

Factly Weekly

Compilation

2025

**For UPSC CSE Prelims
Exam**

4th Week

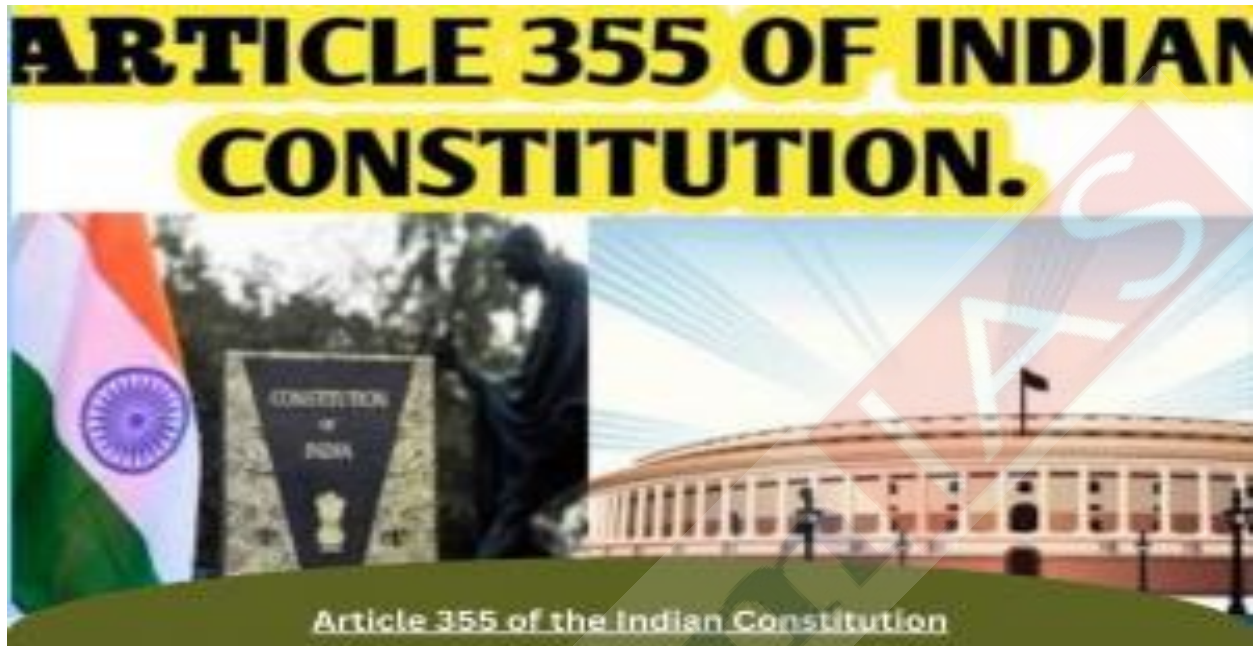
April 2025

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Article 355 of the Indian Constitution

News: A recent petition in the Supreme Court has sought the invocation of Article 355 in West Bengal by deploying central armed forces, citing violence in Murshidabad. **Article 355 of the Indian Constitution.**



About Article 355

- **The text of Article 355 states:** “It shall be the duty of the Union to protect every State against external aggression and internal disturbance and to ensure that the Government of every State is carried on in accordance with the provisions of this Constitution.”

Key points

- **Part of Emergency Provisions:** Article 355 is included in **Part XVIII** of the Constitution, which deals with **emergency provisions (Articles 352 to 360)**.
- The **Union government** is constitutionally obligated to:
 - **Protect every state from external aggression** (such as war or invasion) and **internal disturbance** (such as large-scale violence or breakdown of law and order).
 - Ensure that the **government of every state functions in accordance with the Constitution**.

Scope and Application

- Article 355 **does not itself grant the Union the power** to intervene directly in state affairs but **serves as the basis for actions** under Articles 356 (President’s Rule) and 352 (National Emergency).
- It is **primarily a justification** for the Centre’s intervention in extreme situations where a state is unable to maintain constitutional governance or public order.
- The **Supreme Court** has clarified that Article 355 is **not an independent source of power** for the Centre to interfere arbitrarily in state matters; it must be used judiciously and usually as a last resort.

