

DAILY CURRENT AFFAIRS (DCA)

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MONSOON IN INDIA

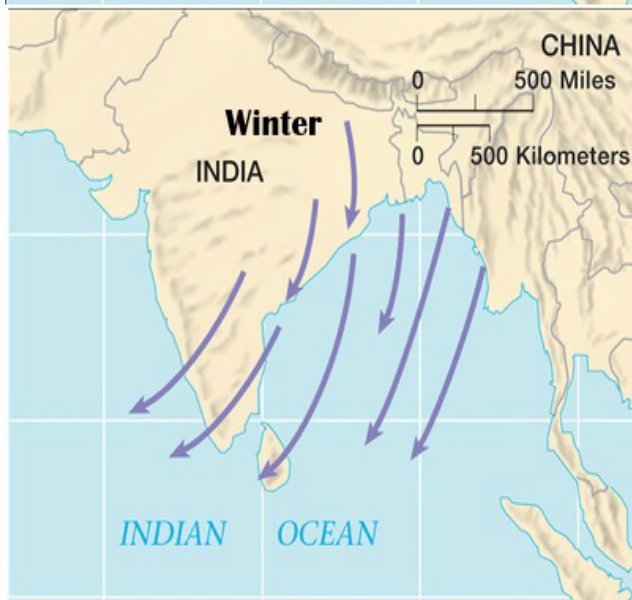
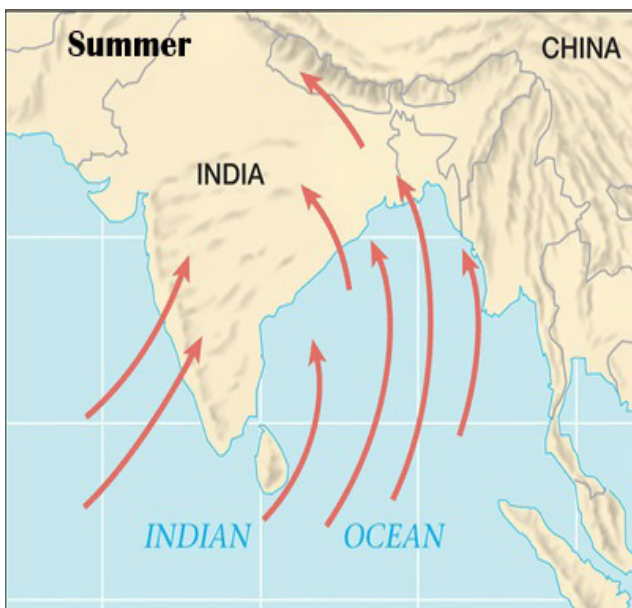
Context

- The southwest monsoon made an **early onset over Kerala** and has advanced until Maharashtra, but **North and Northwest India** have experienced 'heatwave' to 'severe heatwave' conditions.

About the Indian Monsoon

- The term 'monsoon' is derived from the **Arabic word 'mausim'**, which means season which is characterised by a **seasonal reversal of wind direction**.
- The onset and retreat of the monsoon have profound implications for the country's **climate, agriculture, and economy**.

Monsoon Onset (Arrival)



- Climatologically, the monsoon arrives over the **Andaman Sea in the third week of May** and advances into the mainland through **Kerala, June 1 being the normal date of onset**.
- The winds blow from the **South-West** during the summer months (June to September). It brings **more than 70% of India's annual rainfall**.
- The **Inter-Tropical Convergence Zone (ITCZ)** shifts northward, leading to the onset of monsoon rains.
- The **monsoon trough** encourages the development of a thermal low over north and northwest India.
- The **IMD** officially declares the onset of the monsoon based on specific criteria, including rainfall, wind field, and Outgoing Longwave Radiation (OLR) values.

Monsoon Progress

- After its onset over Kerala, the monsoon progresses northwards and covers the entire country in about a month and a half.
- It then **advances in surges** — typically, the progress until central India is fast, after which it slows down. It normally reaches north Uttar Pradesh, Delhi and neighbourhood areas by the end of June, and **covers the entire country by July 15**.
- The progress of the monsoon is closely monitored as it has significant implications for agriculture, particularly the **sowing of kharif (monsoon) crops**.

Monsoon Retreat (Withdrawal)

- It marks the transition from the rainy season to the dry winter season.
- The monsoon **begins to retreat from the northwestern states** of India around early September and withdraws completely from the country by early October.
- The retreat of the monsoon is not as abrupt as its onset.
 - It's a more gradual process, with the monsoon maintaining its presence over the southern and northeastern parts of the country well into October.

Analysis

- An **early or timely onset of the monsoon** does not guarantee good rainfall or its distribution over the country throughout the four-month season, and a **delayed onset** does not necessarily mean below-average rainfall for the entire season.
- Cumulative rainfall over the country from June to September depends on **multiple factors**. It shows **natural inter-annual variability**, which makes **every monsoon different**.
 - ♦ Alongside the quantum of rainfall, its distribution is also vital.
- The **'above normal' rainfall** is being attributed mainly to the soon-to-emerge **La Nina conditions**, which are known to positively influence the Indian monsoon, and a **positive phase of the Indian Ocean Dipole (IOD)**.
- The **India Meteorological Department (IMD)** has forecast **'above normal' rainfall** this season.
 - ♦ Quantitatively, it is expected to be **106% of the Long Period Average** of 880 mm (1971-2020 data).

