts, Trends, Schemes, Policies, Acts

- India is the export hub for software services. The Indian IT outsourcing service market is expected to witness 6–8% growth between 2021 and 2024.
- India's IT and business services market is projected to reach US$ 19.93 billion by 2025.21 and 2024.
- The service sector has over 50% contribution to India's GDP, and it has witnessed a growth of 10.8% during the first half of 2021-22. The service sector has emerged as the highest employment generator with a 5-7% y-o-y growth in 2022.
- The share of the services sector accounted for 57% of the total GVA in FY24 (April-September) as per advance estimates. The services category ranked first in FDI inflows, as per data released by the Department for Promotion of Industry and Internal Trade (DPIIT).
- The services sector's GVA increased by 6.5% in the third quarter (2022-23), and it was the main driver of aggregate GVA growth (accounting for approximately 84% of total GVA growth).





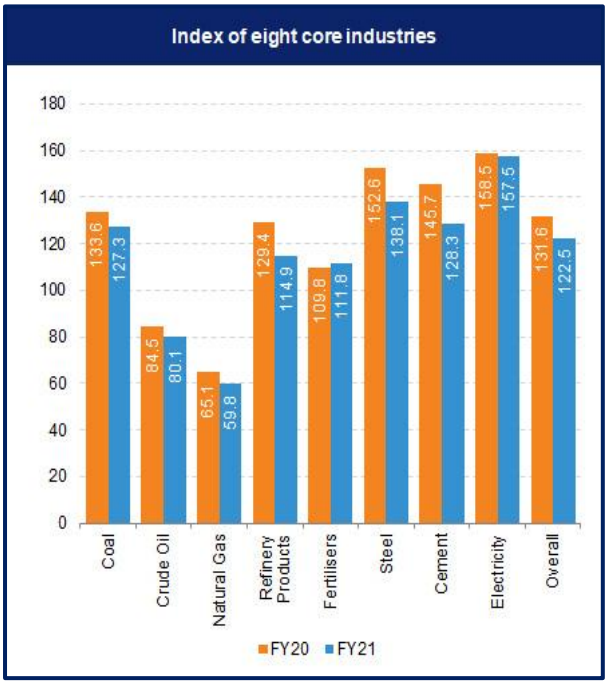


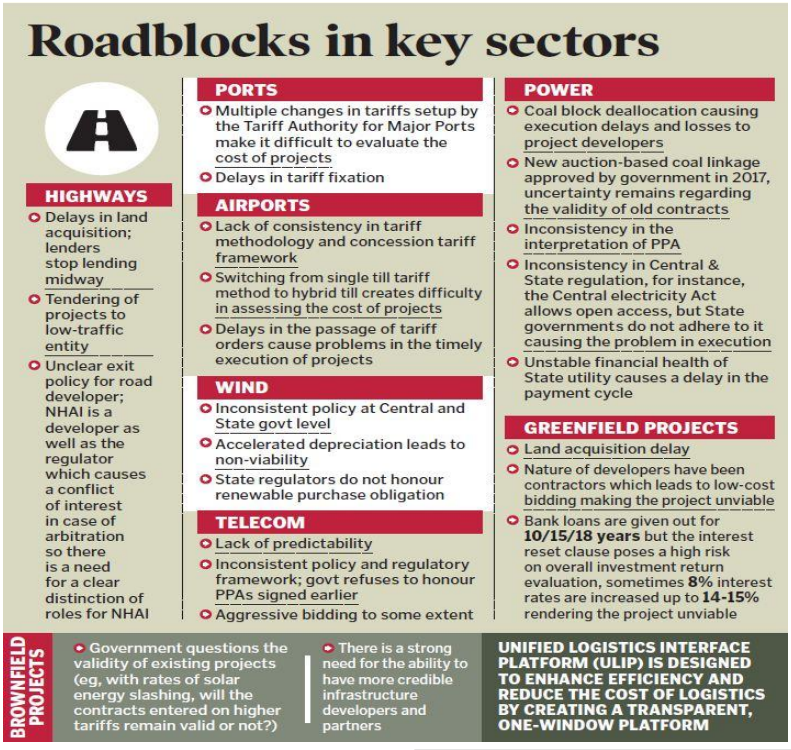
Government Initiatives	Key Features
Action Plan for Champion Sectors in Services	Focused attention on 12 identified Champion Services Sectors to boost growth and development.
Tourism and Hospitality Sector	Expected to earn US$ 50.9 billion as visitor exports by 2028, indicating significant growth potential.
University Grants Commission (UGC)	Total of 1,072 universities in the country, including state, deemed to be, central, and private universities.
Pradhan Mantri Jan Dhan Yojana (PMJDY)	47.39 crore bank accounts opened with deposits totaling Rs. 1.76 lakh crore as of November 9, 2022.
Production-Linked Incentive (PLI)	Launched to boost manufacturing, attract investment, and generate employment in the

Scheme for Telecom	telecom sector.
Mahatma Gandhi National Fellowship (Phase II)	Empowering students and promoting skill development through fellowship programs.
PM Ayushman Bharat Health Infrastructure Mission	Strengthening critical healthcare infrastructure across India over the next four to five years.
Healthcare Infrastructure Credit Incentive Programme	Planned Rs. 50,000 crore programme to boost healthcare infrastructure with government guarantee.
BharatNet Programme	Allocation of Rs. 7,000 crore in Union Budget 2021-22 to enhance digital connectivity across India.
FDI Limit for Insurance Companies	Raised to 74% for insurance companies and 100% for insurance intermediaries to attract more foreign investment.
Pradhan Mantri Kaushal Vikas Yojana (PMKVY) Phase III	Launched in 600 districts offering 300+ skill courses, focusing on new-age and COVID-related skills training.
Cooperation with Japan in Telecom	MoU signed to strengthen cooperation in 5G technologies, telecom security, and submarine optical fibre cable systems.
Contribution of Digital Economy to GDP	Target set to increase digital economy contribution to 20% of GDP in the next five years.
National Digital Health Mission (NDHM)	Initiative to provide a unique health ID to every Indian and revolutionize healthcare accessibility.
Tamil Nadu Electronics & Hardware Manufacturing Policy	Aims to increase state's electronics output to US$ 100 billion by 2025, focusing on upskilling and training.
National Broadband Mission	Objective to provide broadband access to all villages in India by 2022 for enhanced connectivity.

Infrastructure sector- Key concepts and information on Infrastructure along with recent Schemes related to it

- India has to enhance its infrastructure to reach its 2025 economic growth target of US$ 5 trillion.Infrastructure is a key enabler in helping India become a US $26 trillion economy.
- India currently has the fifth-largest metro network in the world and will soon overtake advanced economies such as Japan and South Korea to become the third-largest network.
- Finance minister Nirmala Sitharaman's Budget for 2023-24 underlines sustained focus on the northeast for "inclusive development" as one of the seven priorities, which act as the 'Saptarishi' guiding the government "through the Amrit Kaal".
- The US$ 1.3 trillion national master plan for infrastructure, Gati Shakti, has been a forerunner to bring about systemic and effective reforms in the sector, and has already shown a significant headway.





Government Initiatives and Investments	Key Features
Budget 2023-24	Capital investment outlay for infrastructure increased by 33% to Rs. 10 lakh crore. Significant focus on construction of national highways and railways.
Interest-Free Loans to State Governments	Extended for one more year with enhanced outlay of Rs. 1.3 lakh crore to spur infrastructure investment.
Revival of Airports and Regional Connectivity	50 additional airports, heliports, water aerodromes, and advance landing grounds to be revived.
Urban Infrastructure Development Fund	UIDF to be established using priority sector lending shortfall for infrastructure development in Tier 2 and Tier 3 cities.
Artificial Intelligence Centers of Excellence	Set up in top educational institutions to promote AI in India and harness its benefits for the economy.
Digital Public Infrastructure for Agriculture	Establishment to provide inclusive, farmer-centric solutions through digital services for agriculture.
National Digital Library for Children	Set up to facilitate access to quality books across geographies and promote reading among children.
Pradhan Mantri Awas Yojana (PMAY)	Budget allocation increased significantly to address housing needs.
FDI in Construction Development	Substantial investments in construction and infrastructure sectors.
Green Energy Initiatives	Initiatives by Larsen & Toubro and BHEL for renewable energy and hydrogen.
National Highway Projects	Numerous highway projects inaugurated and initiated for improved connectivity.
National Infrastructure Pipeline (NIP)	Expansion and completion of various infrastructure projects under NIP.
PM GatiShakti National Master Plan	Implementation for multimodal connectivity and integrated infrastructure development.
Quadrilateral Economic Forum	Established to focus on infrastructure projects in the region and strengthen bilateral cooperation.
Rooftop Solar Programme Phase II	Aimed at promoting rooftop solar installations, especially in rural areas.
Mega Investment Textiles Parks (MITRA)	Scheme launched to establish textile parks for enhancing infrastructure in the textile sector.
MITRA Scheme for Textile Parks	Establishment of seven textile parks over three years to boost the textile sector.

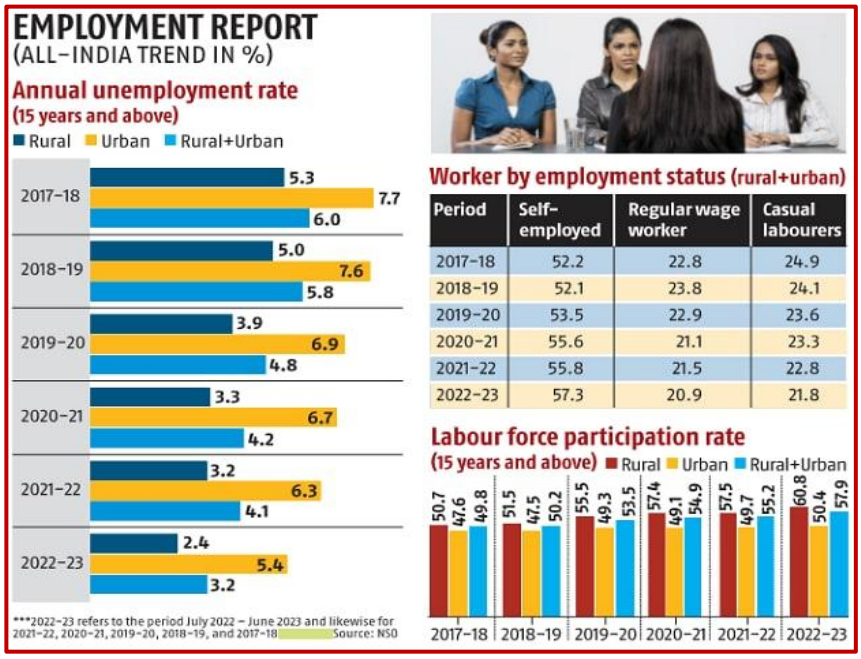
Energy Sector, including Power, Coal, Oil, Gas, and others- Facts and Schemes

- India is the 3rd largest energy consuming country in the world.
- India stands 4th globally in Renewable Energy Installed Capacity (including Large Hydro), 4th in Wind Power capacity & 4th in Solar Power capacity (as per REN21 Renewables 2022 Global Status Report).
- The country has set an enhanced target at the COP26 of 500 GW of non-fossil fuel-based energy by 2030. This has been a key pledge under the Panchamrit. This is the world's largest expansion plan in renewable energy.
- India's installed non-fossil fuel capacity has increased 396% in the last 8.5 years and stands at more than 179.57 GW (including large Hydro and nuclear), about 42% of the country's total capacity (as of November 2023). India saw the highest year-on-year growth in renewable energy additions of 9.83% in 2022.
- The installed solar energy capacity has increased by 30 times in the last 9 years and stands at 73.31 GW as of December 2023. India's solar energy potential is estimated to be 748 GWp as estimated by National Institute of Solar Energy (NISE).
- The installed Renewable energy capacity (including large hydro) has increased by around 128% since 2014.
- Up to 100% FDI is allowed under the automatic route for renewable energy generation and distribution projects subject to provisions of The Electricity Act 2003.
    - Wind power: 44.73 GW
    - Solar Power: 73.31 GW
    - Biomass/Co-generation: 10.2 GW
    - Small Hydro Power: 4.98 GW
    - Waste To Energy: 0.58 GW
    - Large Hydro: 46.88 GW

Government Initiatives	Key Features
Union Budget 2022-23	Allocation of US$ 885 million (Rs. 7,327 crore) for solar power sector, issuance of sovereign green bonds, and infrastructure status to energy storage systems.
Green Energy Corridor	Initiatives for renewable power evacuation and grid reshaping. Construction of 8651 ckm of intra-state transmission lines and charging of 19,558 MVA intra-state substations.

National Portal for Rooftop Solar (RTS)	Development of portal for residential consumers to apply for rooftop solar without waiting for Discom. Total applications received for 117 MW solar capacity since launch in July 2022.
Production Linked Incentive Scheme (Tranche II)	Approved scheme with US$ 2.35 billion (Rs. 19,500 crore) outlay for High Efficiency Solar PV Modules.
Smart Meter Deployment	Deployment of over 51.62 lakh smart meters under National Smart Grid Mission (NSGM), with further 61.13 lakh to be deployed.
Electrification Schemes	Support from schemes like DDUGJY, UDAY, and IPDS for increasing electrification in the country.
Loan Limit Increase	Parliamentary recommendation to increase loan limit for renewable energy sector under priority sector lending.
World Bank Loan Approval	Approval of US$ 135 million loan for West Bengal to improve electricity supply reliability.
PLI Scheme Enhancement	Future plans to increase funding under PLI scheme for solar cells and module manufacturing to Rs. 24,000 crore.
Building Energy Efficiency Programme (BEEP)	EESL partnership with private sector energy service companies to scale up BEEP.
Saubhagya Scheme	Launch of scheme for achieving universal household electrification, with 2.82 crore households electrified as of March 2021.

POVERTY AND UNEMPLOYMENT



FACTS RELATED TO POVERTY AND UNEMPLOYMENT

Unemployment Trends	Open unemployment: 2.1% in 2012, tripled to 6.1% in 2018, highest in 45 years. Total unemployed individuals increased from 1 crore in 2012 to 3 crores in 2018. Youth unemployment surged across education levels, notably higher education.
Education Quality and Unemployment	New Education Policy 2020 aimed to increase higher education enrollment from 27% to 50% by 2035 despite rising graduate unemployment. India Skills Report 2021 indicated nearly half of graduates are unemployable, signaling a decline in education quality.
Skill Development Initiatives	National Skill Development Mission aimed to skill 40 crore workers by 2022. Pradhan Mantri Kaushal Vikas Yojana reported limited success; significant participants remained unemployed.
Structural Changes and Reversals	Share of agriculture in GDP and absolute number of farm workers increased post 2020, contrary to promised structural change. Goal of increasing employment share in manufacturing and its GDP contribution not achieved.
Economic Slowdown	Economic growth slowed to 5.7% over nine years, down from 8% per annum (2004-2014). Decline in non-farm job growth affecting real wages and private consumption. Challenges in investment to

	GDP and exports contributing to structural economic slowdown.
Government Expenditure and Fiscal Situation	Government efforts to reduce fiscal deficit led to a silent fiscal crisis. Corporate tax rate reduction in 2019 increased government debt to GDP from <60% to 81%.
Employment Data Controversies	Discrepancies between employment data sources (CMIE, PLFS) caused controversies.
Government Narratives and Spin	Government narratives highlighted EPFO registrations and MUDRA loans as job growth indicators, questioned for validity.
Demographic Dividend Concerns	Analysis suggests India may be facing a 'lost decade' of job growth with limited time for the demographic dividend to end.

GOVERNMENT SCHEMES

Scheme	Objective	Ministry	Launch Date
National Skill Development Mission	Train a minimum of 300 million skilled individuals by 2022.	Ministry of Skill Development and Entrepreneurship	Not specified
Pradhan Mantri Kaushal Vikas Yojana (PMKVY)	Certifies 10,00,000 youth for existing skills and imparts skills to 1,00,00,000 youth between 2016 to 2020.	Ministry of Skill Development and Entrepreneurship	Not specified
Beti Bachao Beti Padhao Scheme	Tackle the declining child sex ratio and empower girls in India.	Ministry of Women and Child Development	Not specified
National Heritage City Development and Augmentation Yojana	Integrate urban planning, economic growth, and heritage conservation for heritage cities.	Ministry of Housing and Urban Affairs	January 21, 2015
Financial Inclusion Schemes	Pradhan Mantri Jeevan Jyoti BimaYojna, Pradhan Mantri Suraksha Bima Yojana, Atal Pension Yojana. Under Jan Suraksha Yojana: Focus on insurance and pension.	Ministry of Finance	Not specified
Pradhan Mantri Awaas Yojana – Gramin	Enable rural residents to build new houses or enhance existing ones.	Ministry of Rural Development	Not specified
Swaran Jayanti Gram Swaraj Yojana	Self-employment program for the rural poor.	Ministry of Rural Development	April 1999
Pradhan Mantri Gram Sadak Yojana	Connect all unconnected habitation in rural areas through robust all-weather roads.	Ministry of Rural Development	December 25, 2000
Pradhan Mantri Jan Dhan Yojana	Achieve financial inclusion by providing bank accounts and other financial facilities.	Ministry of Finance	Not specified
Sarva Shiksha Abhiyan	Provide elementary education to all children aged six to 14, with the objective of universal retention by 2010.	Ministry of Human Resource Development	2000-01
Mission Indradhanush	Dedicated to the immunization of children and pregnant mothers.	Ministry of Health and Family Welfare	Not specified
One Nation One Ration Card Scheme	Enable migrant workers to access affordable food grains with a single ration card across the country.	Ministry of Consumer Affairs, Food and Public Distribution	June 1, 2020
Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)	Provide wage employment to rural individuals, initially focusing on the hundred most backward districts in India, later expanding to cover all districts.	Ministry of Rural Development	February 2, 2006

IMPORTANT NATIONAL ORGANISATIONS

Organization	Functions
RBI	The Reserve Bank of India (RBI) is India's central banking institution responsible for regulating the country's monetary and financial system. Its functions include issuing currency, managing foreign exchange reserves, regulating and supervising banks

	and other financial institutions, formulating monetary policy to maintain price stability and economic growth, and promoting the development of financial markets. RBI also acts as the banker to the government and performs various developmental roles to support inclusive economic growth.
FSSAI	The Food Safety and Standards Authority of India (FSSAI) is an autonomous body under the Ministry of Health and Family Welfare, Government of India. It is responsible for setting standards for food products, regulating their production, storage, distribution, sale, and import to ensure their safety and quality. FSSAI also promotes public awareness about food safety and trains stakeholders in food safety management. Its goal is to safeguard public health and ensure consumers' right to safe and wholesome food.
TRAI	The Telecom Regulatory Authority of India (TRAI) is a statutory body established under the Telecom Regulatory Authority of India Act, 1997. It is responsible for regulating the telecommunications sector in India to ensure transparency, fair competition, and consumer protection. TRAI formulates regulations, tariffs, and guidelines for the telecommunication industry, resolves disputes, promotes orderly growth, and monitors quality of service to foster a conducive environment for the development of telecommunications infrastructure and services.
FCI	The Food Corporation of India (FCI) is a government-owned corporation established under the Food Corporation Act, 1964. It functions under the Ministry of Consumer Affairs, Food and Public Distribution, Government of India. FCI is responsible for procuring, storing, and distributing food grains across the country to ensure food security and buffer stock management. It implements various government food policies and schemes such as the Public Distribution System (PDS) and Minimum Support Price (MSP) operations.
SEBI	The Securities and Exchange Board of India (SEBI) is the regulatory authority for the securities market in India. It was established under the Securities and Exchange Board of India Act, 1992. SEBI's primary functions include regulating stock exchanges, protecting the interests of investors, promoting the development of the securities market, and regulating intermediaries such as stockbrokers, merchant bankers, and mutual funds. SEBI also enforces securities laws, investigates violations, and promotes investor education and awareness.
NABARD	The National Bank for Agriculture and Rural Development (NABARD) is an apex development financial institution in India, established on the recommendations of the Shivaraman Committee. NABARD's main focus is to promote sustainable agriculture and rural development by providing credit, refinance, and other financial services to agriculture, rural industries, and rural infrastructure sectors. It also supports rural livelihoods, rural infrastructure development, and institutional capacity building for rural prosperity.
ICAI	The Institute of Chartered Accountants of India (ICAI) is a statutory body established by an Act of Parliament, the Chartered Accountants Act, 1949. ICAI regulates the profession of chartered accountancy in India and maintains high professional standards by prescribing qualification requirements, conducting examinations, and regulating the conduct of its members. It also promotes ethics, continuous professional development, and excellence in the accountancy profession through education, training, and research initiatives.
NFRA	The National Financial Reporting Authority (NFRA) is a regulatory authority established under the Companies Act, 2013. NFRA's primary role is to oversee and regulate the quality and reliability of financial reporting by certain classes of companies in India, including listed companies, large unlisted public companies, and specified classes of private companies. NFRA sets accounting and auditing standards, conducts investigations into misconduct or non-compliance, and takes disciplinary action against professionals or entities for violations.