Commissions’ view

- Commissions like the **Sarkaria and Punchhi Commissions** have emphasized that Article 355 imposes a duty on the Union and, by implication, grants it the power to take necessary steps—but measures like President’s Rule should be used only in cases of utmost gravity and urgency.

Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025

News: Union Environment Ministry notifies **draft Greenhouse Gases Emission Intensity (GEI) Target Rules, 2025**, taking a bold step towards sustainability. **Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025.**



About Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025

- The Rules will establish **India's first compliance-based domestic carbon market** which aims to drive industrial adoption of **low-carbon technologies** and drive India's **commitments** to its Nationally Determined Contributions (NDCs).
- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC)
- This market will be structured under the **Carbon Credit Trading Scheme (CCTS), 2023**.
 - It is a **regulatory framework** for **carbon credit trading** and to facilitate emission reductions in line with India's commitments under international climate agreements.
- **Sectors covered:** The Targets will apply to **4 high-emission sector – aluminium, cement, chlor-alkali, and pulp and paper**.
 - The obligated entities need to account for **Carbon Dioxide (CO₂)** and **Perfluorocarbons (PFCs)** such as CF₄, C₂F₆, C₄F₁₀, and C₆F₁₄.
- **Compliance mechanism and obligations:**
 - The targets comprise **two compliance periods, 2025-26 and 2026-27**, aimed at enabling year-wise sectoral decarbonisation.
 - A **uniform formula** has been proposed to **calculate and verify emissions**.
 - The targets can be achieved by **either reducing emissions** or by **purchasing carbon credits certificates** from the Indian carbon market.
 - **Compliance benefit:** Obligated entities keeping **emissions below the targets** will be issued **carbon credits**. These can be either banked until the next compliance cycle, or sold to underperforming firms.
 - **Non-compliance obligation:** Obligated entities that **underperform and fail to submit** carbon credits equivalent to the shortfall for compliance, will be **charged twice the average traded carbon price** for the related compliance cycle.

- The **price** will be calculated by the **Bureau of Energy Efficiency (Ministry of Power)** and the **compensation** will be collected by the **Central Pollution Control Board (CPCB)**.

Bamiyan Buddhas

News: Taliban change tune towards heritage sites, including pre-Islamic relics, in Afghanistan.

About Bamiyan Buddhas



Source – Harvard University

- The Buddhas of Bamiyan were **two monumental size statues**, standing at **115 and 174 feet tall**, carved into the **sandstone cliffs** of the **Bamiyan valley** in **Hazarajat region** of central Afghanistan.
 - The larger of the two statues, represented the **Buddha Vairochana**.
 - The smaller of the two statues, depicted the **Buddha Shakyamuni**.
- They were called **Salsal and Shamama** by locals.
 - Salsal means “the light shines through the universe”;
 - Shamama is “Queen Mother”.
- **Period:** They are said to date back to the **5th-6th century AD** and were **once the tallest** standing Buddhas in the world.
- The site marks the original settlement of **Bamiyan as stopping place** on the branch of the **Silk Route**, which linked **China and India** via ancient **Bactria**.
- **Cultural confluence:** They were great examples of a confluence of the **Gupta, Sassanian and Hellenistic** artistic styles.
 - These statues best exemplified the **Gandharan Buddhist art school**.
- **Destruction:** In **2001**, the Bamiyan statues were systematically destroyed by **Taliban** using explosives.
- In 2003, the **Bamiyan Valley** was declared a **World Heritage Site** by **UNESCO**.

Tobacco

News-The Government has amended the Tobacco Board Rules, 1976, extending the registration validity for Virginia tobacco growers from 1 year to 3 years.