Monsoon Variability

- During monsoon, considerable variability in rainfall is seen with **space and time**. The reasons are:
 - ♦ **Onset, Advancement and Withdrawal of monsoon** decide the duration, period of monsoon current at different places.
 - ♦ **Position of monsoon trough:** It can oscillate **5° to North and 5° to South** within 24 hours.
 - ♦ If this **trough** is in the **south** of normal position, **strong monsoon conditions** are observed over India.
 - ♦ If this trough is in the **north** of normal position or if it runs to foothills of Himalayas or not seen at all, then **break monsoon conditions are observed**.
 - ♦ **Synoptic systems** like cyclonic circulations, lows, depressions move along troughs and contribute to rainfall.

Periodicity of Monsoon (How does monsoon vary from year to year?)

- Year to year variation of monsoon rainfall over the large number of years is known as the interannual variability of monsoon. Periodicity of monsoon is largely controlled by global ocean atmospheric phenomena like El nino Southern oscillation (ENSO).

- Main factors governing **interannual variation of south west monsoon** are: El Nino Southern oscillation (ENSO) and Indian Ocean Dipole (IOD). Other contributing factors are North Atlantic Oscillation (NAO) and Pacific Decadal Oscillations (PDO).

Source: IE

QUAD: DIPLOMACY AND COOPERATION IN THE INDO-PACIFIC

Context

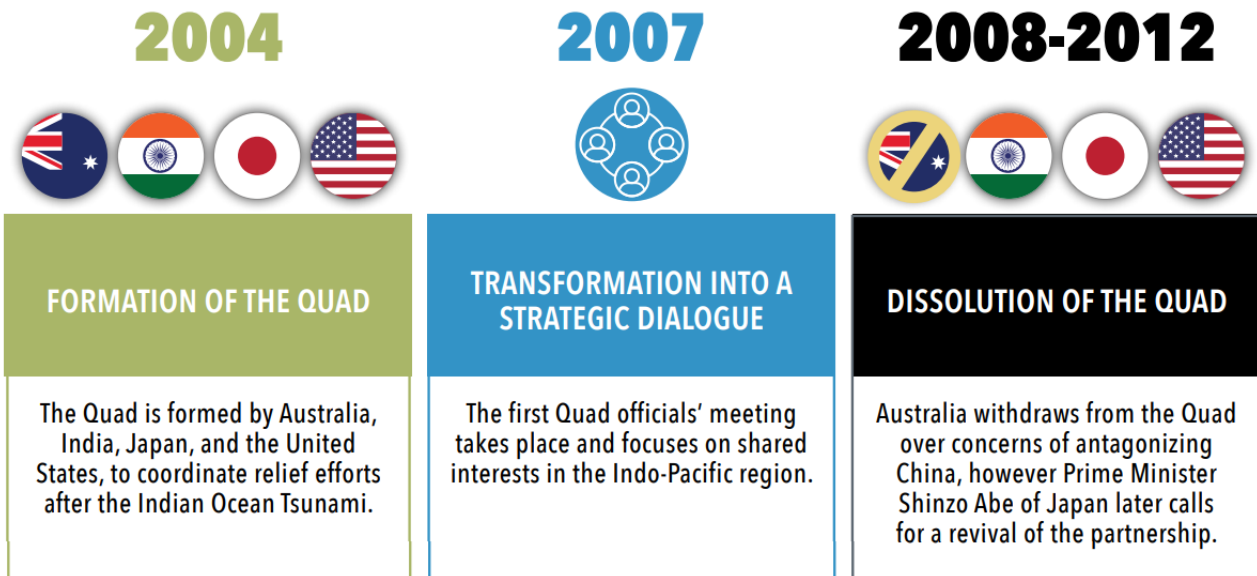
- The **Quad (formerly known as the Quadrilateral Security Dialogue)** has emerged as a strategic group conducting security, diplomatic, and public goods cooperation among its members and within the Indo-Pacific region over the past two decades.

About the Quad

- It comprises **India, Japan, Australia, and the United States**, has emerged as a significant diplomatic platform aimed at ensuring a **free, open, and inclusive Indo-Pacific region**, along with upholding international law, freedom of navigation, and promoting democratic values in the region.
- Quad countries are home to a **combined 1.9 billion people (24% of the world's population)** and represent **35% of the world's GDP** and **18% of global trade**.

Genesis and Evolution

- Quad was conceived in the **early 2000s** with the vision of leveraging the converging interests of its member nations.
- It was in response to the growing need for a collaborative approach to address the challenges in the Indo-Pacific, particularly those posed by natural disasters and regional security threats.