NITI AAYOG VS PLANNING COMMISSION

Parameters	NITI Aayog	Planning Commission
Function	NITI Aayog has not been given the mandate or powers to impose policies on States. NITI Aayog is basically a **think-tank or an advisory body.**	The Planning Commission had the power to impose policies on States and for the projects approved by the Planning Commission.
Allocation of Funds	The powers for allocation of funds have not been given to the NITI Aayog. The powers are with the **Finance Ministry.**	The Planning Commission had the **power to allocate funds** to the State Governments and various Central Government Ministries for various programmes and projects at National and State Levels.
Role of State Governments	In NITI Aayog, State Governments have to play a more **proactive role.**	State Governments did not have much role to play apart from taking part in the meetings. The State Government's role was confined to the **National Development Council**.
Governing Council	The Governing Council of NITI Aayog has **Lieutenant Governors of Union Territories and State Chief Ministers**.	The **National Development Council** had **Lieutenant Governors and State Chief Ministers. Planning Commission had to report to the National Development Commission.**
Constitutional Backing	NITI Aayog is an **Executive Body** as it is not mentioned in the Constitution of India, and it was not established by an Act of Parliament.	The **now-defunct Planning Commission** was also an Executive Body.

IMPORTANT CONVENTION/TREATY

Trade Agreements	Focus Areas
India-UAE Comprehensive Economic Partnership Agreement (CEPA)	Gems and jewelry, textiles, agriculture
India-Australia Economic Cooperation and Trade Agreement (ECTA)	Education, services, resources
India-UK Free Trade Agreement (FTA)	Pharmaceuticals, automobiles, renewable energy
Regional Comprehensive Economic Partnership (RCEP)	Increased trade, market access, economic integration
India-Mercosur Preferential Trade Agreement (PTA)	Market access for goods and services
Investment Agreements	
India-EU Bilateral Investment and Taxation Agreements (BITA and DTAA)	Investment flows, double taxation issues
India-USA Bilateral Investment Treaty (BIT)	Uncertain future
Regional Economic Cooperation	
South Asian Association for Regional Cooperation (SAARC)	Regional trade, investment, economic cooperation
Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)	Tourism, trade, transport, connectivity

IMPORTANT INTERNATIONAL ORGANISATIONS

Bretton Woods System	First system controlling exchange rates between countries, requiring each to maintain currency exchange within a gold-based predetermined range. IMF and World Bank designated as Bretton Woods Institutions. Founded in December 1945, serving as pillars for international capital financing and trade.
World Bank	International financial institution lending to low- and middle-income nations for capital projects. Headquarters in Washington D.C., US. Comprises 189 countries and five constituent organizations. International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA) known as World Bank.
International Monetary Fund	Organization of 190 countries promoting global monetary cooperation, financial stability, trade facilitation, employment, economic growth, and poverty reduction. Established on December 27, 1945, with 29 member countries. Launched financial operations on March 1, 1947.
Asian Development Bank	Multilateral institution established in 1966, headquartered in Manila, Philippines. Comprises 67 Asian and Pacific members. Invests in infrastructure, health, and government administration to aid climate change mitigation and natural resource management.
New Development Bank	Formerly known as the BRICS Development Bank, established by BRICS countries (Brazil, Russia, India, China, and South Africa) in 2014 at the 6th BRICS Summit in Fortaleza, Brazil. Promotes infrastructure and sustainable development in BRICS and other emerging economies, emphasizing innovation and technology. Headquarters located in Shanghai, China.
Asian Infrastructure Investment Bank	Multilateral development bank aiming to improve Asia's social and economic conditions. Regulated by the AIIB Articles of Agreement, effective since December 25, 2015, with 57 founding members. Established in January 2016, headquartered in Beijing, China.
Organisation for Economic Co-operation and Development (OECD)	Group of 38 countries collaborating to enhance economic development. Established in 1961 to foster global trade and economic progress. Provides member countries a platform to exchange policy experiences, seek solutions to common challenges, share best practices, and coordinate domestic and international policies. Official Permanent Observer to the UN, headquartered in Paris, France.
G20	Informal organization comprising 19 countries, the EU, and officials from the World Bank and IMF. Membership includes major advanced and emerging economies, representing significant global population, GDP, investment, and commerce. Members: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, South Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, UK, US, and EU.
G7	Group of the world's seven most advanced economies. Members: Canada, US, UK, France, Germany, Japan, and Italy. Informal group meeting annually to discuss global economic policy, international security, and energy policy.
World Trade Organization	Sole international organization managing international trade rules. Responsible for facilitating seamless global trade and resolving trade-related disputes. Comprises 164 members and 23 observer countries. Operates under the principle of non-discrimination, aiming to reduce trade barriers through negotiation for lower production costs, prices, increased choice, and ultimately, lower cost of living.
G33	The G33 (or the Friends of Special Products in agriculture) is a coalition of developing and least developed countries. Despite the name, there are currently 47 member nations. Some of the main countries include India, China, Indonesia, Pakistan, Nigeria, Philippines, Turkey, Tanzania, Kenya, and South Korea. It was established prior to the 2003 Cancun ministerial conference that have coordinated during the Doha Round of World Trade Organization (WTO) negotiations, specifically in regard to agriculture. Dominated by India, the group has "defensive" concerns regarding agriculture in relation to WTO negotiations, and seeks to limit the degree of market opening required of developing countries.

IMPORTANT REPORTS, RATIOS, INDICES

Economic Indicator	Projection/Status
GDP Growth	Projected: 6.9% - 7.2% in FY 2023-2024, 6.4% - 6.7% in the following year
Inflation	Expected: High inflation till the second half of FY 2024 due to high food and volatile oil prices
Current Account Deficit (CAD)	Trend: Narrowed to 1.9% of GDP in FY 2023, further decrease anticipated in the next fiscal
Foreign Exchange Reserves	Status: Nearly doubled to US$568 billion
Fiscal Deficit	Target: 5.9% of GDP in FY 2024
Government Spending	Estimate: Rise by about 4% year-on-year in FY 2023-2024, compared to 0.1% increase in the previous FY
Private Investment	Projection: Expected to rise by 10.3% in FY 2023-2024, lower than 11.4% rise in the previous year
Manufacturing	Estimate: Expected to expand by 6.5% year-on-year in FY 2023-2024, compared to 1.3% a year ago
Consumer Spending	Projection: Private consumption to expand by 4.4% year-on-year, compared to 7.5% in the previous FY
Rural Employment Program	Initiative: Increased allocation towards the rural employment program
Food Subsidies	Observation: Higher cooking gas subsidies and extension of food subsidy program
Bank Balance Sheets	Status: Indian companies have well-capitalized bank balance sheets
Trade Deficit	Status: India has the lowest external-debt-to-GDP ratio among its peers, around 18%
Business Leaders' Outlook	Outlook: More than 9 in 10 Indian business leaders expect increased profits and revenues in 2024

Reports	
Economic Survey 2022-23	Annual document outlining the state of the Indian economy
Reserve Bank of India (RBI) Annual Report	Comprehensive report covering the central bank's activities
World Bank India Development Update	Biannual report analyzing India's economic performance
International Monetary Fund (IMF) India Country Report	Regular assessment of India's economic stability and outlook
NITI Aayog Strategy Document for India 2025	Long-term vision document outlining key economic and social goals
Indices	
World Bank Doing Business Report	Provides insights into India's business environment (Discontinued after 2020)
World Economic Forum Global Competitiveness Index	Ranks countries based on their competitiveness
Mo Ibrahim Index of African Governance	Examines governance quality in African countries
Sustainable Development Goals (SDG) India Index	Tracks India's progress towards achieving the UN's SDGs
Human Development Index (HDI)	Assesses human development based on life expectancy, education, and living standards

Ratios	
Fiscal Deficit	Ratio of government expenditure to revenue, indicating borrowing needs
Current Account Deficit	Difference between value of imports and exports of goods and services
Debt-to-GDP Ratio	Total national debt compared to gross domestic product, reflecting debt burden
Gini Coefficient	Measures income inequality within a country
Inflation Rate	Change in price of goods and services over time, impacting purchasing power

IMPORTANT COMMITTEES

Committee Name	Purpose / Focus
Kelkar Committee	Tax reforms, fiscal consolidation, and review of direct and indirect taxes
Rangarajan Committee	Financial sector reforms, including banking and insurance sector

	restructuring
Narasimham Committee	Banking sector reforms, liberalization, and deregulation
Abid Hussain Committee	Small-scale industries
Chakravarty Committee	Agricultural credit and rural banking reforms
Tendulkar Committee	Estimation of poverty and revision of poverty line
Sarkaria Commission	Centre-state relations and inter-state disputes
T.S.R. Subramanian Committee	Education policy reforms and suggestions for the New Education Policy
Malhotra Committee	Insurance sector reforms and liberalization
Fazal Ali Commission	Reorganization of states and formation of linguistic states
Eradi Committee	Tax reforms, including recommendations on goods and services tax (GST)
D.R. Gadgil Committee	National income estimation and guidelines for consistent calculation
K.L. Rao Committee	Price policy reforms and agricultural price stabilization
Wanchoo Committee	Taxation reforms and simplification of tax laws
Jha Committee	Industrial licensing policy reforms and deregulation
Vijay Kelkar Committee	Rationalization of subsidies and fiscal consolidation
High-Level Expert Group (HLEG) on Universal Health Coverage	Examining strategies for achieving universal health coverage in India
Committee on Comprehensive Financial Services for Small Businesses and Low-Income Households	Enhancing financial inclusion and access to banking services for marginalized groups
Committee on Doubling Farmers' Income	Identifying strategies to double farmers' income by 2022-23
Committee on Digital Payments	Promoting digital transactions and reducing cash dependency
Committee on Economic Capital Framework for RBI	Determining the appropriate size of reserves and capital for the Reserve Bank of India
High-Level Empowered Committee for Integrated Development of Agriculture	Formulating strategies for holistic development of agriculture sector
Committee on Financial Sector Reforms	Reviewing and recommending reforms in the financial sector
Committee on GST Simplification	Simplifying and rationalizing the Goods and Services Tax (GST) structure
Committee on Logistics Sector Development	Improving infrastructure and efficiency in the logistics and transportation sector
Committee on Micro, Small, and Medium Enterprises (MSMEs)	Addressing challenges and recommending policies for the MSME sector
Standing Committee on Economic Statistics	Enhancing the accuracy and relevance of economic data collection and analysis
Economic Advisory Council to the Prime Minister	Providing advice on economic issues and policy matters to the Prime Minister
Committee on Economic Capital Framework for RBI	Determining the appropriate size of reserves and capital for the Reserve Bank of India

WTO MINISTERIAL CONFERENCE 2024

Theme	"Responding to Contemporary Challenges: Trade for Sustainable Development"
Participants	Trade ministers and senior officials from the WTO's 164 member countries, along with representatives from international organizations and businesses
Objectives	Review the functioning of the multilateral trading system, address current challenges, and take action on the future work of the WTO
Key Issues	Fisheries subsidies, agriculture, industrial subsidies, e-commerce, intellectual property, and trade and climate change
Possible Outcomes	Ministerial declarations, new negotiating mandates, and progress on existing negotiations

DIGITAL MODES

Mode	Description
Unified Payments Interface (UPI)	Instant peer-to-peer (P2P) and merchant payments through mobile apps like Google Pay, PhonePe, and Paytm.

Immediate Payment Service (IMPS)	Real-time interbank electronic fund transfer service available 24/7/365.
Bharat Interface for Money (BHIM)	Government-backed mobile payment app aggregating various payment options, including UPI and Aadhaar Payments.
Aadhaar Enabled Payment System (AEPS)	Financial transactions using Aadhaar biometric authentication at micro ATMs.
National Electronic Toll Collection (NETC)	Cashless toll payment system for highways facilitating faster movement and reduced congestion.
National Payments Corporation of India (NPCI)	Regulator overseeing retail digital payments in India.

Currency Type	Description
Central Bank Digital Currency (CBDC)	Digital currencies issued by a central bank, aiming to enhance financial transactions' efficiency and potentially replace traditional fiat currency.
Cryptocurrencies	Decentralized digital assets like Bitcoin and Ethereum, offering borderless transactions and investment opportunities, although unregulated in many jurisdictions.

GOVERNMENT INITIATIVES

Initiative	Description
Digital India Programme	Government initiative to transform India into a digitally empowered society, promoting digital payments, internet connectivity, and digital literacy.
BHIM-Aadhaar	Integration of Aadhaar biometric authentication with the BHIM app to enhance the security and convenience of digital payments.
Rupaya Debit Card Scheme	Encourages domestic card usage and reduces dependence on foreign card schemes, promoting the adoption of digital payment solutions within India.
Financial Inclusion	Initiatives like Jan Dhan Yojana and PM Jan Dhan Yojana aim to provide banking services and digital payment options to marginalized sections of society.
Open Network for Digital Commerce (ONDC)	Creation of an open, neutral, and transparent platform for e-commerce, fostering competition, consumer choice, and digital commerce in India.

SUMMARY OF BOND MARKET INSTRUMENTS

Type	Key points
By Issuer	Government Bonds: Issued by national governments, offering lower returns and considered less risky.
	Corporate Bonds: Issued by companies, providing potentially higher returns but varying risks based on the issuer's creditworthiness.
	Municipal Bonds: Issued by local governments, offering tax-exempt income in some cases but potentially lower liquidity.
By Maturity	Short-term Bonds: Mature within 3 years, less volatile with lower yields.
	Medium-term Bonds: Mature between 3 and 10 years, balancing risk and return.
	Long-term Bonds: Mature in 10+ years, offering the highest potential returns but more sensitive to interest rate changes.
By Features	Zero-Coupon Bonds: Sold at a discount to face value and mature at face value, providing returns through price appreciation.
	Callable Bonds: Issuer has the right to redeem the bond before maturity, affecting investment strategy.
	Convertible Bonds: Can be converted into the issuer's equity (shares) under certain conditions.
	High-Yield Bonds: Also known as junk bonds, offer higher returns but carry higher default risk.
Considerations	Creditworthiness: Assess the issuer's ability to repay before investing.
	Liquidity: Consider the ease of buying or selling the bond before maturity.
	Yield: Higher yields often entail higher risk.
	Tax implications: Understand the tax treatment of different bonds in your jurisdiction.

KEYWORDS AND TERMINOLOGIES

Dividend Distribution Tax (DDT)	Tax levied on companies when distributing dividends to shareholders, eliminated in India as of April 1, 2020.
Long-Term Capital Gains (LTCG)	Profits from the sale of assets held for over a specified period, taxed at different rates compared to regular income tax rates.
Tax Avoidance	Legal strategies to minimize tax liabilities.
Tax Evasion	Illegal means to avoid paying taxes, such as underreporting income or hiding assets.
Tax Haven	Jurisdiction with low taxes and lenient regulations, often attracting businesses and individuals seeking to reduce tax liabilities.
Tax Buoyancy	Ability of a tax system to generate revenue in response to economic growth.
Base Erosion & Profit Shifting (BEPS)	Tax planning strategies exploiting gaps in tax rules to shift profits to low-tax jurisdictions.
GAFA Tax	Proposed digital services tax targeting large tech companies like Google, Apple, Facebook, and Amazon.
Reduction in Corporate Tax	Policy to lower tax rates on corporate profits, aiming to attract investment and stimulate economic activity.
Tax to GDP Ratio	Total tax revenue collected by a government as a percentage of its Gross Domestic Product (GDP).
Debt to GDP Ratio	Total government debt as a percentage of its GDP, indicating fiscal stability risks.
Sovereign Bond	Debt instrument issued by a government to raise funds, considered relatively low-risk due to government backing.
Bibek Debroy Committee	Committee established in 2019 to recommend simplification measures for direct tax laws in India.
Sam Pitroda Committee	Committee set up in 2013 to advise on innovation and entrepreneurship in India.
Anil Kakodar Committee	Committee appointed in 2018 to review foreign direct investment (FDI) policy in India.
TOT	Transfer of technology, involving the exchange of knowledge and know-how between entities.
Hybrid Annuity Model	PPP model where the government and private partner share financial and construction risks.
Swiss Challenge	Competitive bidding process where the initial bidder's proposal is compared to others for better value for the government.
Greenfield vs. Brownfield	Greenfield projects develop new infrastructure on empty land, while brownfield projects redevelop existing infrastructure.
Standing Deposit Facility (SDF)	Monetary policy tool setting a minimum interest rate on excess reserves deposited by banks.
Counter-cyclical Policy	Economic policies designed to counteract business cycles, such as fiscal spending during recessions.
Variable Reverse Repo Rate (VRRR)	Monetary policy tool absorbing liquidity from the financial system by offering short-term loans to banks at varying interest rates.
C-TAP of WTO	Committee on Trade and Agriculture of the World Trade Organization.
AML/CFT	Anti-Money Laundering and Combating the Financing of Terrorism, international initiatives to prevent and detect illicit financial activities.
Deglobalization	Trends of reshoring and protectionism impacting global supply chains and investment flows.
De-dollarization	Reducing reliance on the US dollar in international trade and financial transactions.
Tokenization	Converting physical assets into digital tokens using blockchain technology.