About Tobacco

- **Origin:** Thought to have originated in South America.
- **Agro-Climatic Requirements**
 - **Temperature:** Ideally between 20°C to 27°C
 - **Rainfall:** Requires a minimum of 500 mm; not suitable above 1200 mm
 - **Soil:** Prefers sandy or sandy loam soils
 - **Frost-free period:** Between 90 and 120 days

Tobacco Production in India

- **India's Status:**
 - *2nd largest producer of tobacco globally (after China)*
 - *4th largest exporter of unmanufactured tobacco*
- **Key Producing States:**
 - *Gujarat* (accounts for nearly 30% of national output)
 - Also grown in Andhra Pradesh, Karnataka, Uttar Pradesh, and Bihar

Key Facts about Saudi Arabia

News- Recently, the Indian Prime Minister visited Saudi Arabia and co-chaired the second meeting of the India-Saudi Arabia Strategic Partnership Council (SPC). **Key Facts about Saudi Arabia.**

About Saudi Arabia

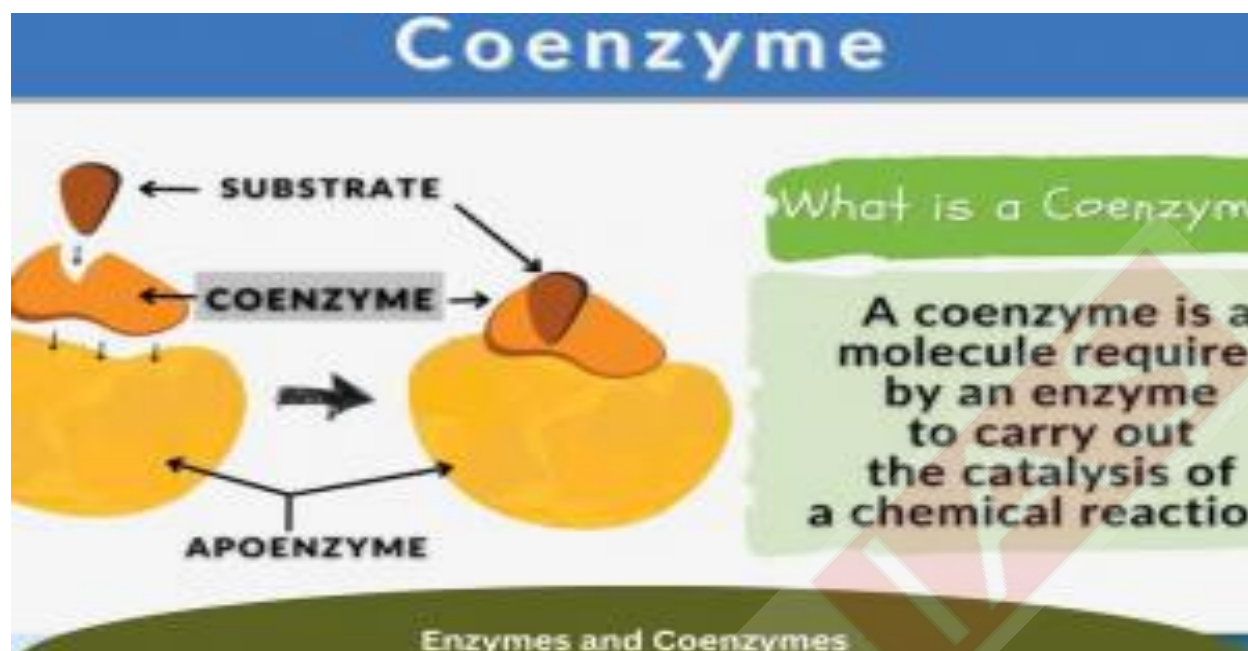


Source- WorldAtlas

- It is a country in West Asia, located at the centre of the Middle East.
- It is the *largest country on the Arabian Peninsula*, covering nearly four-fifths of its area. It is also the fifth-largest country in Asia, the largest in the Middle East, and the 12th-largest in the world.
- It is also the *largest country in the world without a river*.
- **Land and Maritime borders**– It shares land borders with *Iraq, Jordan, Kuwait, Oman, Qatar, the UAE, Bahrain and Yemen*, and has maritime boundaries with the *Persian Gulf, Red Sea, and Gulf of Aqaba*.
- **Climate**– The climate is arid and desertic, with extreme temperature variations.
- **Political system**– It is an *absolute monarchy*.
- **Natural Resources**– The country is rich in natural resources like oil, natural gas, and iron ore.
- **Religious significance**– It is home to Islam's two holiest cities—*Mecca and Medina*.