Milestones and Achievements

- Over two decades, the Quad has facilitated numerous diplomatic talks and joint military exercises, emphasising humanitarian assistance and disaster relief.
- The Malabar naval exercises are a testament to its commitment to enhancing maritime cooperation.
- Additionally, the Quad has been instrumental in advancing dialogue on critical issues like infrastructure development, cybersecurity, and counter-terrorism.

Working Groups of Quad

- **Quad Health Security Partnership:** Health security stands at the forefront of the Quad's collective agenda.
 - ♦ They met virtually for the first time in 2021 alongside **three new partners — South Korea, Vietnam, and New Zealand** — informally dubbed the **Quad-Plus**, and established a range of new initiatives, including the **Quad Vaccine Partnership**.
- **Climate Working Group:** The Quad countries jointly launched the **Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP)** to deliver their climate agenda, at **Quad Leaders' Summit (2022)** in Tokyo. It has also expanded into new areas such as **climate-smart agriculture, carbon recycling, and knowledge sharing on subnational climate actions**.
 - ♦ Q-CHAMP builds upon **three key pillars: climate ambition, clean energy, and adaptation and resilience**. Q-CHAMP

- ♦ Secure, resilient, and sustainable clean energy supply chains require not only diversifying source markets for clean energy technologies and inputs, but also reducing emissions that result from mining, bulk materials production, and technology manufacturing.

- **Critical and Emerging Technology (CET) Working Group:** Critical and emerging technologies such as **Artificial Intelligence (AI), quantum computing, autonomous systems, and biotechnologies** present new opportunities for growth despite surrounding security challenges and implementation complexities.

- ♦ The **Quad International Standards Cooperation Network** provides a platform for the partners to increase situational awareness, coordination, and influence in international standards development.

- ♦ It allows the four countries to work jointly to promote and protect global technology markets, set technical standards, promote 5G networks, and coordinate horizon scanning.

- **Space Working Group:** Quad countries are global leaders in the public and private space sectors, and have made significant strides in their respective space programs that aim to increase coordination and information sharing.

- ♦ They share Earth observation satellite data to monitor climate change, improve disaster response and preparedness, and observe the sustainable use of oceans and marine resources.

- ◆ In 2022, the global space economy was worth an estimated \$546 billion with commercial revenue making up 78% of the entire sector.
- **Quad Infrastructure Coordination Group:** The Quad views infrastructure as critical to the prosperity of the Indo-Pacific.
 - ◆ With the rapid growth and development of the Indo-Pacific region, demand for quality infrastructure is **outpacing annual investment**, resulting in an infrastructure financing gap. The region's infrastructure needs span multiple sectors, including transport, power, telecommunications, water supply, and sanitation.
 - ◆ The **Indo-Pacific** invests approximately **\$881 billion in infrastructure currently**, but this number drops to just \$195 billion when excluding China's investments.
 - ◆ Between 2015 and 2021, the four Quad countries have collectively provided over \$48 billion in infrastructure financing to the Indo-Pacific.
- **Quad Senior Cyber Group:** In 2020, cybercrime resulted in \$1 trillion in losses and damages across the global economy.
 - ◆ In 2022, all four Quad countries were in the **top 20 of international cyber victims**, and together established the **Quad Cybersecurity Partnership** to respond to cyber threats to address cyber vulnerabilities, and focusing on critical infrastructure protection, supply-chain resilience, workforce development, and software security standards.
- ◆ AUKUS focuses on global social issues like climate change, COVID-19 vaccines, and supply chain resilience, while the Quad deals with stronger strategic aspects.
- **Free and Open Indo-Pacific:** The Quad emphasises a **'free, open rules-based order'** rooted in international law to counter threats in the Indo-Pacific. **Tensions with China** and **unilateral actions in the South China Sea** drive this focus.
- **Connectivity and Infrastructure:** The Quad aims to provide transparent infrastructure funding and joint connectivity projects to countries in the region, preventing them from being **'debt-trapped'** by other initiatives like **China's Belt and Road Initiative**.
- **Critical Technologies and Supply Chains:** The Quad has a working group on critical and emerging technologies, aiming to cooperate on international standards and innovation. Resilient supply chains are a priority.

Conclusion and Way Forward

- Quad needs continue to adapt and expand its agenda. Climate change, pandemic response, and sustainable development are areas where collective action is crucial.
- The Quad's ability to foster deeper economic ties and technological partnerships will also be pivotal in **shaping the future of Indo-Pacific diplomacy**.
- Despite its successes, the Quad has faced scepticism regarding its objectives and effectiveness. Critics often point to the lack of a formal charter or binding commitments among member countries.
 - ◆ Moreover, there have been concerns about its perceived role in countering China's influence in the region.
- The next decade will be crucial for solidifying its role as a cornerstone of peace and stability in the Indo-Pacific.

Source: ORF

PERSISTENT ORGANIC POLLUTANTS (POPS)

Context

- As per a new study, **Dichloro-diphenyl-trichloroethane (DDT)** has declined in humans and the environment since **2004** due to tight regulation globally, along with 11 other Persistent Organic Pollutants (POPs).