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CREATING CIVIL SERVANTS FOR THE NATION

8 POLITY

RPA 1950 AND RPA 1951

Comparison of Representation of the People Act, 1950 (RPA) and Representation of the People Act, 1951 (RP Act)

Feature	Representation of the People Act, 1950 (RPA)	Representation of the People Act, 1951 (RP Act)
Primary Focus	Allocation of seats in Parliament, state legislatures, and legislative councils	Conduct of elections and by-elections
Key Provisions	Fixes maximum and minimum number of seats based on population (Articles 80, 170, 171)	Regulates election procedures, including:
	Voter qualifications	Administrative machinery for conducting elections
	Electoral roll preparation and seat filling procedures	Registration of political parties
	Delimitation of constituencies	Candidate qualifications and disqualifications
		Curbing corrupt practices and electoral offenses
		Settling election-related disputes
Relationship	Provides foundation for democracy by determining seat allocation	Supports and complements democratic process by ensuring fair and efficient election conduct

- Both Acts are crucial for functioning democracy in India.
- RPA lays the groundwork for representation, while RP Act translates it into action through election procedures.
- Together, they ensure fair and legitimate representation of the people in government.

ELECTORAL REFORM IN INDIA

Electoral Reforms Before 1996

- **Lowering of Voting Age:** The 61st Constitutional Amendment Act of 1988 reduced the voting age from 21 to 18 years for Lok Sabha and state assembly elections, expanding franchise to include younger citizens.
- **Deputation to Election Commission:** This reform aimed to strengthen the Election Commission's independence by allowing deputation of personnel from states to the Commission.
- **Increase in Number of Proposers:** This measure aimed to curb frivolous candidatures by requiring more proposers for nomination forms.
- **Electronic Voting Machines (EVMs):** First used in Kerala in limited seats in 1982 and then in Goa (entire state) in 1999, EVMs were introduced to enhance transparency and accuracy in the voting process.
- **Booth Capturing:** Measures were implemented to address booth capturing, a major electoral malpractice.
- **Elector's Photo Identity Card (EPIC):** The introduction of EPIC aimed to prevent impersonation and ensure voter eligibility.

Electoral Reforms of 1996

- **Listing of Names of Candidates:** This reform mandated publishing candidates' criminal records and assets to promote informed voting.
- **Disqualification for Insulting the National Honour Act:** This Act aimed to deter candidates from making statements against national integrity.
- **Prohibition on Sale of Liquor:** Liquor sale was banned near polling stations to maintain a peaceful and fair election environment.
- **Number of Proposers:** The number of proposers required for nomination was further increased.
- **Death of a Candidate:** Guidelines were established for conducting elections if a candidate dies during the process.
- **Time Limit for By-Elections:** By-elections were mandated to be held within six months of a vacancy occurring.
- **Holiday on Polling Day:** Declaring polling day a holiday encouraged voter participation.
- Transforming India Promoting Electoral Reforms - Transforming India
- **Contestants Restricted to Two Constituencies:** This reform prevented candidates from contesting from more than two constituencies simultaneously.
- **Prohibition of Arms:** Stringent measures were adopted to curb the use of arms during elections.
- **Effective Campaigning Period Reduced:** Campaigning period was shortened to promote focused campaigning and reduce election fatigue.

Electoral Reforms after 1996

- **Presidential and Vice-Presidential Elections:** Reforms streamlined the process for these elections.
- Requisitioning of Staff for Election Duty
- Voting through Postal Ballot
- Facility to Opt to Vote Through Proxy
- **Declaration of Criminal Antecedents:** Mandatory disclosure of criminal records and assets by candidates enhanced transparency.
- Changes in Rajya Sabha Elections
  - Domicile or residency requirement
  - Introducing open ballot system, instead of secret ballotsystem
- **Exemption of Travelling Expenditure:** This measure reduced election expenditure burden on candidates.
- **Free Supply of Electoral Rolls:** Free access to electoral rolls facilitated informed participation.
- **Parties Entitled to Accept Contribution:** Regulations were established for political party funding.
- **Allocation of Time on Electronic Media:** Equitable distribution of media time for campaigning was ensured.
- **Braille Signage Features in EVMs:** This feature enhanced accessibility for visually impaired voters.

Electoral Reforms since 2010

- **Restrictions on Exit Polls:** Regulations were imposed to curb the influence of exit polls on voting behavior.
- **Time-Limit for Disqualification Cases:** This reform aimed for speedy resolution of disqualification cases.
- **Corrupt Practices by Officials:** The scope of corrupt practices was expanded to include all officials involved in elections.
- **Increased Security Deposit:** The security deposit amount was increased to deter frivolous candidatures.
- **Appellate Authority within District:** This reform facilitated easier access to justice for electoral disputes.
- **Voting Rights for NRIs:** Provisions were made for Non-Resident Indians to vote in certain constituencies.
- **Online Enrolment:** Online voter registration was introduced for convenience.
- **NOTA Option:** Voters were given the option to register "None of the Above" if dissatisfied with all candidates.
- **VVPAT:** Verifiable Voter-Verified Paper Audit Trail machines were introduced to enhance trust in the voting process.
- **Prisoner Voting Rights:** Reforms enabled eligible prisoners to exercise their voting rights.
- **Immediate Disqualification:** This measure ensured immediate disqualification of convicted MPs and MLAs.
- **Election Expenditure Ceiling:** A ceiling was imposed on election expenditure by candidates.
- **Candidate Photos on EVMs:** Photos were included on EVMs for better voter identification.
- **Cash Donation Ceiling Lowered:** The cap on cash donations to political parties was reduced.
- **Corporate Contribution Cap Lifted:** The cap on corporate donations to political parties was lifted.
- **Electoral Bonds:** This scheme aimed to bring transparency to political funding.
- **Foreign Funding Allowed:** Limited foreign funding for political parties was permitted under certain regulations.

Other Notable Reforms

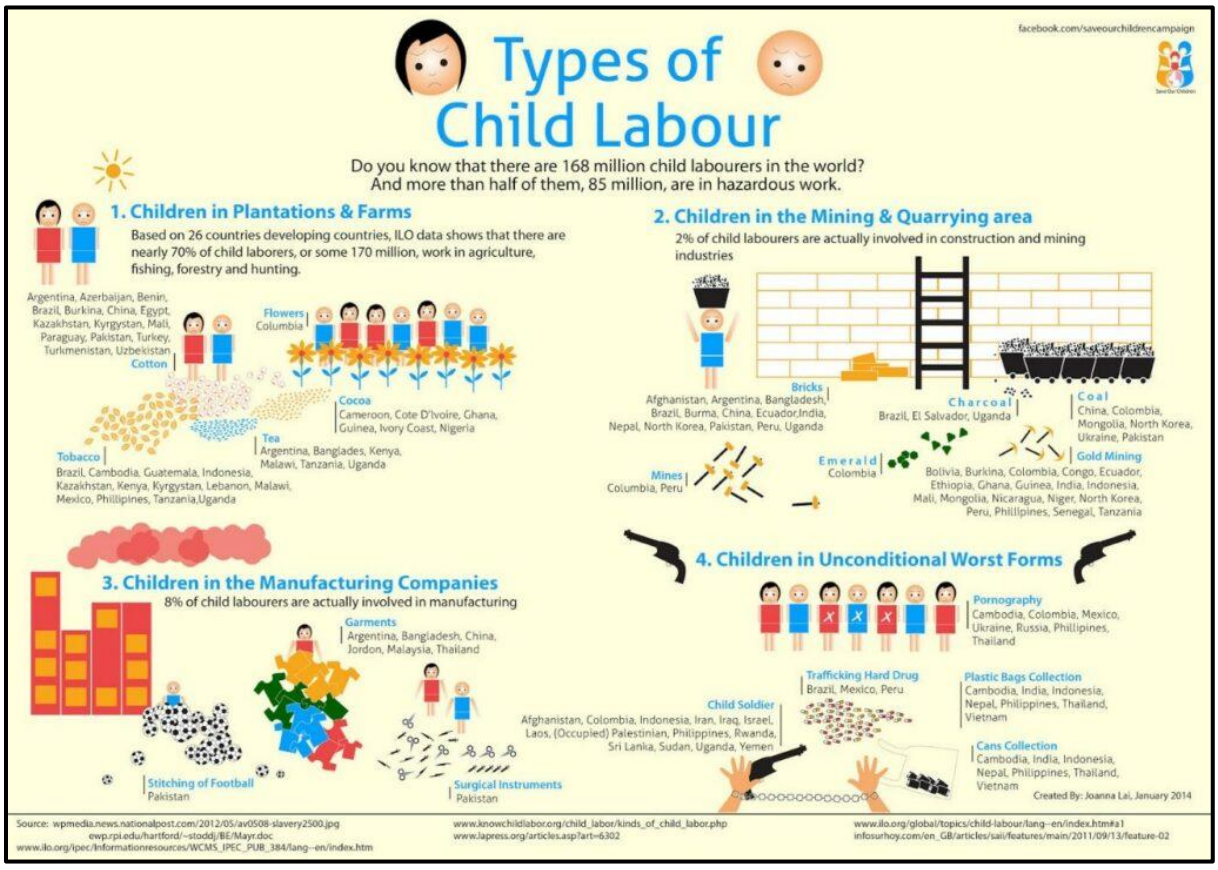
- Systematic Voters' Education and Electoral Participation program-SVEEP
- Community Radio Stations
- Mainstreaming Electoral Literacy-ELC Project

CHILDREN

According to Child and Adolescent Labour (Prohibition and Regulation) Act 1986, a **child as a person who has not completed the age of 14 years.**

Issue	Facts
Child Trafficking	8 children exploited and trafficked daily (National Crime Record Bureau Report)
Child Abuse	> 55% of children have been abused – as per survey by National Commission for the Protection of Child
Child Marriages	Highest rate of child brides in the world
Child Labor	10.1 million children working (3.9% of total child in age group of 5-14 years – Census 2011
Child Labor in Rural Area	8.1 million children – as cultivator and agricultural labourers
SDG target 8.7	to end child labour in all forms by 2025.
Health Issues	> 40% of children stunted or malnourished

Scheme	Objective
Integrated Child Development Services (ICDS)	Promote holistic development and provide essential services for children under six years of age, as well as pregnant and lactating women.
Integrated Child Protection Scheme	Create a protective environment for vulnerable children by preventing their abuse, exploitation, and neglect, and ensuring their rehabilitation and social integration.
SAMAGRA SHIKSHA ABHIYAN	Provide inclusive and equitable quality education to all children from pre-primary to higher secondary levels.
Mid-Day Meal (MDM) Scheme	Enhance enrollment, retention, and attendance of children in schools by providing them with a nutritious cooked meal during school hours.
SAKSHAM ANGANWADI AND POSHAN 2.0	Address the challenges of malnutrition by implementing a strategic transformation in the content and delivery of nutrition.
Mission Vatsalya	Achieve development and child protection priorities in line with the Sustainable Development Goals (SDGs). Focus on strengthening children's rights, advocacy and awareness, as well as juvenile justice and protection systems. Motto : "Leave no child behind",
National Health Mission	Improve child health and nutrition status.
Sarva Shiksha Abhiyan	Universalise primary education.
Udaan	Enable girl students to soar to higher education.
Sukanya SamriddhiYojna	Encourage parents of a girl-child to stock a fund for their education and marriage.
Ladli Laxmi Yojana (MP)	Improve the health and educational status of the girls.
The National Child Labour Project	Rehabilitate children withdrawn from employment.
Platform for Effective Enforcement for No Child Labour (PENCIL)	Combat child labor.



Constitutional Provisions:

- **Article 21A**: Education up to the age of 14 was declared a fundamental right.
- **Article 23-** Traffic in human beings and beggary and other forms of forced labour are prohibited and any contravention of this provision shall be an offence punishable in accordance with the law.
- **Article 24**: Children have a fundamental right against exploitation and the employment of children under the age of 14 in factories and hazardous processes is prohibited.
- **Article 45**: Requires states to provide early childhood care and education for children up to age six.
- **Article 47**– The State shall 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
- **Article 51A(k):** mentions that it shall be the fundamental duty of the parent and guardian to provide opportunities for education to his child or as the case may be, ward between the age of six and fourteen.

Other Law	Objective
Immoral Traffic (Prevention) Act, 1987	End child trafficking
Child Labour (Prohibition and Regulation) Act 1986	Prohibit child labor in certain occupations and regulate conditions in others
Child Labour (Prohibition and Regulation) Amendment Act, 2016	completely prohibits the employment of children below 14 years
Prohibition of Child Marriage Act, 2006	Make it illegal to marry a child or minor Below 18 years(girl); Below 21 years (Boy)
Right of Children to Free and Compulsory Education Act, 2009	Make education a fundamental right for children aged 6-14 in line with Article 21A of the constitution
Protection of Children from Sexual Offences Act, 2012	Protect minors from sexual assault, sexual harassment, and pornography

Juvenile Justice Act, 2015 Highlights:

Feature	Description
Replaces previous laws	Replaces Juvenile Delinquency Law and Juvenile Justice Act, 2000.
Trial of minors as adults	Allows for 16-18 year olds to be tried as adults for "heinous offenses."
Modernized adoption laws	Introduces new and more accessible adoption provisions. - replaced the Hindu Adoptions and Maintenance Act (1956) and Guardians of the ward Act (1890)
Smoother adoption process	Streamlines adoption procedures for orphans, surrendered, and abandoned children.
Centralized adoption authority	Establishes the Central Adoption Resource Authority (CARA) as the statutory body for adoption matters.
Mandatory registration of childcare institutions (CCI)	Requires all Child Care Institutions to register within 6 months of the Act's enactment.

Juvenile Justice (Care and Protection) Amendment Act 2021: Key Provisions

Passed to amend various provisions of the Juvenile Justice Act, 2015

Provision	Description
Non-cognisable offences	Certain crimes against children under the JJ Act 2015 punishable with 3-7 years imprisonment become "non-cognisable". This means police cannot automatically investigate without a magistrate's order, potentially hindering reporting.
Adoption process	Aims to expedite adoption proceedings for faster placement of children.
District Magistrate Authority	Grants district magistrates the power to issue adoption orders, potentially streamlining the process.

Organization	Established by	Purpose	Functions	Target group
National Commission for Protection of Child Rights (NCPCR)	Government of India under Protection of Child Rights (CPCR) Act, 2005	Protection of child rights	Examines child protection laws, makes recommendations, reports to government, investigates violations	Children (0-18 years)
Central Adoption Resources Authority (CARA)	Ministry of Women and Child Development, Government of India	Regulating child adoptions; Hub for adoption of Children	Supervises domestic and international adoptions; Central authority to administer international adoption under the provisions of the 1993 Hague Convention on International Adoption ratified by the Government of India in 2003.	Orphaned, abandoned, and surrendered children
National Institute of Public Cooperation and Child Development (NIPCCD)	Ministry of Women and Child Development	Development of women and children	Provides research, capacity building, and advisory services to government programs	Women and children

Initiative	Description
Samvardhan	Programme to identify vulnerable children and prevent child trafficking; mapping of children and their families
MASI App	Monitoring App for Seamless Inspection for real time monitoring of the Child Care Institutions (CCIs) and their inspection mechanism across the country
GHAR – GO Home and Re-Unite portal – (Portal for Restoration and Repatriation of Child)	The GHAR portal has been developed to digitally monitor and track the restoration and repatriation of children as per the protocols under the Juvenile Justice (Care and Protection of Children) Act, 2015

5 states which top at child labour (according to the data of the Census of 2011

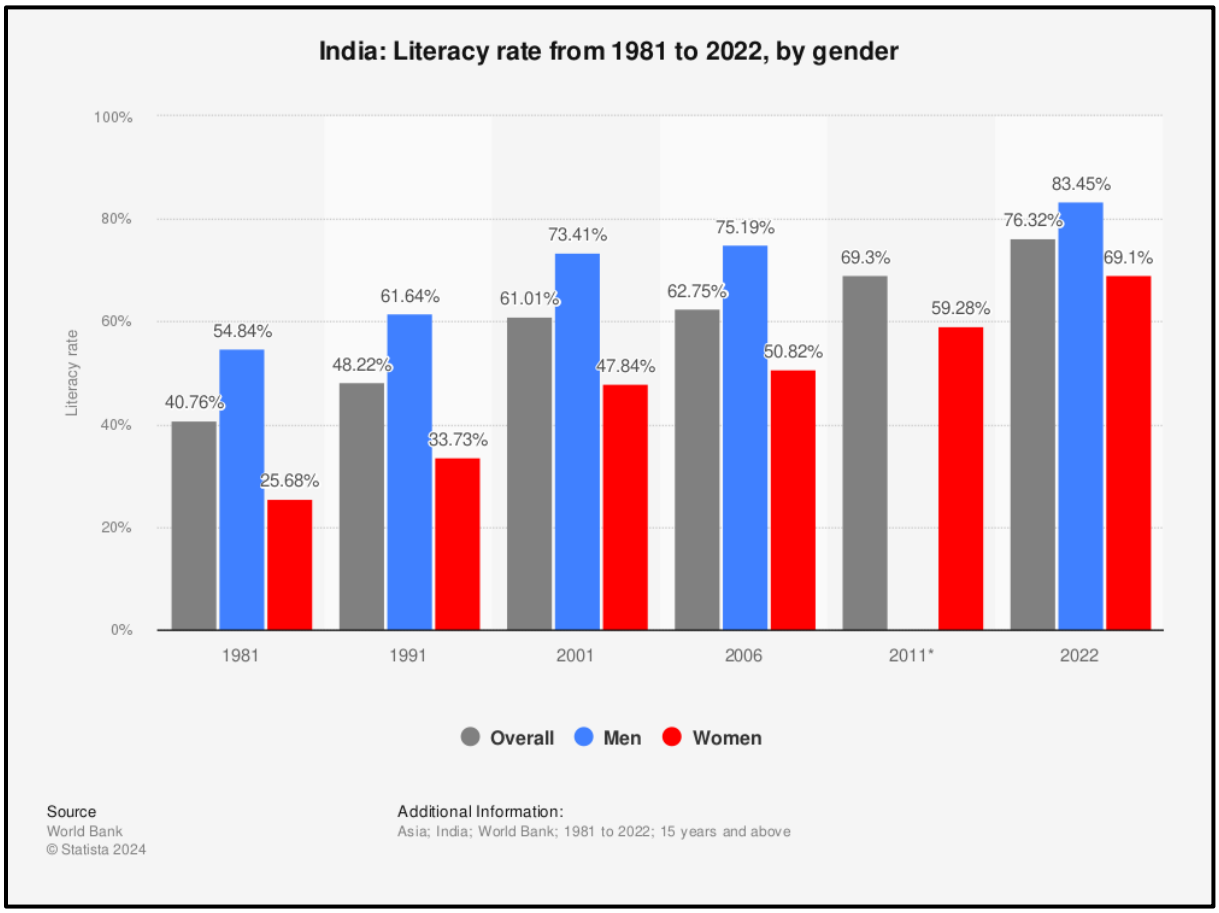
States	Percentage	Numbers (In million)	States	Percentage	Numbers (In million)
Uttar Pradesh	21.5	2.18	Maharashtra	7.2	0.73
Bihar	10.7	1.09	Madhya Pradesh	6.9	0.70
Rajasthan	8.4	0.85			