Enzymes and Coenzymes

News: Plants with genetically modified enzymes/coenzymes are being contemplated to be launched as source of antioxidants in future food markets.



About Enzymes and Coenzymes

- **Enzymes:** They are **specialized proteins** that act as **biological catalysts**, accelerating the rate of chemical reactions in cells without being consumed or permanently altering themselves.
- **Coenzymes:** Many enzymes require some **molecules as cofactors** for efficient functioning. These helper molecules are called **coenzymes**.
 - They are **naturally occurring organic, non-protein molecules** that bind to and support the activity of enzymes.
- **Types of coenzymes:** Based on their **chemical nature**, coenzymes can be categorized as-
 - **Vitamin derived coenzymes** like Biotin, NAD^+ , NADP^+ , Thiamine pyrophosphate (TPP)
 - **Non-vitamin coenzymes** like Coenzyme Q

About Coenzyme Q

- It is also known as **ubiquinone** and is present in every cell membrane.
- **Feature:** It contains several **isoprene units** which are **antioxidants** and offer **stability against stress**.
- **Types:** It comes in **10 different types (CoQ1...Q10)**.
- **Functions:** Each one of them act as a **water-insoluble, but lipid-soluble antioxidant**.
 - All these coenzymes play a vital role in the **function of the mitochondrion**, the major **energy producer** in the cell.
- **Coenzyme Q09:** It has **nine isoprene units**. It is **abundantly found** in **cereal crops** like wheat, rice, oats, barley, corn, rye, millet and in plants like cinnamon, avocado and pepper.
- **Coenzyme Q10:** It occurs **naturally** in human body. It is a component of the **mitochondrial electron transport chain** in humans. Since **heart** have high energy demands and contain **high concentrations of CoQ10**.
- **Advantage of CoQ10:** Developing **CoQ10-enriched crops** offers a cost-effective and sustainable way to **enhance nutritional value** and improve **health benefits**.
- In a research, the **gene-edited rice** demonstrated over **75% CoQ10 accumulation in both grains and leaves**.

Sunrise Sectors

News: India aims to double the share of manufacturing in GDP to 23% helped by sunrise sectors.



About Sunrise Sectors

- It refers to **industries** that are relatively **new**, rapidly **growing**, and have significant **potential** to drive future economic **growth, innovation, and employment**.
- **Features:**
 - High rates of expansion
 - Technological advancement
 - Ability to attract substantial investments and talent
- **Importance of sunrise sector:** It helps in **scaling up manufacturing potential** of a country to absorb a **youthful workforce**, **reduce import dependencies** and build **competitive global supply chains**.

Sunrise sectors in India

- India aims to significantly boost its **manufacturing sector's contribution to GDP from 12% to 23% in the next two decades**, prioritizing job creation and economic expansion.
- **Recognition:** The Indian government has **identified 14 sunrise sectors** such as **semiconductors, renewable energy components, medical devices, pharmaceuticals, hydrogen mission, electrical vehicles and batteries, Agro and Food Processing (A&FP)** and so on in order to strengthen manufacturing.
- India has introduced the **production-linked incentive (PLI) scheme** to promote them.
 - PLI is also offered to sectors that also have **greater employment potential** like electronic goods and similarly **labour intensive sectors** like textile and leather.

Akshvi Digital Wallet

News: India has launched a one-of-its-kind e-digital wallet for disasters —Akshvi which allows communities to self-report their losses in any disaster.