India and Quad

- Quad serves as a platform for India to consult with other major powers on regional security and economic issues, aligning with its foreign policy objectives.
- As a regional power, India counters China's dominance in the Indian Ocean and seeks security in the Indo-Pacific.
- India's participation in the Quad reflects its commitment to regional stability and its role as a significant global player.

Challenges and Criticism

- **Emergence of AUKUS:** Recently, the **Australia-UK-US (AUKUS)** Indo-Pacific grouping was announced, raising questions about whether the Quad might become **'Quad-lite'**.

Findings

- POPs were found in **every one of more than 900 collected samples** in air, water, human milk, soil, beef, milk, milk powder, butter, mutton, pork, chicken, eggs, fish and shellfish, oil, and other items.
- The levels of **12 POPs** including DDT have **declined globally**.
 - ◆ The report attributes the decline to **regulatory actions** implemented since 2004 to control the levels of such chemicals.
- Other POPs continue to be present everywhere.
 - ◆ For instance, dieldrin and polychlorinated biphenyls (PCBs), which have been regulated for long, were detected at elevated levels in the air across the African continent, the Caribbean, and Latin America.

Persistent Organic Pollutants (POPs)

- They are organic chemical substances, that is, they are **carbon-based**.
- They **resist environmental degradation** through chemical, biological, and photolytic processes.

Key characteristics of POPs include:

- **Persistence:** POPs are resistant to breakdown in the environment. Some can persist for years or even decades without degrading.
- **Bioaccumulation:** POPs tend to accumulate in the fatty tissues of living organisms through the food chain.
 - ◆ This means that organisms higher up in the food chain, including humans, can accumulate higher concentrations of POPs.
- **Long-range transport:** POPs can travel long distances from their source of emission.
 - ◆ They can be transported globally through processes such as atmospheric deposition and ocean currents.
- **Toxicity:** Many POPs are toxic to both humans and wildlife.
 - ◆ They can cause a range of adverse health effects, including cancer, reproductive disorders, immune system disruption, and neurological effects.
- **Examples of POPs include** certain pesticides (e.g., DDT), industrial chemicals (e.g., polychlorinated biphenyls or PCBs), and unintentional by-products of industrial processes (e.g., dioxins and furans).

- **Sources of pollution from POPs** include the improper use and/or disposal of agrochemicals and industrial chemicals, elevated temperatures and combustion processes, and unwanted by-products of industrial processes or combustion.

Regulation of POPs

- **Stockholm Convention on Persistent Organic Pollutants (POPs):** It aims to reduce releases of POPs chemicals on a global basis. The convention entered into force in 2004.
- **Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade:** It aims to promote shared responsibilities in relation to importation of hazardous chemicals and contribute safe use. The Convention entered into force in 2004.
- **The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal:** It aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements and disposal of hazardous and other wastes. It came into force in 1992.
- **Convention on Long-Range Transboundary Air Pollutants (LRTAP), Protocol on Persistent Organic Pollutants (POPs):** The aim of the Convention is that Parties shall endeavor to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution.
 - ◆ The aim of the protocol on POPs is to control, reduce, or eliminate discharges, emissions, and losses of persistent organic pollutants. The protocol entered into force in 2003.

Source: DTE

SIPRI ANNUAL REPORT 2024

Context

- SIPRI yearbook 2024 has been published by Oxford University Press on behalf of the Stockholm International Peace Research Institute.

About

- It provides an **overview of developments** in international security, weapons and technology, military expenditure, arms production and the arms trade, and armed conflicts and conflict management, along with efforts to control conventional, nuclear, chemical and biological weapons.

Major Findings

- **Nuclear Arsenal:** In 2024, nine states—the United States, the Russian Federation, the United Kingdom, France, China, India, Pakistan, the North Korea and Israel—together possessed approximately 12121 nuclear weapons, of which 9585 were considered to be potentially operationally available.

Country	Year of first nuclear test	Military stockpile ^a		Total	Retired warheads	Total inventory
		Deployed ^b	Stored ^c			
United States	1945	1 770 ^d	1 938 ^e	3 708	1 336 ^f	5 044
Russia	1949	1 710 ^g	2 670 ^h	4 380 ⁱ	1 200 ^j	5 580
United Kingdom	1952	120	105	225	–	225
France	1960	280	10	290	..	290
China	1964	24 ^j	476	500	–	500
India	1974	–	172	172	..	172
Pakistan	1998	–	170	170	..	170
North Korea	2006	–	50	50	..	50 ^k
Israel	..	–	90	90	..	90
Total		3 904	5 681	9 585	2 536	12 121

- **Decline in Nuclear Warheads:** The number of nuclear warheads in the world continues to decline.
 - ◆ However, this is only due to the USA and Russia dismantling retired warheads.
- **Operational Warheads:** Global reductions of operational warheads appear to have stalled, and their numbers are rising again.
 - ◆ The USA and Russia, which together possess almost **90 percent** of all nuclear weapons, have extensive programmes under way to replace and modernize their nuclear warheads.
- **China** is in the middle of a significant modernization and expansion of its nuclear arsenal.
 - ◆ China has tripled the number with 500 warheads, some of which are believed to be on high operational alert for the first time.
 - ◆ Some projections suggest that China could potentially deploy at least as many intercontinental ballistic missiles as either Russia or the USA in near future.
- **India and Pakistan** also appear to be increasing the size of their nuclear weapon inventories, and the UK plans to increase its stockpile.
- **North Korea's** military nuclear programme remains central to its national security strategy and it may have assembled up to 50 nuclear weapons and could produce more.
- Israel continues to maintain its long-standing policy of nuclear ambiguity, leaving significant uncertainty about the number of its nuclear weapons.