EDUCATION

Key facts

Literacy rate (Census 2011 & NSS Report)	**All India – 74%, Males – 82%, Females – 65% Rural – 74%, Urban - 88%**	
Adult Illiteracy in India (15 years & above)	Adult Non Literates – >20 crore (largest population of illiterate adults in the world)	
Gross Enrolment Ratio (MoE, UDISE 2021-22)	Level Primary (I-V) Upper Primary (VI - VIII) Secondary (IX - X) Senior Secondary (XI - XII) Higher Education (AISHE, 2019-20) GER of girls across all levels of education is now higher than boys.	(2021-22) 103% 95% 80% 58% 27%
Out-of-school Children (6-17 yrs) (NSSO's 2017-18 Household Survey)	More than 3 crore.	
Expenditure on Education	2.9% of GDP (Target – 6%)	
Higher Education	Total Enrolment: Female - 49%, Male – 51% Colleges in Private Sector – >75%, but it caters to only 65% of the total enrolment. Foreign Student Enrolment: Highest share from neighbouring countries like Nepal, Afghanistan, Bangladesh, Bhutan & African countries like Sudan & Nigeria	
Other Feature	Value	Details
Student benefits (freeships, uniforms, books, scholarships)	4.18%	NCPCR report
Literacy rate (2011 Census)	74.04%	Overall
Literacy rate (2011 Census) - Men	82.14%	
Literacy rate (2011 Census) - Women	65.46%	
Highest literacy rate (state)	93.91% (Kerala)	
Lowest literacy rate (state)	61.8% (Bihar)	
Gross Enrollment Ratio (GER) in higher education (2021-22)	28.4%	
Gross Enrollment Ratio (GER) in higher education (2020-21)	27.3%	
Budgetary allocation for Education	**As per Economic Survey 2022-23**, The budgetary allocation for education as a percentage of total expenditure has dropped over the past seven years, from **10.4% to 9.5%.**	

World Bank Figures – Trends



ASER 2023: Beyond Basics Key Findings (Two Columns) – Survey among rural students aged 14-18

Area of Concern	Key Finding
Literacy & Numeracy	Over 50% struggle with basic math and 25% can't read a grade 2 text.
Gender Gap	Boys outperform girls in math and English reading.
School Enrollment	Overall 86.8% enrolled, but 32.6% of 18-year-olds drop out. For 14 years old the drop out figure is 3.9%
Higher Education Streams	Humanities dominate, with low vocational training uptake (5.6%).
Private Tuition	30% of students receive private tuition, up from 25% in 2018.
Digital Access & Skills	90% have smartphones and know how to use them, but many lack digital safety awareness.
National Education Policy Goal	Achieve universal foundational literacy and numeracy by 2025.
NIPUN Bharat Mission Progress	States making efforts, but significant work needed in a diverse country.

Reasons for Dropping Out of School by Gender (NFHS-5)

Reason for Dropping Out	Percentage of Girls (6-17 years)	Percentage of Boys (6-17 years)
Not interested in studies	21.4%	35.7%
Cost of education	20.6%	16.1%
Required for household work	13.3%	9.8%
Marriage	6.8%	0.3%
Others (illness, disability, etc.)	37.9%	38.1%

COMMISSION AND COMMITTEE AND POLICY

Committees/Commission	Year	Governor General/Viceroy	Subjects	Terms of Reference and Recommendations
Charles Wood Despatch	1854	Lord Dalhousie	Education	To promote western education. Specially art, science, philosophy and literature of Europe. Importance of Vernacular medium recognized but chief medium of instruction to be English A system of grants-in-aid

Hunter Commission	1882	Lord Ripon	Education	To look into the working of Wood's Despatch of 1854; and the contemporary status of elementary education in the British territories; Emphasis on a vocational education and other such literary education
Raleigh Commission	1902	Lord Curzon	Education	To inquire into the condition and prospects of universities in India In 1904, on the lines of this commissions' suggestions Indian Universities Act was passed in 1904.
Sadler Commission	1917	Lord Chelmsford	Education	To inquire into the "conditions and prospects of the University of Calcutta" Suggested no excessive official control and government interfere over universities.
Hartog Commission	1929	Lord Irwin	Education	To survey the growth of mass education in British India. To address the decline in educational standards caused by the increased number of educational institutions
Sargent Plan	1944	Lord Wavell	Education	To raise the standard of Education in British India and to create Educational standard in India similar to UK in 40 years. It even provided for Health education, Education for Specially abled, Employment Bureaus, Departments of Education.

Radhakrishnan Committee (1948-49)	• Shape education for independent India's needs and aspirations. • Promote value system based on wisdom, knowledge, leadership	• Defined core values of Indian education system • Shifted focus from colonial interests to national identity
Kothari Commission (1964-66)	• Standardise education system (10+2+3) • Integrate work experience, social service • Link colleges with local schools • Achieve national integration, equal opportunity	• Provided framework for Indian education system • Led to National Education Policy 1968 • Also recommended to raise education from 2.9% of the GDP to 6% by 1985.
National Education Policy 1968	• "Radical restructuring" for equal opportunities • Increase government spending on education (6% GDP) • Improve teacher qualification and training • Three-language formula	• Expanded access to education • Pushed for better teacher training • Promoted national unity through language policy
National Education Policy 1986	• Address educational disparities • Provide opportunities for marginalized sections • Launch Operation Blackboard (improve primary schools) • National System of Education: 10+2+3 structure	• Focused on equity and inclusivity • Promoted adult education and rural development
T.S.R. Subramanian Committee Report (2016)	• Make pre-school education a right • Rethink "no-detention" policy • Address teacher shortage and grievances • Integrate technology, enhance skill development • Establish All India Education Service	• Proposed reforms to address contemporary challenges • Yet to be implemented in its entirety

NEP 2020

NEP 2020: Key Points in Bullet Form

Goals:

- Make India a global knowledge superpower.
- Revamp India's education framework for the first time in over 30 years.

Salient Features:

- Universal access to schooling from pre-primary to Grade 12.
- Quality early childhood care and education for children aged 3-6.
- New 5+3+3+4 school structure (3-8, 8-11, 11-14, 14-18 years).
- Emphasis on interdisciplinary learning, multilingualism, and Indian languages.
- New assessment center (PARAKH) and initiatives for gender inclusion and disadvantaged groups.

Major Initiatives:

- **PM SHRI:** PM Schools for Rising India - Upgrade 14,500+ schools to provide high-quality education.
- **NIPUN Bharat:** National Initiative for Proficiency in Reading with Understanding and Numeracy(NIPUN) Bharat Mission - Ensure children acquire basic literacy and numeracy by Grade 3.
- **PM e-VIDYA:** Promote online education and digital learning.
- **NCF FS &JaduiPitara:** Offer play-based learning materials for ages 3-8.
- **NISHTHA:** The National Initiative for School Heads' and Teachers' Holistic Advancement - Train teachers and school principals.
- **NDEAR:** Guide development of digital education technologies.
- **Academic Frameworks:** Facilitate credit transfer and flexibility in higher education.

OTHER SCHEMES, INITIATIVES

Initiative	Description	Focus
PM e-VIDYA	Unifies digital/online/on-air education efforts for multi-mode access.	Improved access to quality education through technology.
DIKSHA	National digital platform for quality e-content and QR code energized textbooks.	High-quality learning materials readily available one nation, one digital platform.
Swayam Prabha TV	One dedicated TV channel per class (1-12) for continuous learning.	Accessible and engaging learning experience.
Radio & Podcasts	Educational content through radio, community radio, and CBSE podcast "**Shiksha Vani".**	Reaching wider audience, including remote areas.
Digitally Accessible Information System (DAISY)	Content for visually and hearing impaired in accessible formats (**DAISY**& sign language).	Inclusive education for all students.
Mid-Day-Meal (MDM)	Provides nutritious lunch to students in Classes 1-8 of government and aided schools.	Improved nutrition and attendance, especially for disadvantaged children.
Samagra Shiksha	Integrated scheme promoting quality education at all levels, across the country.	Equitable and inclusive education for all students, including rural areas.
Nishtha 2.0	an integrated programme of teacher training designed by NCERT	For improvement in quality of Teachers and their Pedagogy
SAFAL	Structured Assessment For Analyzing Learning Levels	A competency based assessment framework for Grades 3, 5 and 8 in CBSE schools

Constitutional provisions

21A	Right to compulsory education – 86th Constitutional amendment 2002
28	Freedom as to attendance at religious instruction or religious worship in certain educational institutions
30	Right of minorities to establish and administer educational institutions
41	Right to work, to education and public assistance in certain cases
51A(k)	Who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.
350A	Facilities for instruction in the mother tongue at the primary stage

Key Features of the Right to Education (RTE) Act, 2009:

Universal education:

- Free and compulsory primary education for all children aged 6-14.

Equity and inclusion:

- 25% reservation in private schools for disadvantaged groups (SCs, STs, OBCs, differently-abled).
- Admissions in age-appropriate classes for previously un-enrolled children.

Funding and standards:

- Shared financial responsibility between central and state governments.
- Defined norms for pupil-teacher ratios, infrastructure, school days, and teacher hours.

Child-centered learning:

- No Detention Policy
- Prohibition of corporal punishment, mental harassment, and discriminatory admission practices.
- Ban on capitation fees, private tuition by teachers, and unrecognized schools.
- Fostering a safe, positive learning environment free from fear and anxiety.

Teacher qualifications and professionalism:

- Requirement for teachers to have prescribed qualifications.
- Restriction on deploying teachers for non-educational work (except specific exceptions).

Overall, the RTE Act aims to ensure equitable access to quality education for all children in India, regardless of their backgr

HEALTH

Key Stats

Employment in Indian Healthcare Sector	Data
Total employed (2021)	4.7 million
Jobs created (2017-2022)	2.7 million
Jobs created per year	500000
Inadequate infrastructure	Only 0.9 beds per 1000 population, with only 30% in rural areas
Non-communicable diseases (NCDs)	Over 60% of deaths from chronic illnesses like diabetes, cancer, and heart disease
Doctor-patient ratio gap	Needs 20 lakh doctors by 2030, with overworked doctors exceeding WHO's recommended ratio Current 1:11000, WHO recommends 1:1000

Key Highlights of the NFHS-5 National Report:

Fertility Rate:

- **Overall decline:** TFR dropped from 2.2 to 2.0, but 5 states remain above replacement level of 2.1. - Bihar, Meghalaya, Uttar Pradesh, Jharkhand and Manipur.
- **Highest states:** Bihar & Meghalaya highest, Sikkim & Andaman & Nicobar Islands lowest.
- **Area-wise:** Significant decline in both rural & urban areas.
  - Rural - from 3.7 children per woman in 1992-93 to 2.1 children in 2019-21.
  - Urban - from 2.7 children in 1992-93 to 1.6 children in 2019-21.
- **Community-wise:** Muslims' decline steepest over past 2 decades.

Underage Marriages:

- **National Average:** Down from 26.8% to 23.3% for women, 20.3% to 17.7% for men.
- **Highest Increase:** Punjab, WB, Manipur, Tripura, Assam.
  - Tripura has seen the largest jump in marriages for women from 33.1% (NHFS-4) to 40.1%
- **Highest Rate:** West Bengal & Bihar.
- **LowestRate:** J&K, Lakshadweep, Ladakh, HP, Goa, Nag aland, Kerala, Puducherry, TN.

Teenage Pregnancies:

- **Decline:** From 7.9% to 6.8%.

Contraceptive Use:

- Higher among employed & wealthier communities.
- Unmet need highest among lowest wealth quintile.
- Modern contraceptive use up with income & employment.

Domestic Violence:

- **Marginal decline:** From 31.2% to 29.3%.
- **Highest:** Karnataka (48%), Bihar, Telangana, Manipur, Tamil Nadu.
- **Lowest:** Lakshadweep (2.1%).

Institutional Births:

- **Up:** From 79% to 89% nationally.
- Higher in urban areas (94%) than rural (87%).

Immunization:

- **Increase:** 77% children (12-23 months) fully immunized (up from 62%).

Stunting:

- **Marginal decline:** 38% to 36%.
- **Higher in rural areas.**

Obesity:

- **Increase:** 21% to 24% (women), 19% to 23% (men).

SDG Goals:

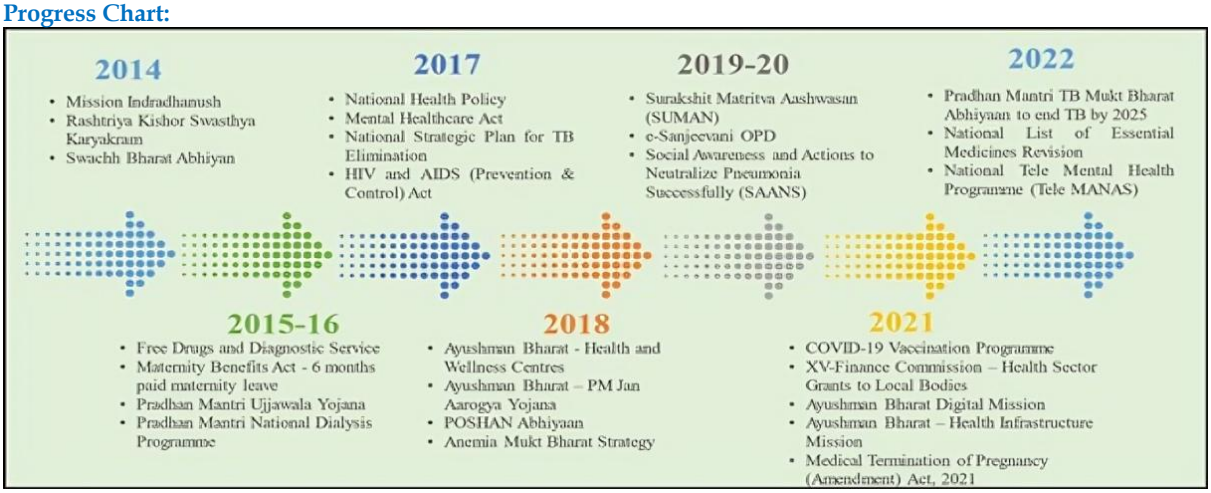
- **Improvement:** Across all states/UTs.
- **High female participation:** Especially in household decisions

Neonatal mortality rate (per 1000 live births)	**24.9**
Infant mortality rate (per 1000 live births)	35.2
Under-five mortality rate (per 1000 live births)	41.9
Maternal Mortality Ratio (per lakh live births)	97(2018-20)

Box 1: Cases and Deaths due to Vector-borne diseases across India, 2021

Disease	Total Cases	Total Deaths
Malaria	1,58,326	80
Dengue	1,88,366	247
Acute Encephalitis Syndrome	5,946	216
Kala-Azar	1,353	28
Japanese Encephalitis	754	66

Progress Chart:



Policies

National Health Policy 1983 - Key Points:

- **Goal:** Achieve "Health for All by 2000" through comprehensive Primary Health Care (PHC) services.
- **Focus:**
  - Equitable access to essential healthcare, particularly for vulnerable populations.
  - Preventive and promotive healthcare over curative care.
  - Community participation and involvement in healthcare delivery.
- **Strategies:**
  - Establishment of a well-dispersed network of PHC centers throughout the country.
  - Expansion of health workforce, including training and deployment in rural areas.
  - Integration of traditional and modern medicine systems.
  - Emphasis on health education and awareness campaigns.
  - Increased public sector investment in healthcare.
- **Outcomes:**
  - Improved access to basic healthcare services, especially in rural areas.
  - Increased awareness of health and hygiene practices.
  - Reduction in infant mortality rate and communicable diseases.
  - However, the ambitious goal of "Health for All" by 2000 was not fully achieved.

National Health Policy 2002: Key Points

- **Focus:** Equitable access to health services across all social and geographical areas.
- **Increased investment:** Central government commits to significantly raise public health funding.
- **Priority:** Preventive and curative care at the primary healthcare level, with increased resource allocation.
- **Increased health spending:** Target 6% of GDP by 2010, 2% dedicated to public health investment.
- **Increased central government contribution:** 25% of public health investment by 2010, compared to 15%.
- **Focus on primary healthcare:** 55% of public health investment allocated to primary health sector.
- **Balanced investment in other sectors:** 35% and 10% investment in secondary and tertiary sectors respectively.

National Health Policy 2017: Key Features in Bullet Points

Focus:

- Progressive, incremental expansion of healthcare coverage.
- Comprehensive primary healthcare package, including:
  - Major non-communicable diseases.
  - Mental health.
  - Geriatric care.
  - Palliative care.

- Rehabilitative care.
- "Health and Wellness Centres" offering broader primary care services.

Access and Affordability:

- Free drugs, diagnostics, and emergency/essential care in public hospitals.

Integration:

- Three-dimensional integration of AYUSH systems (traditional medicine):
  - Cross-referrals.
  - Co-location.
  - Integrative practices.

Other Key Points:

- Effective grievance redressal mechanism.
- Increase public health expenditure to 2.5% of GDP by 2025.

Targets:

- Life expectancy: 67.5 to 70 by 2025.
- Infant mortality rate: 28 by 2019.
- Under-five mortality rate: 23 by 2025.
- Two beds per 1,000 population (accessible within "golden hour").
- Achieve global 2020 HIV target (90-90-90 UNAIDS Target).

Committees:

Bhore Committee, 1943	A broad survey of position regarding health conditions and health organization in British India b. Recommendations for future development
Mudaliar Committee, 1962	Assessment of developments in field of medical relief & public health since Bhore Committee Report Review of 1st & 2nd Five Year Plan Health Projects Make recommendations for future plan of health development in India
Chadha Committee, 1963	PHCs planning & priority acc. to needs of Maintenance Phase of National MaleriaEradication Programme b. staffing pattern for NMEP and how to utilise NMEP staff post eradication status
Jungalwalla Committee, 1967	To examine various problems including service conditions; elimination of private practice
Kartar Singh Committee, 1973	The utilization of mobile service units under Family Planning (FP) programme for integrated national, public health & FP services operating from taluk level
Mashelkar Committee 2002	Related to Regulatory Issues in Indian Pharmaceutical Sector; recommended centralizing drug licensing with the central regulator.