About Akshvi Digital Wallet



Source-UNFCCC

- Akshvi is an acronym for **Aapda Kshati Vivaran (Disaster Damages Description)**.
- It is a **community-driven platform**, created by **SEEDS** (Sustainable Environment and Ecological Development Society) India.
 - SEEDS aims to strengthen the resilience of **300 million climate risk-prone people in the country by 2030**.
- Using this platform, the affected communities **log their losses and assets** every time they are faced with an incident (flood, drought, heatwave, landslide, lightning, hailstorm etc.) – regularly over a period of time.
- **Pilot project**: It is presently piloted in **five districts of three states** (Uttar Pradesh, Assam, and West Bengal).
- **Working mechanism**:
 - Similar to digilocker, each household is given an **E-Disaster Wallet** for **self-report their economic and non-economic losses**.
 - There are **three ways** to report this – i) an **IVRS** (Interactive Voice Response System) helpline number, ii) a chatbot on **WhatsApp**, iii) assisted **filling of data** by a person.
- **Benefits**:
 - The family will have a **credible record** of all their losses.
 - Agencies will know **exactly** the losses and the needs of the people.
 - Government agencies will have **hyperlocal data** on loss and damages

Simla Agreement 1972

News– After the recent escalation with India following the Pahalgam incident, Pakistan put the Simla Agreement on hold.



About Simla Agreement 1972

- It is a *bilateral peace treaty* signed on July 2, 1972, between India and Pakistan, in the aftermath of the 1971 India-Pakistan War.
- The agreement was signed in Shimla, Himachal Pradesh, by *Prime Minister Indira Gandhi* and *Pakistan's President Zulfikar Ali Bhutto*.
- It came into force on August 4, 1972, after being ratified by both countries.

Background: The 1971 War

- The 1971 war resulted in India's decisive victory and the creation of Bangladesh.
- On December 16, 1971, over 93,000 Pakistani soldiers surrendered in Dhaka, making it the largest military surrender since World War II.
- A ceasefire was declared on both eastern and western fronts, and the war ended the following day.

Objectives of the agreement- The agreement aimed:

- To end hostilities and confrontation.
- To work towards friendly and harmonious relations.
- To establish durable peace in the subcontinent.

Key Provisions of the Simla Agreement

- **Peaceful bilateral resolution:** Both nations committed to resolving disputes through bilateral negotiations, *without involving third-party mediation* — a clause India has consistently emphasized, especially in opposing international interference in the Kashmir issue.
- **Line of Control (LoC):** The agreement converted the 1971 ceasefire line into the Line of Control (LoC), effectively *establishing a de facto border in Jammu and Kashmir*. It emphasized that neither side would seek to unilaterally alter this line, thereby reinforcing the status quo.
- **Return of territory:** India returned over 13,000 km² of territory captured during the war, demonstrating goodwill and commitment to peace. However, it *retained strategic zones such as Turtuk and Chaluska in the Chhorbat Valley*.
- **Recognition of Bangladesh:** Though not immediate, the agreement laid the groundwork for Pakistan's eventual diplomatic recognition of Bangladesh.

National Zero Measles-Rubella Elimination Campaign 2025-26

News– Union Health Minister recently launched the National Zero Measles-Rubella Elimination Campaign 2025–26. The launch, held on the first day of World Immunization Week (April 24–30), marks a major step toward India's goal of *eliminating measles and rubella by 2026*.



About National Zero Measles-Rubella Elimination Campaign 2025-26

Aim: The campaign aims to achieve 100% immunisation coverage of children against Measles and Rubella, both of which are highly contagious viral infections that can lead to severe complications or even death in children.

Dosage schedule: *Two doses of the Measles-Rubella (MR) vaccine are administered under the Universal Immunisation Programme (UIP)—the first at 9–12 months and the second at 16–24 months of age.*

Target areas: The campaign prioritises inclusive and equitable coverage, with a special focus on remote and hard-to-reach areas, urban slums, migratory populations, and regions prone to frequent outbreaks.