Indian Nuclear Forces

- India's nuclear arsenal reached **172** warheads this year, slightly surpassing Pakistan which has 170.
- India is strengthening the undersea leg of its nuclear triad as well as developing long-range missiles.
- India's third SSBN [a nuclear-powered submarine carrying ballistic missiles armed with nuclear weapons] was launched in 2021, and a fourth is under-construction for possible launch in 2024.

About SIPRI

- SIPRI is an **independent international institute** dedicated to research into conflict, armaments, arms control and disarmament. It is based in Stockholm.
- It was established in **1966**, SIPRI provides **data, analysis and recommendations**, based on open sources, to policymakers, researchers, media and the interested public.
- **Funding:** It was established on the basis of a decision by the Swedish Parliament and receives a substantial part of its funding in the form of an annual grant from the **Swedish Government**.
 - ◆ The Institute also seeks financial support from other organizations in order to carry out its research.

Nuclear Disarmament

- Disarmament refers to the **act of eliminating or abolishing weapons** (particularly offensive arms) either unilaterally or reciprocally.
- It may refer either to **reducing the number of arms, or to eliminating entire categories of weapons**.

Challenges in Nuclear Disarmament

- **Geopolitical Tensions:** Nuclear weapons are often seen as a deterrent against potential adversaries.
 - ◆ Countries are reluctant to disarm if they perceive a threat from others who possess nuclear capabilities.
- **Transparency:** Ensuring compliance with disarmament agreements is difficult.
- **Technological Advancements:** Advances in nuclear technology, including smaller and more sophisticated weapons, pose challenges to disarmament efforts.

- **Strategic Stability Concerns:** Countries often view nuclear weapons as a guarantee of their national security.
 - ◆ Fear of losing strategic stability can deter states from fully committing to disarmament efforts.
- **Economic and Strategic Costs:** The process of dismantling nuclear weapons and managing their materials is expensive and complex.
- **Non-Proliferation Concerns:** As some states disarm, others may perceive a strategic advantage in acquiring or retaining nuclear weapons.
 - ◆ This can lead to concerns about proliferation and undermine disarmament efforts.

Treaties Related to Nuclear Disarmament

- **Treaty on the Non-Proliferation of Nuclear Weapons (NPT):** Signed in **1968** and entered into force in **1970**, the NPT aims to prevent the spread of nuclear weapons and promote disarmament.
 - ◆ It divides the world into nuclear-weapon states (NWS), recognized as possessing nuclear weapons at the time of the treaty's signing, and non-nuclear-weapon states (NNWS), which agree not to develop or acquire nuclear weapons.
 - ◆ The treaty also requires NWS to pursue disarmament negotiations in good faith.
- **Treaty on the Prohibition of Nuclear Weapons (TPNW):** Adopted by the United Nations in **2017** and opened for signature in 2018, the TPNW aims to prohibit the development, testing, production, stockpiling, stationing, transfer, use, and threat of use of nuclear weapons.
 - ◆ It represents a significant step towards nuclear disarmament, although it has not been signed by nuclear-armed states.
- **Comprehensive Nuclear-Test-Ban Treaty (CTBT):** Opened for signature in **1996**, the CTBT aims to ban all nuclear explosions for both civilian and military purposes.
 - ◆ While the treaty has been signed by **185** countries and ratified by **170**, it has not entered into force as nuclear-armed states must ratify it to become operational.
- **Outer Space Treaty:** This multilateral agreement entered into force in 1967 and bans the siting of weapons of mass destruction in space.
 - ◆ All nine states believed to have nuclear weapons are parties to this treaty.

Source: TH

WORLD CROCODILE DAY

Context

- World Crocodile Day is celebrated on 17th June every year.