Legislations:

- Right to health: Implicitly guaranteed under Article 21 (Right to life & liberty) of the Indian Constitution.
- State's obligation(Under DPSP): Articles 38, 39, 42, 43, & 47 of Directive Principles of State Policy mandate the state to ensure access to healthcare for effective realization of the right to health.
- Supreme court in Parmanand Katara Vs Union of India (1989) case gave verdict that every doctor (Government of Private) has the professional obligation to extend his services with due expertise for protecting life

Initiatives and Schemes:

Initiative	Goal	Achievements (as of December 15, 2023)
Pradhan Mantri SurakshitMatritva Abhiyan (PMSMA)	Ensure comprehensive and quality antenatal care	4.61 crore antenatal check-ups conducted
		49.56 lakh high-risk pregnancies identified
LaQshya - Labour Room and Maternity Operation Theatres	Improve quality of care in labor rooms and maternity operation theatres	873 labor rooms and 663 operation theatres LaQshya-certified nationally
		185 labor rooms and 129 operation theatres LaQshya-certified in FY2022-23
Janani Suraksha Yojana (JSY)	Promote institutional delivery among pregnant women from disadvantaged backgrounds	43.35 lakhs beneficiaries received benefits during the period of April-September 2023
MusQan - Quality improvement initiative of Child Health services	Ensure child friendly services in Public Health facilities	58 facilities got national level certification as on November 2023
Ayushman Arogya Mandir	Create 1,50,000 Health and Wellness Centres (AB-HWCs)	Bring healthcare closer to the community by upgrading Sub Health Centres (SHCs) and rural and urban Primary Health Centres (PHCs)
Ayushman Bharat PM-JAY	Provide health cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization	55 Crore individuals covered, 28.45 Crore Ayushman Cards created, 6.11 crore hospital admissions authorized
National TB Elimination Programme (NTEP)	Early diagnosis of TB patients, Prompt treatment with quality-assured drugs and treatment regimens, Engaging with patients seeking care in the private sector, Prevention	Goal of achieving Sustainable Development Goals related to TB by 2025

	strategies including contact tracing in high-risk/vulnerable populations, Airborne infection control, Multi-sectoral response for addressing social determinants	
AnemiaMukt Bharat (AMB) programme	Reduce anemia prevalence in India	Provided IFA syrup to 3.7 crore children (6-59 months), IFA Pink tablets to 4.2 crore children (5-9 years), IFA Blue tablets to 5.2 crore children (10-19 years), IFA Red tablets to 1.5 crore pregnant women and 80 lakh lactating women
Kayakalp (MeraAspataal/My Hospital)	To empower the patients by seeking their views on Quality of experience in a public healthcare facility.	11,034 health facilities in 34 states and UTs are integrated with "MeraAspataal"
e-Sanjivani – National Telemedicine Service	Access to specialized medical healthcare across the country by providing facility for doctor-to- doctor consultation and patient-to-doctor consultation.	eSanjeevani consultations rendered: more than 18.9 crore. It is operational in more than 1,33,000 Health & Wellness Centres and 27,000 hubs.
Ayushman Bharat Digital Mission-ABDM - earlier known as National Digital Health Mission	to create a national digital health ecosystem that supports universal health coverage in an efficient, accessible, inclusive, affordable, timely, and safe manner	Ayushman Bharat health accounts created: 49.86 crore Healthcare professionals are registered under Ayushman Bharat Digital Mission: 2,58,217 Health facilities registered under ABDM: 2,25,968

OLD AGE

Key facts

Information	Data	Source
Total Senior Adults (60+)	104 million	Census of 2011
Percentage of Total Population	8.6%	Census of 2011
Gender Distribution	More women than men	Census of 2011
Projected Percentage of Seniors in 2026	12.5%	Quality of Life for Elderly Index, EAC-PM
Projected Percentage of Seniors in 2050	19.5%	Quality of Life for Elderly Index, EAC-PM
Dependence on Family for Financial Support	47%	HelpAge India study
Dependence on Pensions & Cash Transfers	34%	HelpAge India study
Desire to Work "as long as possible"	40%	HelpAge India study

National Policy on Older Persons

Area of Need	Key Provisions
Housing, Health Care, and Other Necessities	State assistance to meet the needs of older people.
Equitable Share of Development	Guaranteeing their right to participate in and benefit from development initiatives.
Protection from Abuse and Exploitation	Safeguarding their rights and well-being.
Access to Services for Improved Quality of Life	Providing services that enhance their physical, mental, and social well-being.
Social Security	Addressing issues related to financial security and pensions.
Intergenerational Ties	Promoting positive relationships and support between generations.
Family as Primary Caregivers	Recognizing the crucial role of families in caring for older adults.
Non-Governmental Organizations (NGOs)	Encouraging partnerships with NGOs to provide services and support.
Workforce Development	Promoting opportunities for older people to continue working or engaging in income-generating activities.
Research and Training	Investing in research on aging and training of professionals to improve care and support for older adults.

Schemes for Senior Citizens

Scheme Name	Objective	Target Audience	Key Features
Pradhan Mantri Vaya Vandana Yojana	Financial security and regular income	Age 60 and above	Monthly pension + lump sum maturity amount

(PMVVY)			
Varishtha Pension Bima Yojana	Regular income and financial security	Age 60 and above	Annuity plan with guaranteed pension
RashtriyaVayoshri Yojana	Support for physical limitations	Age 60 and above	Financial assistance for mobility aids and hearing aids
Integrated Programme for Older Persons	Improved quality of life	Age 60 and above	Day care centers, home-based care, medical facilities
SAMPANN Project	Smooth pension processing	Retired DoT employees	Online pension processing and payment
SACRED Portal	Job opportunities	Age 60 and above	Register and search for employment
Seniorcare Ageing Growth Engine (SAGE)	Business support for aged care services	Entrepreneurs	Financial assistance, training, and incubation
Atal VayoAbhyuday Yojana	Awareness and intergenerational ties	Senior citizens	Recognizes and appreciates the valuable contributions made by the elderly to society and seeks to ensure their well being and social inclusion.

India's Aging Population: Key Points

- 71% (over 73 million) of the elderly population resides in rural areas.
- 29% (around 31 million) of the elderly population resides in urban areas.
- **Rapid Growth:** The elderly population in India is growing rapidly, from 9% in 2011 to a projected 18% by 2036 as per National commission on Population.
- By **2050, 1 out of every 5 people in India will be over 60.**
- **Planning Needed:** Proactive planning and resource allocation are crucial to ensure the elderly maintain a decent quality of life in the future.
- **Increased Life Expectancy:** A major achievement, life expectancy in India has doubled since independence, reaching 70 years today.
- **Declining Fertility Rate:** Fertility rate has dropped significantly, from 6 children per woman to 2, empowering women but presenting a new challenge - population aging.
- **Challenge Ahead:** Balancing the needs of a growing elderly population with a smaller workforce creates complex social and economic issues.

TRIBES

Commission on Tribal Communities in India

Commission Name	Year	Key Focus	Notes
Kaka Kalelkar Commission (1953)	1953	Definition of Scheduled Tribes	Appointed under Article 340
Elwin Committee (1959)	1959	Tribal development program implementation	Focused on Multi-Purpose Development Blocks
N. Dhebar Commission (1960)	1960	Overall situation of tribal groups	Addressed land alienation in tribal areas
Lokur Committee (1965)	1965	Scheduled Tribe definition criteria	
Bhuria Committee (1991)	1991	PESA Act enactment	Recommendations led to the Panchayat Extension to Scheduled Areas Act, 1996
Xaxa Committee	2013	Socio-economic, educational, and health status of tribal communities	
Bandopadhyay Committee (2006)	2006	Development and governance in Left-Wing Extremist areas	
Mungekar Committee (2005)	2005	Administration &governance issues	

Key Statistics

Statistic	Information
Population	10,42,81,034
Percentage of Indian population	8.6%
Number of Scheduled Tribes (census)	705
Number of Scheduled Tribes (Draft National Tribal Policy, 2006)	698
Geographical distribution	15% of India's land area
Primary sector employment	80%+
State with most tribal communities	Odisha (62)
Sex ratio (rural)	991 females per 1000 males
Sex ratio (urban)	980 females per 1000 males

Average sex ratio	990 females per 1000 males
Particularly Vulnerable Tribal Groups (PVTGs)	75 groups
PVTG population	27,68,322

Acts:

Act	Year	Purpose
Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989	1989	Prevent atrocities against members of Scheduled Castes (SCs) and Scheduled Tribes (STs).
Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996	1996	Extend Panchayati Raj system (local self-governance) to Scheduled Areas, respecting customary laws and traditions of tribal communities.
Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	2006	Recognize and vest forest rights and land occupation rights in forest-dwelling Scheduled Tribes and other traditional forest dwellers.

- Forest cover in India (2011): 692,027 sq. km (21.05% of total area)
- Tribal areas and forests: 60% of forest cover lies within areas covered by the Integrated Tribal Development Programme (ITDP), covering 411,881 sq. km.
- Forest classification and tribal communities: Much of this forest area was classified as protected areas (Reserved Forests, Protected Forests, Wildlife Sanctuaries, and National Parks), marginalizing tribal communities who traditionally relied on these lands.
- Forest Rights Act (2006): This act aimed to address the marginalization of tribal communities by recognizing their rights to access and use forest resources.

WOMEN

Key Statistics

Statistic	Description	Value (2011)	Projected Value (2036)
Total Population	Number of people in India	121.1 crore	152.2 crore
Female Population	Percentage of females in India	48.5%	48.8%
Sex Ratio (National)	Number of females per 1000 males	943	-
Sex Ratio (Rural)	Number of females per 1000 males in rural areas	949	-
Sex Ratio (Urban)	Number of females per 1000 males in urban areas	929	-
Sex Ratio at Birth	Number of females born per 1000 males	904 (2017-19) / 907 (2018-20)	-
Overall Literacy Rate	Percentage of literate people in India	72.98%	-
Male Literacy Rate	Percentage of literate males in India	80.9%	-
Female Literacy Rate	Percentage of literate females in India	64.63%	-
Primary Education Gross Enrollment Ratio	Percentage of children enrolled in primary education	103.4% (2021-22)	-

Programs

Initiatives and Programs	Year	Objective
Working Women Hostel	1972-73	Provide safe accommodation and day-care facilities for working women
Support to Training and Employment Programme for Women	1986-87	Empower women with skills for gainful employment
National Commission of Women	1992	Review constitutional safeguards, recommend measures, assist with grievance redressal, advise on policy matters
National health programs	2005	Address maternal healthcare needs through programs like NRHM and Family Welfare Programme
National Mission for Empowerment of Women	2011-12	Convergence of schemes and programs to holistically empower women
Weekly Iron and Folic Acid Supplementation Programme	2012	Address anaemia among adolescent girls and boys
Beti Bachao Beti Padhao Yojana	2015	Create awareness, improve welfare services, and address declining Child Sex Ratio
Sukanya Samriddhi Yojana	2015	Savings scheme specifically for the girl child

Mahila-E-Haat	2016	Online marketing platform for women entrepreneurs, SHGs, and NGOs
Mahila Shakti Kendra	2017	Empower rural women with skill development, digital literacy, employment, health, and nutrition
Pradhan Mantri Matru Vandana Yojna	2017	Maternity Benefit Programme implemented in sync with the National Food Security Act
SWADHAR Greh	2018	Provide basic needs for women in distress
Project StreeSwabhiman	2018	Sustainable model for providing affordable sanitary products in rural areas
Nari Portal	2018	Mission Mode Project for women empowerment
Universalisation of Women Helpline (Dial 181)	2019	Provide 24x7 emergency/non-emergency response to women affected by violence

Committee and Commission

National Commission for Women (NCW), 1992

Protection and promotion of women's rights

Sub-Committee on CEDAW at NHRC - Sub-Committee on Convention on Elimination of All Forms of Discrimination Against Women (CEDAW)

Establishment	May 2020
Chairperson	Smt. Jyotika Kalra, Hon'ble Member, NHRC
Rationale	Examine alignment of Indian legislation, policies, and schemes with CEDAW articles. - Identify gaps and recommend solutions.
Function	Resource and expert committee
Focus	CEDAW compliance

The National Commission for Women

The National Commission for Women Act, 1990 (Govt. of India Act No. 20 of 1990) established the National Commission for Women as a statutory entity in January 1992.

- **Functions:**
  - Review the constitutional and legal protections for women
  - Suggest corrective legislative actions
  - Make it easier for grievances to be resolved; and
  - Provide the government with advice on all policy issues affecting women.

Other Government Schemes for Women Empowerment in India

Scheme Name	Target Beneficiaries	Objective	Description
Pradhan Mantri Matru Vandana Yojana	Pregnant women (first live birth)	Provide financial support	Cash transfers before and after delivery
UdyamSakhi Portal for Women Entrepreneurs	Women entrepreneurs	Support and empower	Offers information, resources, and assistance
One Stop Centre Scheme	Women affected by violence	Integrated support	Medical, legal, psychological, and counseling services
Ujjwala Scheme	Women from economically disadvantaged households	Promote clean cooking fuel	Provides free LPG connections
SWADHAR	Women in difficult circumstances	Shelter, support, and rehabilitation	Serves destitute women, trafficking victims, and homeless women
Beti Bachao Beti Padhao	Girls	Education and welfare	Addresses declining child sex ratio
Mahila Samman Savings Certificate	Women and girls	Encourage savings	Special small savings scheme offered by Post Office
Women IN STEM	Women	Encourage participation in STEM fields	Supports education, training, and career development

Legislation	Objective
Prohibition of Child Marriage Act (2006)	Forbid underage marriages Make child marriage illegal Offer victims' rights protection Strengthen penalties for those who aid, abet, promote, or solemnize such weddings Minimum age of marriage: 21 for men, 18 for women

Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013	Define sexual harassment Outline complaint and investigation processes Specify appropriate course of action
Protection of Women from Domestic Violence Act, 2005	Recognize domestic violence as a crime Offer protection to victims of domestic violence Provide swift, affordable, and convenient justice Prevent domestic violence and respond appropriately if it occurs
Dowry Prohibition Act, 1961	Prohibit paying or receiving dowry
Maternity Benefit (Amendment) Act, 2017	Increase paid maternity leave from 12 to 26 weeks

SUPREME COURT

SC Doctrines

Doctrine	Description
Harmonious Construction Doctrine	Achieves balance between Fundamental Rights (FR) and Directive Principles of State Policy (DPSP)
Purposive Interpretation/Construction	Utilizes external material and internal aids for interpretation, often associated with judicial activism
Ancillary Powers Doctrine	Allows legislation on related incidental matters when power exists for a main subject
Colourable Legislation Doctrine	Prevents indirect achievement of what is prohibited directly
Pith and Substance Doctrine	Challenges the true nature of legislation, not just its ancillary effects
Severability Doctrine	Removes only the offending part of legislation
Eclipse Doctrine	Laws conflicting with FRs become inactive until the overlying FR is removed
Laches Doctrine	Imposes a time limit on claiming rights
Basic Structure Doctrine	Identifies unalterable aspects of the Constitution
Constitutional Morality	Laws must conform to constitutional values

Supreme court Case	Year	Key Points
Romesh Thapar V. State Of Madras,	1950	Liberty of the press is an essential part of the right to freedom of speech and expression under Article 19(1)(a).
Shankari Prasad Case	1951	Under Article 368, parliament can amend Fundamental rights
Berubari Union Case	1960	Can Parliament cede Indian territory (Berubari Union) to Pakistan, as per the Nehru-Noon Agreement through simple majority or by Constitutional amendment. Preamble could be used as a guiding principle
Sajjan Singh Case	1965	SC opined that Parliament can amend any part of the Constitution including the Fundamental Rights
GolaknathCase	1967	FR can't be amended by parliament;to amend these rights a new Constituent Assembly is required
Kesavananda Bharti Case	1973	In context of **Kerala land reforms legislation of 1970;** Preamble is a **part of Constitution but not a source of power nor a source of limitations; Doctrine of Basic Structure**
ADM, Jabalpur Vs Shivkant Shukla	1976	Person has any locus standi to move any writ petition under Article 226 before a High Court for habeas corpus or any other writ or order or direction to challenge the legality of an order of detention on the ground that the order is not under or in compliance with the Act or is illegal
Maneka Gandhi V. Union Of India,	1978	**right of travel and to go outside the country is included in the right to personal liberty; due process of law**
Minerva Mills V/S Union Of India	1980	**Widened the scope of Fundamental rights by striking down 42nd Amendment Act 1976;** Fundamental Rights and the DPSP are complimentary to each other and there should be a balance between them.
Bacchan Singh Vs State Of Punjab	1980	**Constitutional Validity of** death penalty; **doctrine of 'rarest of rare case'** for awarding the death penalty
M. C. Mehta V. State Of Tamil Nadu	1986	**children should not be employed in hazardous jobs** in factories; **changed the scope of Environment Law in India**
Mohini Jain Vs State Of Karnataka	1989	**Right to Education' is concomitant to the fundamental rights** enshrined under Part III of the Constitution. It is directly flowed from A.21 – right to life
S R Bommai Vs Union Of India	1991	**President rule under A.356 of constitution to be used politically but sparingly only when need arise.**
Indra Sawhney And	1992	Rule of Law added as an element of basic structure; Validity of Resrvation