Progress and Recognition:

- Between January and March 2025, 332 districts reported zero measles cases, while 487 districts recorded zero rubella cases.
- In 2024, India witnessed a 73% reduction in measles cases and a 17% decrease in rubella cases compared to the previous year.
- For its sustained efforts, India received the *Measles and Rubella Champion Award (2024)* from the Measles and Rubella Partnership.

Universal Immunisation Programme (UIP):

- *Launched in 1985*, the UIP is *entirely funded by the Government of India* and is the world's largest vaccination programme.
- It *provides protection against 12 vaccine-preventable diseases* such as Polio, Measles, Rubella, Diphtheria, Tetanus, Rotavirus, and Hepatitis B. The programme reaches millions of pregnant women and newborns annually, reducing under-five mortality rates.
- **Digital Support through U-WIN:** The U-WIN platform, launched by the Hon'ble Prime Minister, supports the vaccination drive by digitally recording immunisation events, generating certificates, and enabling appointment bookings.

SAARC Visa Exemption Scheme (SVES)

News- India has suspended the SAARC Visa Exemption Scheme (SVES) for Pakistani nationals in the aftermath of the Pahalgam terror attack, which resulted in the death of 26 individuals.



About SAARC Visa Exemption Scheme (SVES)

- **Genesis:**
 - The SAARC Visa Exemption Scheme (SVES) was *officially launched in 1992*, following its proposal at the Fourth SAARC Summit held in Islamabad in 1988.
 - It was envisioned as a step toward strengthening regional integration and cooperation among the eight SAARC member countries: India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Maldives, and Afghanistan.
- **Objective:** The primary aim of the SVES is to *facilitate regional mobility by promoting people-to-people contact* and enhancing diplomatic, cultural, and business exchanges through visa-free travel for certain categories of individuals.
- **Targeted Beneficiaries:** The scheme permits visa-free travel for *24 designated categories* such as: *Dignitaries, Judges, Members of Parliament, Senior government officials, Journalists, Businesspersons, Sports persons* etc.
- **Validity**– Special visa stickers are issued (by each SAARC member), typically *valid for one year*, allowing visa-free travel within SAARC countries.

Country-Specific Provisions – India:

- **Nepal & Bhutan:** Citizens of both countries *do not require a visa* to enter India.
- **Pakistan:** Initially, Pakistani nationals were allowed one-year, multiple-entry business visas under restricted categories. In 2015, this was *revised to allow verified special-category businesspersons up to three-year* visa exemptions. Their movement remained restricted to designated cities (approximately 10–15).
- **Sri Lanka:** Sri Lankan nationals are also *eligible for India's e-Tourist visa*.
- **Indian Citizens:** Do not require visas to travel to Nepal and Bhutan.

Suspension Clause:

- **Discretionary nature:** Despite being a regional facilitation mechanism, the SVES is not a binding treaty. It is *based on mutual trust and bilateral goodwill*.
- **Right to deny entry:** Member states retain the sovereign authority to deny entry under SVES on national security or public order grounds.

Chlorpyrifos Pesticide

News: Indian civil societies have called for an immediate ban on chlorpyrifos in the upcoming **2025 Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions (BRS COP)**.



About Chlorpyrifos Pesticide

- It is an **organophosphate pesticide** widely used in India to **control a variety of insect pests** in agriculture.
- It is classified as '**moderately hazardous**' by the **World Health Organization** and continues to be used in India on a variety of crops.
- It is approved for use on 18 crops (**under Insecticides Act, 1968**) in India despite banned or restricted in over 40 countries.
- **Advocacy to ban:** India's **Pesticide Action Network (PAN)** is advocating for an immediate ban on chlorpyrifos under **Basel, Rotterdam and Stockholm Conventions**.

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About Basel Convention (1989)

- It is an **international treaty** that was designed to **reduce the movements of hazardous waste between nations** and specifically to **prevent transfer of hazardous waste from developed to less developed countries (LDCs)**.
- It does **not** address the movement of **radioactive waste**.