Background

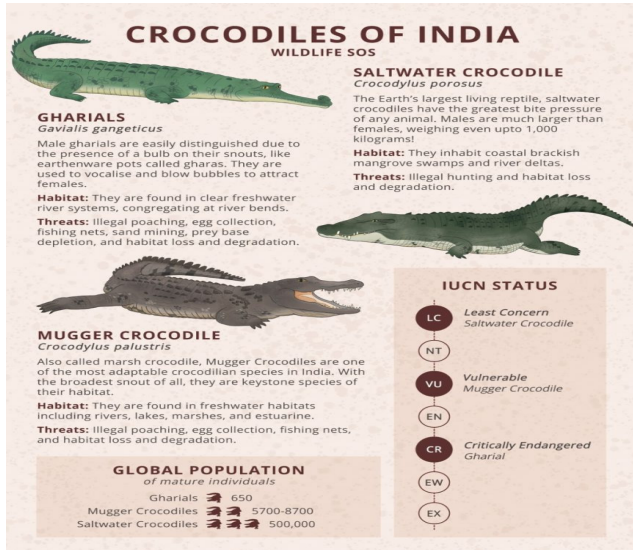
- In India even after the passage of the **Wild Life (Protection) Act, 1972**, crocodilians were very threatened and on the verge of extinction due to indiscriminate killing for commercial purposes and severe habitat loss.
- In **1975**, India launched the **Crocodile Conservation Project** in Odisha's Bhitarkanika National Park.
- **The objective** of the project was to **protect the animals' natural habitat and revive the population quickly** through captive breeding as the survival rate of the crocodile hatchlings in nature is low because of predation.
- As per the reptile census report of this year, today there are **1,811 saltwater crocodiles in Bhitarkanika**, a vast tract of forest and saltwater swamp.
 - ◆ However today it has become a ground for the increasing human-crocodile conflict.

Crocodile species in India

- Estuarine or saltwater crocodile (*Crocodylus porosus*)
 - ◆ They are the largest living reptile on earth.
 - ◆ **They are found** in only three locations in India: Bhitarkanika, the Sundarbans and the Andaman and Nicobar Islands.
 - ◆ **IUCN Status:** Least Concern
 - ◆ It is listed under **Schedule 1** of the Wild Life (Protection) Act, 1972.
- **Mugger or marsh crocodile (*Crocodylus palustris*)**
 - ◆ Mugger Crocodiles are hole-nesting species, with egg-laying taking place during the dry season.
 - ◆ **They are found** in various freshwater habitats, including rivers, lakes, marshes, irrigation canals and even coastal saltwater lagoons and estuaries.
 - ◆ **IUCN Status:** Vulnerable
 - ◆ It is listed under **Schedule 1** of the Wild Life (Protection) Act, 1972.

Gharial (*Gavialis gangeticus*)

- The Gharial derives its name from a bulbous knob-like protuberance on the snout of breeding males that resembles a ghara, which in Hindi means an earthen pot.
- **They are found** mainly in the Chambal, Girwa Ghagra, and Gandak rivers.
- **IUCN Status:** Critically Endangered
- It is listed under **Schedule 1** of the Wild Life (Protection) Act, 1972.



Bhitarkanika National Park

- **It is a national park and a Ramsar site** located in the estuaries in northeast Kendrapara district in **Odisha**.
- **Rivers:** The park is inundated by the rivers **Brahmani, Baitarani, Dhamra, and Pathsala**.
- It hosts many **mangrove species**, and is the second largest mangrove ecosystem in India.
- **Gahirmatha Beach** separates the swamp region and mangroves from the Bay of Bengal.
- **Flora and fauna:** The national park is home to **Saltwater crocodile (*Crocodylus porosus*), Indian python, king cobra, black ibis, darters** and many other species.

Constitutional Provisions regarding protection of wildlife

- **Article 51 A (g)** of the Constitution states that it shall be the fundamental duty of every citizen to protect and improve the natural environment including forests and Wildlife.
- **Article 48 A** in the Directive Principles of State policy, mandates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.

Source: DTE

JOINT DOCTRINE FOR CYBERSPACE OPERATIONS

In News

- The Chief of Defence Staff released the **Joint Doctrine for Cyberspace Operations** during the Chiefs of Staff Committee (COSC) meeting .

Do you know ?

- Cyberspace is a complex environment consisting of interactions between people, software and services, supported by worldwide distribution of information and communication technology (ICT) devices and networks.

Cyberspace in Defense Sector

- In addition to the traditional domains of warfare including Land, Sea, and Air, **Cyberspace has emerged as a crucial** and challenging domain in modern warfare.
- Unlike territorial limits in the domains of land, sea, and air, **cyberspace is a global common** and hence has **shared sovereignty**.
- Hostile actions in cyberspace can impact the **Nation's economy, cohesion**, political decision making, and the Nation's ability to defend itself.
- Operations in cyberspace need to be dovetailed into the National Security fabric, to evolve the 'Ends,' 'Ways' and 'Means' to create advantage and influence events in all other operational environments and across all instruments of power.
- India has been actively working to bolster its cyber defense capabilities in response to the evolving nature of modern warfare, where cyberspace has become a crucial battleground.

Initiatives

- **Joint Doctrine** : It is a keystone publication that will guide Commanders in conducting Cyberspace Operations in today's complex military operating environment.
 - It lays emphasis on understanding military aspects of cyberspace operations .
 - It provides conceptual guidance to commanders, staff and practitioners in the planning, and conduct of operations in cyberspace, as also to raise awareness in warfighters at all levels.
- **The Indian Computer Emergency Response Team (CERT-In):** The Ministry of Home Affairs has set up the 'Indian Cyber Crime Coordination Centre' (I4C) to deal with all types of cyber crime in the country, in a coordinated and comprehensive manner.