Union Of India		
KihotoHollohan Case	(1992)	validity of the anti-defection law was upheld by supreme court. It made the Speaker's order subject to judicial review but on limited grounds.
Lic Of India Case	1995	**Preamble is not enforceable but is the integral part of the Constitution**
VishakaAnd State Of Rajasthan	1997	**Subject matter:** workplace sexual harassment Vishaka Guidelines'
Union Of India V. Association For Democratic Reforms	2002	**It is a voters fundamental right to** know the backgrounds of candidates contesting elections to hold public office. This right comes from Right to freedom of speech and expression
I.R. Coelho Case	2007	No blanket immunity on **judicial review of laws included in the Ninth Schedule**
Prakash Singh Vs Union Of India	2007	Directives and practical mechanism to start the reforms in Police, making it more democratic
People'S Union For Civil Liberties Vs. Union Of India	2013	NOTA judgement; Indian voters got the NOTA (None-Of-The-Above) option in elections.
Shreya Singhal Vs Union Of India	2015	Reasonable restrictions under Article 19(2) may be imposed only if it incites violence or leads to public disorder
Justice K.S. Puttaswamy Vs. Union Of India	2017	Right to Privacy - **Fundamental Right to Privacy** is **intrinsic to life and liberty** and thus, comes under **Article 21** of the Indian constitution.
Abhiram Singh V. C. D. Commachen Case	2017	Seeking votes on Religion and Caste lines is illegal and amounts to corrupt practices. SC reaffirmed the secular character of the Indian state
Navtej Singh Johar Vs. Union Of India	2018	Section 377 of IPC (Criminalize homosexuality), Article 21(Right to privacy), Article 14 & 15; Decriminalization of Homosexuality
Indian Young Lawyers Association Vs. The State Of Kerala	2018	SABARIMALA TEMPLE CASE; **devotion cannot be subjected to gender discrimination.**
Lok Prahari Vs Union Of India Case	2018	Central Government to amend the rules as so that candidates contesting election can give information about the sources of their income, and those of their spouses and dependents; Non-disclosure of assets would be considered a corrupt practice under RPA 1951
Association For Democratic Reforms V. Union Of India	2019	Subject matter of the case: Related to donation through Electoral bonds
Amit Sahani Vs Commissioner Of Police & Others.	2020	Right to protest vs Right to commute; democracy and dissent go together **indefinite "occupation" of a public road is unacceptable**
Anuradha Bhasin Case	2020	Right to Internet access as a fundamental right under A.21; **Internet as a medium is a major means of information diffusion**
Punjab V. Davinder Singh	2020	States can sub-classify Scheduled Castes and Scheduled Tribes in the Central List Aim of state to provide preferential treatment to the last mile / vulnerable or weakest of all
Mukesh Kumar Vs The State Of Uttarakhand	2020	**no fundamental right to reservation in promotions; There is no such mandate to states to provide reservation in promotion**
Rambabu Singh Thakur Vs Sunil Arora	2020	**political parties to publish the entire criminal history; They have to submit compliance reports** with the Election Commission of India
Common Cause V Union Of India	2021	**Subject matter: extensions to the tenures of directors of Central Bureau of Investigation (CBI) and the Enforcement Directorate** **tenures could be extended only in 'rare and exceptional' cases**
Subhash Desai V Principal Secretary, Governor Of Maharashtra And Ors	2023	**Speaker to decide the disqualification petitions of MLAs "within a reasonable time; Speaker to decide whether the rebellion amounts to defection.**
All India Judges Association V. Union Of India	2024	**District judiciary's independence is part of the basic structure**

8 MISCELLANEOUS

INDICES

Index Name	Index Released by	India's Rank	First Rank and Index Specifications
Global Peace Index 2023	Institute for Economics and Peace (IEP)	126th	India ranks 126th out of 163 Countries, 17th Edition of GPI, India scored 2.578 points and ranked 21st among 26th Asian Countries
Global Climate Risk Index 2021	The International Environmental think tank 'Germanwatch'	7th, 1st rank – Mozambique	1st rank – Mozambique, calculates economic and fatalities losses due to weather-related causes
Democracy Index 2021	Economist Intelligence Unit	46th, 1st rank – Norway	1st rank – Norway, based on 60 indicators grouped in five different categories
Global Talent Competitiveness Index 2023	INSEAD, Portulans Institute, Human Capital Leadership Institute	103, 1st rank – Switzerland	1st rank – Switzerland, shows gap between high-income, talent-rich nations and the rest of the world widening
Human Development Index 2021	United Nations Development Programme	132nd, 1st rank – Switzerland	1st rank – Switzerland, based on three dimensions: long and healthy life, knowledge, and a decent standard of living
Global Crypto Adoption Index 2022	Chainalysis	4th, 1st rank – Vietnam	1st rank – Vietnam, measures level of cryptocurrency adoption among 20 countries
Global Hunger Index 2023	Concern Worldwide and Welthungerhilfe	111th	Measures and tracks hunger globally, regionally, and country-wise
Smart City Index 2020	Institute for Management Development	85th, Topped by Singapore	Topped by Singapore, surveyed 109 cities, Hyderabad ranked 85th highest among Indian cities
Global Food Security (GFS) Index 2021	London-based Economist Impact, sponsored by Corteva Agriscience	71st, 1st rank – Ireland	1st rank – Ireland, measures performance of 113 countries, includes 58 unique food security indicators including Income and Economic Inequality
World Happiness Report 2023	Sustainable Development Solutions Network	126th, 1st rank – Finland	1st rank – Finland, measures happiness of citizens in 136 countries
Human Freedom Index 2021	American think tank Cato Institute and Fraser Institute in Canada	119th, 1st rank – Switzerland	1st rank – Switzerland, measures performance of 165 countries based on 79 indicators
Henley Passport Index 2024	International Air Transport Association (IATA)	80th, 1st rank – France, Germany, Italy, Spain, Japan, and Singapore	1st rank – France, Germany, Italy, Spain, Japan, and Singapore, ranks world's most powerful passports, India's visa-free score is 62
Global Kids Rights Index	Kids Rights Foundation	113rd, 1st rank – Iceland	1st rank – Iceland, measures performance of 182 countries, surveyed in 5 topics: Right to Life, Health, Education, Protection, and Enabling Environment for Child Rights
Global Talent Competitiveness Index	Adecco Group, INSEAD, Tata Communications	72nd, 1st rank – Switzerland	1st rank – Switzerland, measures performance of 132 countries, India ranked 72nd with a score of 40.42
Ease of Doing Business 2020	World Bank	63rd, 1st rank – New Zealand	1st rank – New Zealand, measures performance of 190 countries, considers 12 areas of Business Regulation
Corruption Perception Index 2021	Transparency International	85th, Topped by Denmark, Finland, New Zealand, and Norway	Topped by Denmark, Finland, New Zealand, and Norway, measures performance of 180 countries, India scored 40
World Press Freedom Index 2023	Reporters Without Borders	161st, 1st rank – Norway	1st rank – Norway, measures performance of 180 countries
World Competitive Index 2023	International Institute for Management Development (IMD)	40th, 1st rank – Denmark	1st rank – Denmark, examines impact of COVID-19 on economy of 64 countries, top-performing Asian economies: Singapore (5th), Hong Kong (7th), Taiwan (8th), and China (16th)
Renewable Energy	Ernst & Young (EY)	3rd, 1st rank –	1st rank – United States, measures performance of

Country Investment attractiveness index 2021		United States	top 40 global nations on attractiveness of renewable energy investment and deployment opportunities
Global Terrorism Index 2021	Institute for Economics and Peace (IEP)	13th, 1st rank – Afghanistan	1st rank – Afghanistan, shows points from 0 (no impact of terrorism) to 10 (highest impact), India scored 7.43
Global Innovation Index 2023	World Intellectual Property Organization	40th, 1st rank – Switzerland	1st rank – Switzerland, provides performance ranks of 132 economies based on 81 indicators
World Digital Competitiveness Ranking	IMD World Competitiveness Center	49th, 1st rank – United States	
Climate Change Performance Index 2024	Germanwatch, the NewClimate Institute, and Climate Action Network International.	7th, Denmark-4th	

SPORTS CURRENT AFFAIRS

A summary of the recent sports news:

- **Indian Football Ranking:** Indian football has hit a seven-year low, sliding to the 117th spot in the FIFA Rankings.
- **Sumit Nagal:** India's top-ranked tennis player, Sumit Nagal, secured the 98th spot in the ATP's top 100 rankings by winning the ATP Chennai Open Challenger.
- **U19 World Cup 2024 Final:** Australia defeated India by 79 runs in the U19 World Cup 2024 Final.
- **SAFF Women's U-19 Championships:** India and Bangladesh were declared joint winners.
- **Khelo India Winter Games 2024:** The Khelo India Winter Games 2024 is set to commence, with Ladakh making its debut as a host alongside Jammu & Kashmir. The snow leopard is the mascot, symbolizing the spirit of the Games and bringing attention to snow leopard conservation.
- **Rohan Bopanna:** Indian tennis star Rohan Bopanna became the oldest player to claim the No. 1 spot in the men's doubles rankings at the age of 43.
- **Praggnanandhaa Surpasses Viswanathan Anand:** Rameshbabu Praggnanandhaa defeated World Champion Ding Liren, surpassing Viswanathan Anand to become India's No.1 Chess Player.
- **The Best FIFA Football Awards 2024:** Lionel Messi won the Best FIFA Men's Player award, while Aitana Bonmati won the Women's Player of the Year award.
- **Australian Open 2024 Winners:** Jannik Sinner won the men's singles, Aryna Sabalenka won the women's singles, and Rohan Bopanna secured his first men's doubles Grand Slam title with partner Matthew Ebden.
- **Khelo India Youth Games 2024:** The games kicked off in Tamil Nadu, with Maharashtra defending their title after topping the medals tally.

Name of the Winner	Event	Name of the Winner	Event
Vaishali Rameshbabu	IV El Llobregat Open	**Marco Bezzecchi**	MotoGP India Grand Prix 2023
Kiyana Parihar (Under-8 Girls) and Harsh Suresh (U-16 Open)	25th Asian Youth Chess Championships 2023	**Max Verstappen**	Belgian Grand Prix 2023
Manchester City	FIFA Club World Cup 2023	**Women's Archery Team**	World Archery Championships
Payal (48 kg), Nisha (52 kg), and Akanksha (70 kg)	IBA Junior World Boxing Championships 2023: gold	**The Indian wrestlers**	World u17
Ramkumar Ramanathan	ITF Kalaburagi Open 2023	**India**	Asian Champions Trophy 2023
Leander Paes and Vijay Amritraj	Election to the International Tennis Hall of Fame	**Ashleigh Gardner and Chris Woakes**	ICC Players
Antim Panghal	United World Wrestling (UWW) Rising Stars of the Year 2023	**Spain**	FIFA Women's World Cup 2023
Haryana	Khelo India Para Games (KIPG) 2023, Delhi	**Anahat Singh**	Asian Junior Squash Individual Championships: Gold
Airport Authority of India (AAI)	75th Inter State-Inter Zonal Badminton Championships 2023	**Priya Malik**	U20 World Wrestling: Gold
Hardik Singh and Savita Punia	FIH Hockey Star Awards for the 2023 season	**Neeraj Chopra**	World Athletics Championships

Dommaraju Gukesh	Chennai Grand Masters 2023 tournament	**Max Verstappen**	Dutch Grand Prix 2023
Magnus Carlsen and Koneru Humpy	2023 FIDE World Rapid Chess Championship: silver	**HS Prannoy**	The BWF World Badminton Championships: Bronze medalist
Aishwary Pratap Singh Tomar	Asian Shooting Championships 2023: gold	**Neeraj Chopra**	Lausanne Diamond League
The Indian Women's Hockey Team	Women's Asian Champions 2023	**Max Verstappen**	Austrian Grand Prix 2023
Australia	Sixth ODI World Cup	**Yuki Bhambri**	Mallorca Championship
Pankaj Advani	IBSF World Billiards Championship	**Lakshya Sen**	Canada Open
Novak Djokovic	ATP Finals	**Marketa Vondrousova**	Wimbledon champion
Anish Bhanwala	ISSF World Cup Final 2023: Bronze	**Team of Indian Athletes**	Asian Athletics Championship
Anahat Singh	National Squash Championship 2023	**Indian GM Praggnanandhaa**	Tata Steel Chess Masters
Aditi Ashok	Ladies European Tour	**Carlos Alcaraz**	Wimbledon Championships
Italy	Davis Cup 2023	**Max Verstappen**	Hungarian Grand Prix
Max Verstappen	Red Bull 2023	**Satwik-Chirag**	Korea Open
Punjab Hockey Team	13th Senior National Men's Championship	**Brian Harman**	The Open Championship
Raunak Sadhwani	FIDE World Junior Rapid Chess Championship 2023	**Pakistan**	ACC Men's Emerging Teams Asia Cup 2023
Ayush Shetty	BWF World Junior Championships 2023	**Jonas Vingegaard**	The Tour de France
Max Verstappen	One world championship	**Aditya Samant**	Biel Master Tournament
Karthikeyan Murali	Qatar Masters Tournament 2023	**Asmita Dey**	Junior Asian Judo Championships
Unnati Hooda	Abu Dhabi Masters 2023	**Iga Swiatek**	Warsaw Open
Nodirbek Yakubboev	Qatar Masters 2023	**The Indian women's hockey team**	Torneo del Centenario
Max Verstappen	Italian Grand Prix	**Chennai Super Kings**	TATA Indian Premier League 16th Season, 2023
Novak Djokovic	US Open 2023	**India**	Dhofar Municipality Men's Hockey Junior Asia Cup 2023
Mohun Bagan	Super Giant beat East Bengal	**Punjab University**	3rd Edition of the Khelo India University Games
Divya Deshmukh	Tata Steel Chess	**Max Verstappen**	Spanish Grand Prix 2023
Prathamesh Jawkar	Archery World Cup Final	**Aravindh Chitambaram**	Dubai Open Chess 2023
Riya Sachdeva	Asian under-16 tennis championship	**Magnus Carlsen**	Superbet Rapid and Blitz Poland 2023
Arjun Lal Jat and Arvind Singh	19th Asian Games, Hangzhou, China	**Chirag Shetty and Satwiksairaj Rankireddy**	Indonesian Badminton Open 2023
India: 4th with 107 medals - 28 gold, 38 silver and 41 bronze.	19th Asian Games	**Indian Football Team**	Hero Intercontinental Cup 2023
Indian women's cricket team	19th Asian Games	**Indian Women Hockey Team**	Women's Junior Asia Cup 2023
Murali Sreeshankar	Paris Diamond League 2023: 3rd place in Long Jump	**Novak Djokovic**	French Open 2023: 23rd Grand Slam Title
Egypt	Squash World Cup 2023	**India**	Special Olympics World Games Berlin 2023: 202 medals

PERSONS IN NEWS

Person in News	Why in the News?
Chirag Shetty and Satwiksairaj Rankireddy	Conferred with the Major Dhyan Chand Khel Ratna Awards for their achievements in badminton doubles.
Suryakumar Yadav	Named ICC Men's T20I Player of the Year.
Rachin Ravindra	Awarded the ICC Men's Emerging Cricketer of the Year.
Rohan Bopanna	Won the men's doubles title at the Australian Open (with Matthew Ebden), marking his first Grand Slam title. Became the oldest man to win a Grand Slam title.
Lionel Messi	Won the Best FIFA Men's Player award for the record-breaking seventh time, highlighting his exceptional contributions to football.
Rameshbabu Praggnanandhaa	Surpassed the legendary Viswanathan Anand to become India's top-ranked chess player.
Vijayakanth	Passed away in December 2023, known for his contributions to Tamil cinema and politics.
Sheikh Hasina	Secured a landslide victory in January 2024, general elections, marking her fourth consecutive term as Prime Minister of Bangladesh.
Ustad Rashid Khan	Renowned musician and composer passed away, received Padma Shri, Padma Bhushan, and Bharat Ratna for his contributions to Hindustani classical music.
Tshering Tobgay	Re-elected as the Prime Minister of Bhutan in the National Assembly elections held in January 2024.
Dr. Nitya Anand	A renowned scientist known for discovering India's first oral contraceptive pill 'Saheli,' passed away at the age of 99.
Nadia Calviño	Became the first woman and first Spaniard to preside over the European Investment Bank (EIB) starting January 1, 2024.
Henry Kissinger	Passed away at the age of 100. Known for shaping U.S. foreign policy during the Cold War, and involvement in ending the Vietnam War.
Sanjiv Khanna	Appointed as the Executive Chairperson of the National Legal Services Authority (NALSA).
Akshata Krishnamurthy	First Indian to operate a Mars rover for NASA, contributing to global space exploration.
Daniel Barenboim and Ali Abu Awwad	Indira Gandhi Prize for Peace was awarded jointly to Daniel Barenboim and Ali Abu Awwad for promoting peace and understanding between Israel and the Arab world.
V R Lalithambika	Conferred with the prestigious Légion d'honneur by France for enhancing space cooperation between France and India.
Kabir Bedi	Conferred with the 'Order of Merit,' one of the highest civilian honours in Italy, for his achievements in the entertainment industry.
Angelo Mathews	Angelo Mathews, a Sri Lankan cricketer, became the first player in international cricket history to be dismissed "timed out" during a 2023 World Cup match against Bangladesh.
Heeralal Samariya	Sworn in as the new Chief of the Central Information Commission (CIC). CIC oversees the implementation of the Right to Information Act 2005.
Nandini Das	Nandini Das, an Indian-born author and Professor at the University of Oxford won the 2023 British Academy Book Prize for Global Cultural Understanding. Winning book: "Courting India: England, Mughal India, and the Origins of Empire."
Vir Das	Vir Das won the Emmy for Best Comedy for "Vir Das: Landing" at the 51st International Emmy Awards.
Paul Lynch	Irish writer Paul Lynch won the Booker Prize for his novel "Prophet Song." The novel revolves around a woman safeguarding her family during Ireland's collapse into totalitarianism and war.
Sivasankari	Tamil writer Sivasankari was honoured with the Saraswati Samman for her book of memoirs titled "Surya Vamsam."
Claudia Goldin	Claudia Goldin received the Nobel Prize in Economic Sciences for her significant contributions to understanding the status of women in the workforce and the persistence of the gender pay gap.
Pierre Agostini, Ferenc Krausz, and Anne L'Huillier	They were awarded the Nobel Prize in Physics for their pioneering work in the field of attosecond physics. Their research focuses on studying physical processes occurring on the attosecond timescale, enabling a deeper understanding of electron dynamics in matter.
Narges Mohammadi	An Iranian human rights lawyer and activist was awarded the Nobel Prize for Peace for her courageous work in defending the rights of prisoners of conscience in Iran.
Dr. Katalin Karikó and Dr. Drew Weissman	They were awarded the Nobel Prize in Physiology or Medicine for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19.
Alexei Ekimov, Louis Brus, and Moungi Bawendi	They were awarded the Nobel Prize in Chemistry for their work on quantum dots. Their research has led to the development of new methods for synthesizing and characterizing quantum dots, as well as exploring various applications in fields such as LED screens, solar cells, and biomedical imaging.

Jon Fosse	Norwegian author was awarded the Nobel Prize for Literature for his innovative plays and prose that give voice to the unsayable.
Joyeeta Gupta	Dutch environmental scientist and professor won the Spinoza Prize in recognition of her significant contributions to the field of climate change.
M. S. Swaminathan	He was known as the "Father of India's Green Revolution," and passed away at 98. His pioneering work in developing high-yielding crop varieties and advocacy for farmers included proposing a Minimum Support Price (MSP) 50% higher than production costs as the Chair of the National Commission on Farmers in 2004.
Jaya Verma Sinha	Jaya Verma Sinha becomes the first woman to be appointed as the Chairperson of India's Railway Board, the highest decision-making body in the Railway Ministry.
NV Ramana	Former Chief Justice of India (CJI) NV Ramana has been appointed as a member of the International Mediator Panel, a prestigious recognition, by the Singapore International Mediation Centre (SIMC).
Tharman Shanmugaratnam	Tharman Shanmugaratnam's election as Singapore's 9th President marks a historic moment as the first non-Chinese and Indian-origin president.
R Madhavan	Appointed as the new president of the Film and Television Institute of India (FTII) and chairman of the governing council.
Ravi Kannan	Oncologist Dr. Ravi Kannan from Assam received the 2023 Ramon Magsaysay Award for his exceptional efforts in offering free or affordable cancer treatment to rural communities.
Swati Nayak	Swati Nayak, an Indian agriculture scientist known as "Bihana Didi" (Seed Lady) by local communities in Odisha, was awarded the prestigious Norman E Borlaug Award for 2023.
Waheeda Rehman	Veteran actor Waheeda Rehman to receive Dadasaheb Phalke Lifetime Achievement Award for her contribution to Indian cinema.