Rotterdam Convention (2004)

- Rotterdam Convention on **Prior Informed Consent Procedures (PIC)** entered into force in **2004**.
- It is an **international treaty** designed to facilitate **informed decision-making by countries with regard to trade in hazardous chemicals**.

Stockholm Convention (2004)

- It is a global treaty aimed at **protecting human health and the environment from persistent organic pollutants (POPs)**.
- The Convention entered into **force on May 17, 2004**, and has been ratified by **over 152 countries**.

Note– India ratified the Stockholm Convention and Rotterdam Convention in 2006. Both the conventions are legally binding.

Musk Deer

News: Recently, a report “Plant Breeding Programmes in Indian Zoos: Assessment and Strategic Actions (2024)”, released by the Central Zoo Authority (CZA) has revealed that no breeding programme has been started in Indian zoos for the conservation of musk deer, classified as ‘endangered’ by IUCN.



About Musk Deer

- It is a solitary shy animal which lives in mountainous regions from Siberia to the Himalayas.
- There are **mainly** two species of musk deer found in India-
 - i) Himalayan Musk Deer ii) Apline Musk Deer

Himalayan Musk Deer (*Moschus leucogaster*)

- It is a musk deer species occurring in the **Himalayas of Nepal, Bhutan, India, Pakistan and China**.
- In India, it inhabits parts of **Kashmir, Ladakh, Himachal Pradesh, the northern part of Uttar Pradesh, Sikkim and Arunachal Pradesh**.

- It is also known as **White-bellied Musk Deer**. It's commonly known as "**Kasturi mriga**" in Nepali and "**Lah**" in Tibetan language.
- It was previously **considered a subspecies of the Alpine musk deer**, but was **separated** on the basis of different skull proportions.
- It is **under threat** due to its **hunting** primarily for its **musk** which is used in manufacture of **perfume, medicine and cosmetics**.

Characteristics

- **Musk glands and teeth:** Males have **long, curved canine teeth** and a **musk gland**, which is located in a **sac** between the genitals and the umbilicus.
- **Behaviour:** During the day, it **hides** in dense cover and is shy and secretive. At **night, it emerges** to feed in more open habitats.
- It is **herbivores** and eats grasses, forbs, mosses, lichen, twigs, shoots, and plant leaves.
- Himalayan musk deer can live for **up to 10 to 14 years**.

Protected Areas and Projects

- **Kedarnath Wildlife Sanctuary:** Established in 1972, in the western Himalayas, is the site of a **captive breeding program**.
- **Askot Musk Deer Sanctuary:** Located in Uttarakhand, dedicated specifically to musk deer conservation.
- **Himalayan Musk Project** started in 1982- It was the the flagship conservation program, but its **success has been limited** by lack of **founder stock** to initiate a sustainable breeding programme.
 - 'Founder stock' means the **pair** from which breeding can be carried forward.

Conservation

- **IUCN Status:** Endangered
- **Wildlife Protection Act:** Schedule I

NOTE – Musk Deer is the state animal of Uttarakhand.

INS Surat

News: Indian Navy's guided missile destroyer INS Surat successfully test-fired a medium-range surface-to-air missile in the Arabian Sea.



About INS Surat

- It is the **fourth and final stealth destroyer ship** of the **Project 15B- Guided Missile Destroyer Project** and is popularly known as the **Visakhapatnam-class**.
 - It represents an **advanced iteration of the Kolkata-class destroyers** built under **Project 15A**.
- It has been **designed and constructed** indigenously by the **Warship Design Bureau** of Indian Navy and **Mazagon Dockyard** respectively.
- It was commissioned by the Prime Minister in **January 2025**.