- **The Defence Cyber Agency (DCA)** was established to coordinate cybersecurity efforts across the armed forces and enhance their capabilities in defending against cyber attacks.
- The Ministry of Electronics and Information Technology initiated the **Cyber Surakshit Bharat (CSB) programme** in public-private partnership to educate & enable the Chief Information Security Officers (CISOs) & broader IT community in Central/State Governments, Banks, PSUs and Government organizations to address the challenges of cyber security.
- India has also invested in **indigenous research and development** of cybersecurity technologies to reduce dependency on foreign capabilities.

Challenges

- India faces a **diverse range of cyber threats**, including sophisticated malware, phishing attacks, and cyber espionage attempts aimed at stealing sensitive military information.
- The interconnected nature of defence systems and reliance on digital technologies make them vulnerable targets for adversaries seeking to undermine national security.
- Despite efforts to bolster cybersecurity, the defence sector faces challenges such as **rapid technological advancements**, evolving cyber threats, and shortage of skilled cybersecurity professionals.

Conclusion and Way Forward

- India's defence sector is poised to leverage emerging technologies like artificial intelligence, quantum computing, and secure communication networks to enhance situational awareness and operational effectiveness.
 - ♦ The integration of cyberspace with other domains such as space and electronic warfare will redefine modern warfare capabilities.
- By adopting a proactive approach to cybersecurity and fostering innovation, India can strengthen its defence resilience and ensure a secure and resilient cyberspace environment for national security.
- As India continues to navigate the complexities of cyber warfare, it is clear that investing in skilled personnel, advanced technology, and robust policy frameworks will be key to safeguarding national security in the digital age.

- **Development of Joint Doctrines** is an important aspect of Jointness and Integration, a step which is being actively pursued by the Indian Armed Forces.
 - ♦ The Joint Doctrine for Cyberspace Operations is a significant step to give impetus to the ongoing process

Source: PIB

NEWS IN SHORT

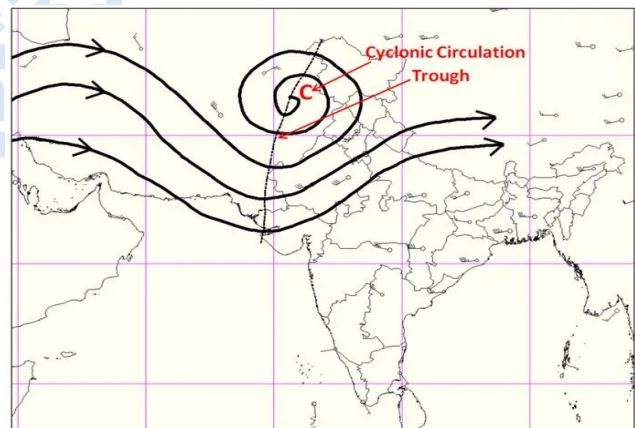
WESTERN DISTURBANCE AND HEATWAVES

Context

- Recently, India Meteorological Department (IMD) forecast a heatwave in North India due to an approaching western disturbance towards northwest India.

About the Western Disturbances (WDs)

- WDs are **extratropical weather systems** originating over the **Mediterranean Sea** and **moving eastward**.



- They influence weather patterns in the Indian subcontinent, particularly during the winter months.
- While WDs themselves do not directly cause heat waves, their **interaction with other meteorological factors** plays a crucial role.

Role of WDs in Heatwaves

- **Temperature Contrast:** WDs **bring cold air from the Mediterranean region** into India. When this **cold air interacts with the warm air** over the Indian landmass, it creates a sharp **temperature contrast and gradient** can lead to **extreme weather events, including heatwaves**.

- **Pre-Heatwave Conditions:** Before a heatwave, WDs often precede the event. The passage of a WD disrupts the normal weather patterns, **leading to rising temperatures**. The warm air mass intensifies, **resulting in heatwave conditions**.
- **Heatwave Amplification:** WDs enhance the heatwave effect by **reducing cloud cover** (clear skies allow more sunlight to reach the surface, increasing temperatures), **suppressing moisture** (inhibiting the arrival of monsoon winds, reducing humidity levels), and **intensifying dry winds** (bringing dry continental air, exacerbating heat stress).

Source: AIR

POST OFFICE ACT 2023 COMES INTO FORCE

Context

- The Post Office Act 2023 comes into force w.e.f. 18th June, 2024. **Post Office Bill (2023)** was introduced to repeal the **Indian Post Office Act, 1898** and to consolidate and amend the law relating to the **Post Offices in India**.

Objectives

- **Simplified Framework:** The Act simplifies the legislative framework for postal services, doing away with provisions such as the exclusive privilege of collecting, processing, and delivering letters.
- **Ease of Doing Business:** By removing unnecessary restrictions, the Act enhances the ease of doing business.
- **Ease of Living:** It ensures that citizens can access essential services seamlessly.

Key Features

- **No Penal Provisions:** Unlike its predecessor, the Indian Post Office Act, 1898, the new Act does not prescribe any penal provisions.
- **Addressing Standards:** The Act provides a framework for prescribing standards for addressing items, address identifiers, and usage of postcodes.

Postal Services in India

- These come under the **Union List** (Schedule VII) of the Constitution of India.
- The Indian Post Office Act, 1898 regulates the postal services offered by the Union government through India Post, a departmental undertaking.