IMPORTANT DAYS

Important Days	Key Points and Themes
World Neglected Tropical Diseases Day January 30, 2024)	The theme was “Unite. Act. Eliminate.”.
National Voters Day (January 25, 2024)	The theme was "Nothing Like Voting, I Vote For Sure."
National Tourism Day (January 25, 2024)	Highlights the significance of the tourism industry in India's economy and cultural exchange. The theme for 2024 was "Sustainable Journeys, Timeless Memories".
National Girl Child Day (January 24, 2024)	The theme was “Mere Viksit Bharat Ka Sapna” translates to "The Dream of Developed India."
National Startup Day (January 16, 2024)	The theme was "Celebrating 8 Years of Innovation."
Indian Army Day (January 15, 2024)	The theme was“In Service of the Nation.”
National Youth Day (January 11, 2024)	The theme was “MYBharat-Viksit Bharat@2047- By the Youth, For the Youth”.
National Road Safety Week 2024 (January 11-17, 2024)	The theme was "Be a Road Safety Hero."
National Human Trafficking Awareness Day (January 11, 2024)	The theme was "Activate Connections to Prevent Human Trafficking."
Startup India Innovation Week 2024 (January 10-18, 2024)	Organized by the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry, The theme was "Startups Unlocking Infinite Potential," featuring various events and activities.
World Hindi Day (January 10, 2024)	The theme was "Hindi–Bridging Traditional Knowledge and Artificial Intelligence."
World Braille Day (January 4, 2024)	To honour Louis Braille, the inventor of the Braille system. The theme for 2024 was "Empowering Through Inclusion and Diversity."
Good Governance Day (December 25)	Celebrated on the birth anniversary of former Prime Minister Atal Bihari Vajpayee.
National Farmers' Day (December 23)	Observed on the birth anniversary of former Prime Minister Chaudhary Charan Singh. The theme for 2023: 'Delivering Smart Solutions for Sustainable Food Security and Resilience.'
National Mathematics Day (December 22)	Honours the legacy of Srinivasa Ramanujan, a great mathematician. Celebrated

	on his birth anniversary.
International Human Rights Day (December 10)	Marks the anniversary of the adoption of the Universal Declaration of Human Rights in 1948. Theme for 2023: "Freedom, Equality and Justice for All."
International Anti-Corruption Day (December 9)	The theme for 2023: 'UNCAC at 20: Uniting the World Against Corruption.'
World Soil Day (December 5)	The theme for 2023: 'Soil and Water, a Source of Life.'
International Day of Persons with Disabilities (December 3)	The theme for 2023: "United in action to rescue and achieve the SDGs for, with and by persons with disabilities."
International Day of Persons with Disabilities (December 3)	The theme for 2023: "United in action to rescue and achieve the SDGs for, with and by persons with disabilities."
International Day for the Abolition of Slavery (December 2)	The theme for 2023: "Fighting slavery's legacy of racism through transformative education."
National Pollution Control Day (December 2)	Creates awareness about pollution's harmful effects and remembers the victims of the Bhopal gas tragedy. The theme for 2023: "Sustainable Development for a Clean and Healthy Planet."
World AIDS Day (December 1)	Raises awareness about HIV/AIDS, commemorates those who lost their lives, and advocates for continued efforts in prevention, treatment, and research. The theme for 2023: "Let Communities Lead."
BSF Raising Day (December 1)	Commemorates the foundation of the Border Security Force (BSF) in 1965. The BSF is the world's largest border-guarding force, responsible for securing India's land borders with Pakistan and Bangladesh.
World Sustainable Transport Day (November 26)	Theme 2023: "Sustainable transport, sustainable development."
Constitution Day of India (November 26)	Commemorates the adoption of the Constitution of India on November 26, 1949.
National Milk Day (November 26)	Commemorates the birth anniversary of Dr. Verghese Kurien, the father of India's White Revolution.
International Day for the Elimination of Violence against Women (November 25)	Theme 2023: "UNITE! Activism to End Violence against Women & Girls."
World Fisheries Day (November 21)	Theme 2023: "Celebrating the Wealth of Fisheries and Aquaculture."
World Children's Day (November 20)	Theme 2023: "For every child, every right."
International Men's Day (November 19)	Theme 2023: "Zero Male Suicide."
World Heritage Week (November 19-25)	Theme 2023: "Heritage Changes."
World Toilet Day (November 19)	Theme 2023: "Accelerating Change."
World AMR (Antimicrobial Resistance) Awareness Week (November 18-24)	Theme 2023: "Preventing Antimicrobial Resistance Together."
National Press Day (November 16)	Theme 2023: "Media in the Era of Artificial Intelligence."
International Day for Tolerance (November 16)	Commemorates Mahatma Gandhi's contributions.
Janjatiya Gaurav Divas (November 15)	Birth anniversary of freedom fighter and tribal leader Birsa Munda.
National Children's Day (November 14)	Marks the birth anniversary of Pandit Jawaharlal Nehru.
World Diabetes Day (November 14)	World Diabetes Day (November 14)
World Pneumonia Day (November 12)	Theme 2023: "Every Breath Counts: Stop Pneumonia in Its Track."
National Education Day (November 11)	Theme 2023: "To invest in people, prioritize education." Marks the birth anniversary of Maulana Abul Kalam Azad, the first education minister of independent India.
National Ayurveda Day (November 10)	Theme 2023: "Ayurveda for One Health."
National Legal Services Day (November 9)	Theme 2023: "Access to Justice for All: Empowering the Marginalized through Legal Awareness."
World Tsunami Awareness Day (November 5)	Theme 2023: "Fighting Inequality for a Resilient Future."

International Day for Biosphere Reserve (BR) (November 3)	India has 18 BRs, with the first in the Nilgiris, the largest in the Gulf of Kachchh (Gujarat), and the smallest in Dibru-Saikhowa (Assam).
India Water Week (November 1-5)	Theme 2022: "Water Security for Sustainable Development with Equity."
Vigilance Awareness Week (October 30 - November 5)	Theme 2023: "Say no to corruption; commit to the Nation."
Global Media and Information Literacy Week (October 24-31)	Theme 2023: "Media and Information Literacy in Digital Spaces: A Collective Global Agenda."
United Nations Day (October 24)	Theme 2023: "The Frontlines of Climate Action."
World Snow Leopard Day (October 23)	The Snow Leopard (Panthera uncia) is classified as Vulnerable on the IUCN Red List of Threatened Species.
International Day for the Eradication of Poverty (October 17)	Theme 2023: "Decent Work and Social Protection: Putting Dignity in Practice for All."
World Food Day (October 16)	Theme 2023: "Water is Life, Water is Food. Leave No One Behind."
Global Handwashing Day (October 15)	Theme 2023: "Clean Hands Are Within Reach."
International Day of Rural Women (October 15)	Theme 2023: "Rural Women, Women with Rights."
World Standards Day (October 14)	Theme 2023: "Shared Vision for a Better World – Standards for Sustainable Development Goals (SDG)."
World Migratory Bird Day (October 14)	Theme 2023: "Water: Sustaining Bird Life."
International Day for Disaster Risk Reduction (October 13)	Theme 2023: "Fighting inequality for a resilient future."
International Day of the Girl Child (October 11)	Theme 2023: "Invest in Girls' Rights: Our Leadership, Our Well-being."
World Mental Health Day (October 10)	Theme 2023: "Mental health is a universal human right."
National Postal Week (October 9-13)	Theme 2023: "Together for trust: Collaborating for a safe and connected future."
World Post Day (October 9)	Theme 2023: "Together for trust: Collaborating for a safe and connected future."
World Cotton Day (October 7)	Theme 2023: "Making cotton fair and sustainable for all, from farm to fashion."
World Teachers' Day (October 5)	Theme 2023: "The teachers we need for the education we want: The global imperative to reverse the teacher shortage."
World Space Week (October 4-10)	Theme 2023: "Space and Entrepreneurship."
World Animal Day (October 4)	Theme 2023: "'Great or Small, Love Them All'."
International Day of Non-Violence (October 2)	Observes Gandhi Jayanthi, the 154th Birth Anniversary of Mahatma Gandhi.
World Habitat Day (October 2)	Theme 2023: "Resilient urban economies. Cities as drivers of growth and recovery."
World Heart Day (September 29)	Theme 2023: "Use Heart, Know Heart."
World Tourism Day (September 27)	Theme 2023: "Tourism and green investment."
World Maritime Day (September 28)	Theme 2023: "MARPOL at 50 – Our commitment goes on."
World Environmental Health Day (September 26)	Theme 2023: "Global Environmental Public Health: Standing up to protect everyone's Health each and every day."
Antyodaya Diwas (September 25)	Birth anniversary of Indian leader Pandit Deendayal Upadhyaya.
International Day of Sign Languages (September 23)	Theme 2023: "A World Where Deaf People Everywhere Can Sign Anywhere!"
International Day of Peace (September 21)	Theme 2023: "Actions for peace: Our ambition for the #GlobalGoals."
World Bamboo Day (September 18)	Bamboo is also known as "Green Gold."
World Ozone Day (September 16)	Theme 2023: "Montreal Protocol: fixing the ozone layer and reducing climate change."
International Day of Democracy (September 15)	Theme 2023: "Empowering the next generation."
Hindi Diwas (September 14)	World Hindi Day is observed on January 10 every year.
International Day for South-South Cooperation (September 13)	Theme 2023: "Solidarity, Equity, and Partnership: Unlocking South-South Cooperation to Achieve the SDGs."
International Literacy Day (September 8)	Theme 2023: "Promoting literacy for a world in transition: Building the foundation for sustainable and peaceful societies."
National Teachers' Day (September 5)	Observed in India to commemorate the birth anniversary of Bharat Ratna Dr. Sarvepalli Radhakrishnan. World Teachers' Day is observed on October 5.
National Nutrition Week (September 1-7)	Theme 2023: "Suposhit Bharat, Sakshar Bharat, Sashakt Bharat (Nutrition-rich India, Educated India, Empowered India)."

National Sports Day (August 29)	Commemorates the birth anniversary of India's hockey wizard Major Dhyan Chand.
National Space Day (August 23)	Declared to commemorate the soft landing of Chandrayaan 3 on the Moon.
World Water Week (August 20-24)	Theme 2023: "Seeds of Change: Innovative Solutions for a Water-Wise World."
World Organ Donation Day (August 13)	Theme 2023: "Step up to volunteer; we need more organ donors to fill the lacunae."
International Youth Day (August 12)	Theme 2023: "Green Skills for Youth: Towards a Sustainable World."
World Biofuel Day (August 10)	Raises awareness about non-fossil fuels and honours Sir Rudolph Diesel's research experiments.
International Day of the World's Indigenous Peoples (August 9)	Theme 2023: "Indigenous Youth as Agents of Change for Self-determination."
National Javelin Day (August 7)	Celebrates Neeraj Chopra's gold medal win in men's javelin throw at the Tokyo 2020 Olympics.
National Handloom Day (August 7)	Commemorates the Swadeshi movement that started on August 7, 1905.
Earth Overshoot Day 2023 (August 2)	Campaign initiated by Andrew Simms and the Global Footprint Network to raise awareness about ecological overshooting.
World Breastfeeding Week (August 1-7)	Theme 2023: "Let's make breastfeeding and work, work."
World Day against Trafficking in Persons (July 29)	Theme 2023: "Reach every victim of trafficking, leave no one behind."
International Tiger Day (July 29)	Proposed in 2010 during the Saint Petersburg Tiger Summit.
World Nature Conservation Day (July 28)	Theme 2023: "Forests and Livelihoods: Sustaining People and Planet."
International Day for the Conservation of the Mangrove Ecosystem (July 26)	Adopted by UNESCO in 2015.
World Brain Day (July 22)	Theme 2023: "Brain Health and Disability: Leave No One Behind."
Nelson Mandela International Day (July 18)	Nelson Mandela was conferred with the Nobel Peace Prize in October 1993.
World Youth Skills Day (July 15)	Theme 2023: "Skilling teachers, trainers, and youth for a transformative future."
World Population Day (July 11)	Theme 2023: "Unleashing the power of gender equality: Uplifting the voices of women and girls to unlock our world's infinite possibilities."
World Zoonoses Day (July 6)	Commemorates Louis Pasteur's creation of a successful rabies vaccine in 1885.
International Plastic Bag Free Day (July 3)	Theme 2023: "Sustainable solution for a plastic-free world."
National Statistics Day (June 29)	Theme 2023: "Alignment of State Indicator Framework with National Indicator Framework for Monitoring Sustainable Development Goals."
MSME Day (June 27)	Theme 2023: "Future-ready MSMEs for India@100."
International Day Against Drug Abuse and Illicit Trafficking (June 26)	Theme 2023: "'People first: Stop stigma and discrimination, strengthen prevention.'"
United Nations Public Service Day (June 23)	Theme 2023: "Innovative Public Service Delivery: Ensuring No One Is Left Behind."
International Yoga Day (June 21)	Theme 2023: "Yoga for Vasudhaiva Kutumbakam" – 'Yoga for 'The World is One Family.'"
World Sickle Cell Day (June 19)	Theme 2023: "Building and strengthening global sickle cell communities, formalizing newborn screening and knowing your sickle cell disease status."
International Day for the Elimination of Sexual Violence in Conflict (June 19)	Theme 2023: "Bridging the gender digital divide to prevent, address and respond to conflict-related sexual violence."
Global Wind Day (June 15)	Organized by WindEurope and Global Wind Energy Council.
World Day Against Child Labour (June 12)	Theme 2023: "Week of Action against Child Labour." June 12-20, 2023: National Commission for Protection of Child Rights (NCPCR's) Elimination of Child Labour Week.
World Oceans Day (June 8)	Theme 2023: "Planet Ocean: tides are changing."
World Food Safety Day (June 7)	Theme 2023: "Food standards save lives."
World Environment Day (June 5)	Theme 2023: "Solutions to Plastic Pollution."
International Sex Workers' Day (June 2)	Theme 2023: "Access to Justice."
World Milk Day (June 1)	Theme 2023: "The potency of milk and the milk industry."
World No Tobacco Day (May 31)	Theme 2023: "We need food, not tobacco."
World Digestive Health Day (May 29)	Theme 2023: "Your Digestive Health: A Healthy Gut From the Start."
International Day of UN Peacekeepers (May 29)	Theme 2023: "Peace begins with me."
World Hunger Day (May 28)	Theme 2023: "Celebrating sustainable solutions to hunger and poverty."

World Menstrual Hygiene Day (May 28)	Theme 2023: "Making menstruation a normal fact of life by 2030."
Indian Commonwealth Day (May 24)	Theme 2023: "Forging a Sustainable and Peaceful Common Future."
International Day for Biological Diversity (May 22)	Theme 2023: "From Agreement to Action: Building Back Biodiversity."
World Metrology Day (May 20)	Theme 2023: "Measurements supporting the global food system."
National Endangered Species Day (May 19)	Theme 2023: "Celebrating the 50th anniversary of the Endangered Species Act."
International Nurses Day (May 12)	Theme 2023: "Our Nurses, Our Future."
International Day of Plant Health (May 12)	Theme 2023: "Plant Health for Environmental Protection."
National Technology Day (May 11)	Theme 2023: "Integrated Approach in Science and Technology for a Sustainable Future."
World Press Freedom Day (May 3)	Theme 2023: "Shaping a Future of Rights: Freedom of Expression as a Driver for All Other Human Rights."
International Labour Day (May 1)	Also known as International Worker's Day and May Day. First Labour Day or May Day was celebrated in Madras (Chennai) by the Labour Kisan Party of Hindustan on May 1, 1923.
World Day for Safety and Health at Work (April 28)	Theme 2023: "A safe and healthy working environment as a fundamental principle and right at work."
World Immunization Week (April 24-30)	Theme 2023: "The Big Catch-Up."
World Intellectual Property Day (April 26)	Theme 2023: "Accelerating Innovation and Creativity: Women and IP."
World Malaria Day (April 25)	Theme 2023: "Time to deliver zero malaria: invest, innovate, implement."
National Panchayati Raj Day (April 24)	Celebrates the implementation of the 73rd Amendment Act, 1992 of the Constitution.
Earth Day (April 22)	Theme 2023: "Invest In Our Planet."
World Heritage Day (April 18)	Theme 2023: "Heritage and Climate."
World Health Day (April 7)	Theme 2023: "Health for All."
International Day of Zero Waste (March 30)	Promotes zero-waste initiatives to achieve the Sustainable Development Goals.
Earth Hour (March 25)	An annual event organized by the World Wide Fund for Nature (WWF).
World Tuberculosis Day (March 24)	Theme 2023: "Yes! We can end TB!"
World Meteorological Day (March 23)	Theme 2023: "The Future of Weather, Climate, and Water Across Generations."
International Day of Forests (March 21)	Theme 2023: "Forests and health."
National Vaccination Day or National Immunization Day (March 16)	Theme 2023: "Vaccines Work for everyone."
World Consumer Rights Day (March 15)	Theme 2023: "Empowering Consumers through Clean Energy Transitions."
World Wildlife Day (March 3)	Theme 2023: "Partnerships for wildlife conservation."
Zero Discrimination Day (March 1)	Theme 2023: "Save lives: Decriminalise."