- It grants the Union government exclusive privilege over conveying letters.
- Post offices are now **not just an office to distribute letters**, but they are hubs of various **financial and other services**.
- Postal network has more than **1.5 lakh post offices**, with over **1.29 lakh in rural areas**.

Source: PIB

PRO-TEM SPEAKER OF LOK SABHA

Context

- Senior Congress leader K Suresh, as the seniormost member of the Lok Sabha, is expected to be **appointed as pro-tem Speaker** when the first session of the 18th Lok Sabha begins.

About

- In the new Lok Sabha, the **Speaker of the House** is decided by a simple majority.
- Until her selection, the **pro-tem Speaker is chosen to administer some important duties**. 'Pro-tem' essentially means **'for the time being'** or **'temporarily'**.
- The **Constitution does not mention the post**. However, the official 'Handbook on the Working of Ministry of Parliamentary Affairs' speaks about the 'Appointment and Swearing in of Speaker pro tem'.
- **Administering oaths to the new MPs** is the pro-tem Speaker's primary duty.
- **The seniormost members** (in terms of number of years of membership of the House) are generally chosen for the purpose, though there have been exceptions.
- As soon as the new government is formed, the Legislative I Section of the Government of India prepares a list of the seniormost Lok Sabha members.
 - It is then submitted to the Minister of Parliamentary Affairs or the Prime Minister **for identifying an MP as Speaker pro-tem**.

Source: IE

BITUMEN

In Context


- India is looking to start large-scale production of bio-bitumen from biomass or agricultural waste.


About Bitumen

- Bitumen is the **heaviest material obtained** from the **fractional distillation process of crude oil**.
- It is **Black or Brown** in colour and possesses waterproofing & adhesive properties.

Facts & Figures

What is Bitumen?
Bitumen is a black substance produced through distillation of crude oil and is widely used to bind surfaces of paved road



 3.21 MT India's import of Bitumen in 2022-2023	5.24 MT India's indigenous bitumen production in the last FY
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- It is widely used to bind the surfaces of paved roads.
- **Status in India:** Bitumen consumption has gone up significantly in recent years in line with increasing road construction in India
 - ♦ India currently imports about half of its annual requirement of bitumen and the target is to replace imports with bio-bitumen over the next 10 years.

Source:ET

MIYAWAKI METHOD

In News

- NHA will undertake a unique initiative to plant **Miyawaki plantation** on land parcels adjacent to National Highways at various locations.

About Miyawaki method

- Miyawaki plantations, also known as Miyawaki method, is a unique **Japanese** approach to ecological restoration and afforestation development.
- It was pioneered in the 1970s by Japanese botanist and expert in plant ecology Mr. **Akira Miyawaki**. This technique of plantation involves planting native trees, shrubs and groundcover plants within every square metre.
- **Benefits:** It aims to create dense, native, and biodiverse forests in a short period of time.
 - ♦ With this method, **trees grow ten times faster** and the plantations act as a sound and dust barrier.
 - ♦ It helps in better micro-climatic conditions such as improvement in air & soil quality.

- ♦ It will also help in biodiversity conservation, rapid growth of green cover, efficient carbon absorption, soil restoration and in habitat creation for local flora and fauna.
- ♦ These forests retain ground water and help to recharge the groundwater table.

Source:PIB

NATURE RESTORATION LAW (NRL)

Context

- The EU Environmental Council adopted the Nature Restoration Law (NRL) to rehabilitate the ecosystems.

Nature Restoration Law (NRL)

- It was proposed by the **European Commission in 2022**, under the EU biodiversity strategy for 2030, part of the European Green Deal.
- **The ecosystems covered** by the NRL, include wetlands, grasslands, forests, rivers and lakes, as well as marine ecosystems, including seagrass and sponge and coral beds.

Regulations under NRL

- The conservation law sets a target for the EU to restore at least **20 percent** of the bloc's land and sea areas by **2030** and all ecosystems in need of restoration by **2050**.
- The regulation introduces specific requirements for measures to reverse the **decline of pollinator populations by 2030**.

Source: DTE

BURP TAX

News

- New Zealand has decided to scrap the "burp tax" aimed at reducing their greenhouse gas emissions from the livestock.

Reasons for introduction of the 'Burp Tax'

- It was introduced by New Zealand to lower carbon footprint through **curtailing methane emissions** from ruminant species.
- Nearly half of New Zealand's greenhouse gas emissions come from their livestock rearing.
- Methane is a **potent greenhouse gas** responsible for 30% of warming since preindustrial times, second **only to carbon dioxide**.

Methane Emissions from Ruminants

- Ruminants have a specialized digestive system that has four compartments, one of which, the rumen.
- Rumen is involved in microbial fermentation and releases methane through belching.

Tacking Methane Emissions

- Initiatives like Global Methane Pledge aims to cut methane emissions by at least 30% by 2030 from the 2020 levels.
- Indian initiatives like Harit Dhara, NICRA Project & BS VI norms are in the process of methane reduction.

Source: TH