AWARDS

Award	Purpose/Focus	Important Facts
Indira Gandhi Prize for Peace, Disarmament, and Development	Recognizes efforts in environmental conservation, peace, and development	Established in 1986 in honor of former Indian Prime Minister Indira Gandhi
Goldman Environmental Prize	Honors grassroots environmental activists	Founded by Richard and Rhoda Goldman in 1989
Tyler Prize for Environmental Achievement	Recognizes individuals who have made significant contributions to environmental science, policy, and education	Established in 1973 by John and Alice Tyler
United Nations Champions of the Earth	Recognizes outstanding leaders from government, civil society, and the private sector whose actions have a positive impact on the environment	Initiated in 2005 by the United Nations Environment Programme
The Ramon Magsaysay Award for Community Leadership	Honors transformative work that addresses community concerns and brings positive change	Named after former Philippine President Ramon Magsaysay, started in 1957
Rachel Carson Prize	Recognizes women leaders in environmental protection	Named after environmentalist Rachel Carson, first awarded in 2002

The Zayed International Prize for the Environment	Rewards environmental initiatives globally	Established in 1999 by the United Arab Emirates
Champions of Nature	Recognizes contributions to conservation and sustainable development	Organized by the World Conservation Union (IUCN), first awarded in 2001
The Equator Prize	Honors outstanding community efforts to reduce poverty through the conservation and sustainable use of biodiversity	Launched by the United Nations in 2002 to recognize indigenous peoples' efforts in sustainable development
Right Livelihood Award	Honors individuals and organizations offering practical and exemplary solutions to the most urgent challenges facing the world today	Established in 1980, also known as the "Alternative Nobel Prize"
Global 500 Awards	Recognizes outstanding achievements in the protection and improvement of the environment	Established in 1987 by the United Nations Environment Programme (UNEP)
International Meteorological Organization Prize	Recognizes outstanding contributions to meteorology and related sciences	Awarded by the World Meteorological Organization (WMO)
Sasakawa Award	Recognizes outstanding efforts to reduce the risk of natural disasters	Presented by the United Nations International Strategy for Disaster Reduction (UNISDR)
Amrita Bishnoi Wildlife Protection Award	Recognizes efforts in wildlife conservation inspired by the Bishnoi community	Named after Amrita Devi Bishnoi, who sacrificed her life for tree conservation in 1730
1st World Agriculture Prize	Recognizes individuals or groups making significant contributions to global agriculture	Initiated by the Global Confederation of Higher Education Associations for Agricultural and Life Sciences (GCHERA)
GD Birla International Award	Recognizes outstanding contributions in various fields including environmental conservation	Instituted by the K.K. Birla Foundation, named after the Indian industrialist Ghanshyam Das Birla

Awardee	Awards	Awardee	Awards
Suganthy Sundararaj	PRSI National Award for Healthcare Contributions	**Bina Agarwal**	Kenneth Boulding Award
Lalithambika VR	Top French civilian honour	**Deepti Babuta**	Dhahan Prize
NTPC Bongaigaon	Greentech Environment Award	**Ektaa Kapoor**	International Emmy Directorate Award.
Odisha Pavilion	India International Trade Fair (IITF-2023) Award	**Paul Lynch**	Booker Prize
Power Grid Corporation of India Limited (PGCIL)	SKOCH Gold Award 2023	**All India Football Federation**	AFC President's Recognition Bronze award
ISRO and Team Chandrayaan-3	"Outstanding Contribution to Brand India" award at the 19th India Business Leader Awards (IBLA)	**Madhuri Dixit**	54th IFFI
Sheetal Devi	Best Young Athlete At APC Conference	**Pierre Agostini, Ferenc Krausz, and Anne L'Huillier**	Nobel Prize in Physics
Olympian M. Sreeshankar	35th Jimmy George Foundation Award	**Sudha Murty**	Global Indian Award
Amazon India	National Award For Empowering Individuals With Disabilities	**Moungi G. Bawendi, Louis E. Brus, and Alexei I**	Nobel Prize in Chemistry
Ranveer Singh	Prestigious Honor from Sharon Stone at Red Sea International	**Jon Fosse**	Nobel Prize in Literature

	Film Festival		
Lionel Messi	Time Magazine Names Lionel Messi 'Athlete of the Year' For 2023	**Narges Mohammadi**	Nobel Peace Prize
Indian-Origin Novelist Meira Chand	Singapore's Highest Arts Award	**Michael Douglas**	Lifetime Achievement Award
Michelle Zárate Palomec and Sebastian Mwaura	UN Global Climate Action Awards	**Guidance Tamil Nadu**	United Nations Promotion Award
Prashant Agrawal	National Award For 'Best Personality- Empowerment of Differently-abled'	**Mr. V. K. Singh, Mr. Daljeet Singh Khatri**	Golden Peacock Award.
Federal Bank	The prestigious title of 'Bank of the Year (India)'	**Institute of Chartered Accountants of India**	ISAR Honours
Nikhil Dey	2023 International Anti-Corruption Champion' by the US Government	**Kerala Gramin Bank**	Assocham awards
Veteran actor Kabir Bedi	Italy's civilian honour 'Order of Merit'	**Udhampur military station**	'Best Green Military Station'
Indian Scientist Dr. Hemachandran Ravikumar	Karmaveer Chakra Medal-2023	**Ashok Gadgil and Subra Suresh**	National Medal of Technology and Innovation and National Medal of Science
Hindi Writer Pushpa Bharati	33rd Vyas Samman	**Dhananjaya Y. Chandrachud**	Global Leadership
Ban Ki-moon	2023 Diwali 'Power of One' Award At UN	**Yogender Chaudhry**	Anubhav Awards 2023
Javed Akhtar	Padmapani Lifetime Achievement Award at Ajanta-Ellora Film Festival	**Smita Sharma**	Mahatma Awards
Dr. Atul Shah	2023 REACH Game Changing Innovator award	**Dr. Ravi Kannan**	Ramon Magsaysay Award
Daniel Barenboim and Ali Abu Awwad	Indira Gandhi Peace Prize	**Dr. Shanta Thoutam**	World Innovation Award
Vijay Amritraj and Leander Paes	International Tennis Hall of Fame	**Satyajit Majumdar**	Dr V G Patel Memorial Award
Antim Panghal	United World Wrestling (UWW), Rising Star of the Year	**Brig Sanjay Kumar Mishra**	Dr AM Gokhale award
Prof. Savita Ladage	Nyholm Prize for Chemistry Education Excellence	**Najma Akhtar**	Lifetime Achievement Award-Academia
Prof. B.R. Kamboj	M.S. Swaminathan Award	**Dr. Swati Nayak**	Norman Borlaug Field Award
Vasanthalakshmi Narasimhachari	Nritya Kalanidhi' award	**Gangubai Kathiawadi**	National Film Awards
Professor Adrian Michael Cruise	Prestigious Order of the British Empire	**Prime Minister Narendra Modi**	The Grand Cross of the Order of Honour'
'Oppenheimer'	Golden Globes Awards 2024	**SVAMITVA Scheme**	National Award for E-Governance
Shirshendhu Mukyopadhyaya	Kuvempu Rashtriya Puraskar	**Indian-American economist Raj Chetty**	Harvard University's George Ledlie Prize
Singapore's Changi Airport	World's Best Airport for 2023	**RatanTata**	'Udyog Ratna' Award
Surat and Indore	Swachh Survekshan Awards 2023	**Professor (Dr.) Om Narain Bhargava**	The National Geoscience Award
FIFA President Gianni Infantino	International Sports Personality of the Year	**Radio Mind Tree from Ambala, Haryana, Radio Hirakhand from Sambalpur, Odisha, and Voice of SOA from**	8th and 9th Community Radio Awards

		Cuttack, Odisha	
Matthew Macfadyen	75th Primetime Emmy Awards	**Filmmaker Kartiki Gonsalves**	Tara Award
REC Limited	ICAI Awards	**Michael Rosen**	PEN Pinter Prize
Lionel Messi	Best FIFA Men's Player 2023	**Lallianzuala Chhangte**	AIFF Men's Footballer
Aitana Bonmatí	Fifa best player awards	**Manisha Kalyan**	Second consecutive Women's Footballer
Karpoori Thakur, LK Advani, MS Swaminathan, Charan Singh, PV Narsimha Rao	Bharat Ratna Award	**Aruna Sairam and Shashank Subramanyam**	Chevalier award
Parbati Baruah, Jageshwar Yadav, Chami Murmu, Gurvinder Singh, Sathyanarayana Beleri, Dukhu Majhi, K. Chellammal, Sangthankima	Padma Shri Awards 2024	**Odisha**	Bhoomi Samman Award
Deepti Sharma	Best International Cricketer	**Byculla Railway station**	UNESCO's Asia Pacific Cultural Heritage Conservation award
Dr. Ritu Karidhal Srivastava and Naveen Tiwari	Gaurav Samman	**National Mineral Development Corporation**	ASSOCHAM Awards
12th Fail (Popular) & Joram (Critics)	69th Filmfare Awards	**Adani Transmission Limited**	Golden Peacock Environment Management Award
Ajit Mishra	Freedom of the City of London Award	**Gulzar, Sanskrit Scholar Rambhadracharya**	58th Jnanpith Award
Ministry of Culture's tableau	First prize	**Jagdish Bakan**	Michel Batisse Award
M. Sreeshankar	35th Jimmy George Foundation Award	**Joyeeta Gupta**	NWO Spinoza Prize
Mohammed Shami	Arjuna Award	**Paterson Joseph**	2023 RSL Christopher Bland Prize
Novak Djokovic and Aryna Sabalenka	International Tennis Federation	**Brihanmumbai Electric Supply and Transport**	UITP Awards 2023
Dr. Srinivas Naik Dharavath	Visionary Leader Icon Award	**Shaktikanta Das**	'Governor of the Year' Award
Dr. Poonam Khetrapal Singh	National Order of Merit Gold Medal	**South Indian Bank (SIB)**	Sixth Digital CX Awards
Sukrita Paul Kumar	Tagore Literary Prize	**Moeen Ali**	OBE for services to cricket
Crompton Greaves Consumer Electricals Ltd	National Energy Conservation Award 2023	**Arundhati Roy**	45th European Essay Prize
Axis Bank, SBI Card, Ujjivan Small Finance Bank, GAIL India Ltd., Bharat Electronics Ltd., Electronics Corporation of India Limited (ECIL), Tata Consultancy Services Ltd., Target India Pvt. Ltd., and Multi Commodity Exchange of India Ltd..	13th DSCI Excellence Awards	**Salman Rushdie**	Peace Prize of the German Book Trade for 2023
Bengaluru's	World Special Prize for an	**"When Climate Change**	4th Annual Health for All Film

Kempegowda International Airport	Interior 2023	**Turns Violent"**	Festival
NTPC Bongaigaon	Greentech Foundation	**Lalitha Natarajan**	2023 Iqbal Masih Award
Odisha Pavilion	"Excellence in Display"	**Sudha Murty**	Bal Sahitya Puraskar
B. Anantha Sarma and Abhinav Verma	SKOCH Gold Award 2023.	**Prime Minister Narendra Modi**	'Order of the Nile',
Nita Ambani	USISPF Global Leadership Award	**Rajindar Singh Dhatt**	Prestigious Points of Light award
Aitana Bonmati and Lionel Messi	Ballon d'Or	**Basu Kannogia, Dr. Mohan Ram, Ritesh Sirothia, Biswajit Mishra, and Millo Tasser**	Eco Warrior Awards
Nandini Das	British Academy Book Prize	**Apolinaris D'Souza**	19th Kalakar Puraskar Award
Vihaan Talya Vikas	Wildlife Photographer of the Year'	**Author Salman Rushdie**	'Lifetime Disturbing The Peace Award
Deenanath Rajput	2nd Rohini Nayyar prize	**Taekwondo Humanitarian Foundation.**	2023 Olympic Cup
Josefina Belmonte, Fundação Ellen Macarthur, Blue Circle, José Manuel Moller	Earth Award	**Suresh Ishwar Wadkar**	Gansamragini Lata Mangeshkar Award' f
Reserve Bank of India	Changemaker of the Year	**GAIL India's natural gas company**	Innovation Award,Midstream Project of the Year
Kerala	Global Responsible Tourism Award	**Indian Grandmaster Vidit Gujrathi**	FIDE Grand Swiss
Max Verstappen	Sao Paulo Grand Prix	**Serena Williams**	Fashion Icon award

BOOKS

Book Name	Author
Unsettled: Climate Change, Science, and Making Sense of the Present	Elizabeth Kolbert
The Ministry for the Future	Kim Stanley Robinson
Doughnut Economics: Seven Short Lessons for Creating a Prosperous Future	Kate Raworth
How Bad Are Bananas? The Carbon Footprint of Everything	Mike Berners-Lee
Silent Spring	Rachel Carson
Entangled Life: How Fungi Make Our Worlds, Change Our Minds & Shape Our Futures	Merlin Sheldrake
Half-Earth: Our Planet's Fight for Life	E.O. Wilson
Rewilding: Bringing Nature Home	Peter Wohlleben
The Sixth Extinction: An Unnatural History	Elizabeth Kolbert
The Water Justice Movement: Fighting for Safe and Affordable Water for All	Kimberly Wasserman
Greenpeace: Untold Story	Peter Denton
The Future of Climate Activism: A Practical Guide	Greta Thunberg & Vanessa Nakate

Authors/Released By	Book Name
British historian Simon Sebag Montefiore	"The World: A Family History"
Kaki Madhava Rao	"Breaking Barriers: the Story of a Dalit Chief Secretary"
Shashi Tharoor	"Ambedkar: A Life"
Dr. Ashvini Kumar Dwivedi	"Human Anatomy"
Sanjeev Sanyal	"Revolutionaries: The Other Story of How India Won Its Freedom"
Himanta Biswa Sarma	"Mukhyamantrir Diary 1"
Professor K.K. Abdul Gaffar's	"Njaan Sakshi"
Tamal Bandyopadhyay	"Roller Coaster: An Affair with Banking"
J. R. Moehringer	"Spare"
Aashish Chandorkar and Suraj Sudhir	"Braving A Viral Storm: India's Covid-19 Vaccine Story"

Javed Akhtar by Arvind Mandloi	"Jadunama"
Ma. Subramanian	"Come! Let's Run"
Dr. Ashwin Fernandes	"India's Knowledge Supremacy: The New Dawn"
Kaushik and Ramakrishnan Sridhar	"COACHING BEYOND: My Days with the Indian Cricket Team"
Meghnad Desai	"The Poverty of Political Economics"
Shubhra Gupta	"Irrfan Khan: A Life in Movies"
Former CJI Ranjan Gogoi	"Chief Minister's Diary No.1"
President J.P. Nadda	"Modi: Shaping a Global order in flux"
Salman Rushdie	"Victory City"
Satyajit Ray	"The Best of Satyajit Ray"
Palagummi Sainath (P Sainath)	"The Last Heroes"
Dr MA Hasan	"War & Women"
Vani Tripathi Tikoo	"Why can't Elephants be Red"
Lekhnath Chhetri	"Phoolange"
Aniruddha Bhattacharjee	"Basu Chatterji : And Middle-of-the-Road Cinema"
Perumal Murugan	"Pyre"
Shrimant Kokate	"Chhatrapati Shivaji Maharaj"
Anurag Behar	"A Matter of the Heart: Education in India"
Shri Rajiv Malhotra and Mrs. Vijaya Viswanathan	"Snakes in the Ganga"
Rao Inderjit Singh	"Women and Men in India 2022"
Rachna Biswat Rawat	"Bipin: The Man Behind the Uniform"
P. Jyothimani, former Judge	"India's Struggle for Independence – Gandhian Era"
Dr. Karan Singh	"Mundaka Upanishad: The Gateway to Eternity"
Abhay K	"The Book of Bihari Literature"
Dr.Gyan Chaturvedi	"Pagalkhana"
KM Chandrashekhar	"As Good As My Word"
Jagdeep Dhankar	"Mundaka Upanishad-The Bridge of immortality"
Sajjan singh Dev	"India's vaccine Growth story"
R N Ravi	"Pt. Deendayal Upadhaya : Dispersions of Thought"
Nandini Das	"Courting India: England, Mughal India and the Origins of Empire"
Piyush Babele	"Gandhi: Siyasat aur Sampradaiykta"
Pattabhi Ram	"The Great Bank Robbery NPAs, Scams And The Future Of Regulation: Robbery: NPAs, Scams and the Future of Regulation"
State Bank of India (SBI)	"The Banker To Every Indian"
Boria Majumdar	"Sachin@50 – Celebrating A Maestro"
Jaidip Mukerjea	"Autobiography "Crosscourt""
Amitav Ghosh	"Smoke and Ashes: A Writer's Journey Through Opium's Hidden Histories"
Prime Minister Narendra Modi	"Saurashtra-Tamil Sangamprashastih"
Narayanan Vaghul	"Reflections"
Shashi Shekhar Vempati	"Collective Spirit, Concrete Action"
Amitabh Kant	"MADE IN INDIA :75 Years of Business and Enterprise"
Kasturi Ray	"Droupadi Murmu: From Tribal Hinterlands to Raisina Hills"
Dr. Manoj Kumar	"Supreme Court On Commercial Arbitration"
Aditya Bhushan	"Guts Amidst Bloodbath : The Aunshuman Gaekwad Narrative"
Ruskin Bond	"The Golden Years"
Ramachandra Murthy Kondubhatla	"NTR: A Political Biography"
Dr. Vijay Darda	"Ringside"
KK Gopalakrishnan	"Kathakali Dance Theatre: A Visual Narrative of Sacred Indian Mime"
Abhay K	"Nalanda"
Shantanu Gupta	"Ajay to Yogi Adityanath"
Ashwinder Singh	"Master Residential Real Estate"
A.K. Bhattacharya	"India's Finance Ministers"
Roopa Pai	"The Yoga Sutra for Children"
Sudha Pai & Sajjan Kumar	"Maya, Modi, Azad: Dalit Politics in the Time of Hindutva"
Anita Bharat Shah	"Colours of devotion"
Abhishek Choudhary	"Vajpayee: The Ascent of the Hindu Right 1924-77"
Vinod Mankara	"Prism: The Ancestral Abode of Rainbow"
R. Chidambaram and Suresh Gangotra	"India Rising Memoir of a Scientist"

T.N. Seshan	"Through The Broken Glass: An Autobiography"
Debashis Chatterjee	"Krishna – the 7th Sense"
Former vice president Venkaiah Naidu	"As the wheel turns"
Dr. Nazema Maraikayar & Dr. Y.S. Rajan	"Dr. APJ Abdul Kalam: Memories Never Die"
Chetna Maroo	"Western Lane"
Rishi Raj	"Kargil: Ek Yatri Ki Jubani"
Neerja Chowdhury	"How Prime Ministers Decide"
PS Sreedharan Pillai	"Heritage Trees of Goa"
Dr. Dinesh Prasad Saklani	"Let's Move Forward"
Vipul Rikhi	"The Life, Vision and Songs of Kabir"
Goa governor PS Sreedharan Pillai	"Three New Books – 'Heritage Trees of Goa', 'When Parallel Lines Meet', and 'Ente Priya Kavithakal' ('My Dear Poems' a collection of poems)"
Amrit Mathur's Autobiography	"Pitchside: My Life in Indian Cricket"
Shri Apurva Chandra	"eBook-"People's G20""
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Vivek Agnihotri	"The Book of Life: My Dance with Buddha for Success"
Launched by Hardeep Singh Puri	"The Reverse Swing: Colonialism to Cooperation"
ISRO Chief, S Somanath	"Nilavu Kudicha Simhangal"
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Professor (Dr.) Mohan Kumar and launched by Vikram K. Doraiswami	"India's Moment: Changing Power Equations around the World"
Twinkle Khanna	"Welcome To Paradise"
Released by Uttarakhand CM Pushkar Dhami	'RESILEINT INDIA' to highlight the PM Modi's role in transforming disaster management
Bollywood actor Huma Qureshi	"Zeba: An Accidental Superhero"
Launched by Former President Shri Ramnath Kovind	"Naye Bharat Ka Samveda' on PM Modi"
Former Reserve Bank of India (RBI) governor Raghuram Rajan & Co Author Economist Rohit Lamba	"Breaking the Mould: Reimagining India's Economic Future"