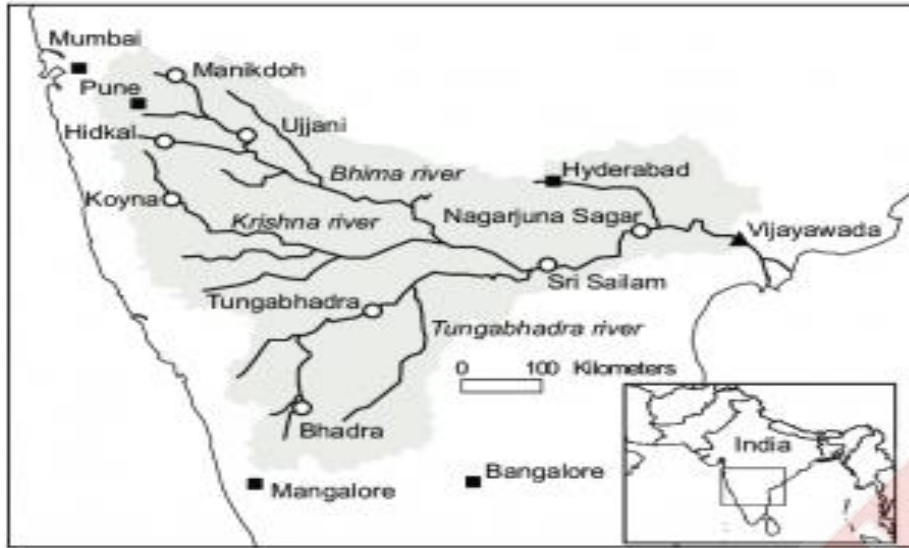
Features

- It ranks among the **largest and most sophisticated destroyers** in the world.
- **Weapons:** It is armed with supersonic **Surface-to-Surface 'Brahmos'** missiles and **'Barak-8'** Medium Range **Surface to Air Missiles**.
 - It is fitted with **indigenously developed anti-submarine weapons and sensors**, prominently the **Hull mounted Sonar Humsa NG**, Heavy weight **Torpedo Tube Launchers** and **ASW Rocket Launchers**.
- **AI-enabled:** It is Indian Navy's **first AI enabled warship** utilising indigenously developed AI solutions.
- It has a water displacement of **7,400 tons**.

Krishna river

News- Due to extreme heat, the Krishna River has dried up earlier than expected, significantly disrupting irrigation in Karnataka's Bagalkot, Vijayapura, and Yadgir districts.

About Krishna river



Source- ResearchGate

- **Origin:** The Krishna River originates near *Mahabaleshwar* in the *Western Ghats*, located in Satara district, Maharashtra.
- It is *India's third-longest river*, following the Ganges and Godavari.
- *In terms of water inflows and basin area*, it ranks as the *fourth-largest river in India*, after the Ganges, Indus, and Godavari.
- The Krishna River basin spans across the states of *Maharashtra, Karnataka, Telangana, and Andhra Pradesh*.
- **Left Bank tributaries** – Bhima, Dindi, Peddavagu, Musi, Palleru, Munneru.
- **Right Bank tributaries** – Kudali (Niranjna) Venna, Koyna, Panchganga, Dudhaganga, Ghataprabha, Malaprabha and *Tungabhadra (largest tributary)*.
- **Key projects**– The key projects on the Krishna River include Tungabhadra, Srisailem, Nagarjuna Sagar, and Prakasam Barrage, all of which are crucial for irrigation and hydroelectric power generation.

Cabinet Committee on Security (CCS)

News- Following the Pahalgam terror attack that claimed 26 lives, the Cabinet Committee on Security (CCS) unveiled a set of unprecedented retaliatory actions targeting Pakistan.



About Cabinet Committee on Security (CCS)

- It is the apex decision-making body in the Government of India on matters related to the country's defence, national security, and law and order.
- It plays a critical role in formulating India's security and strategic framework.
- The committee is *chaired by the Prime Minister* and comprises key ministers holding strategic portfolios:
 - Minister of Defence
 - Minister of Home Affairs
 - Minister of Finance
 - Minister of External Affairs
- **Functions of the CCS**
 - It discusses different initiatives to take to enhance the national security of India.
 - It deals with all issues related to the law and order and national security of India.
 - *Discusses political developments with national security implications.*
 - Evaluates foreign policy decisions with a bearing on security.
 - Evaluating international agreements related to defence and security.

About Cabinet Committees

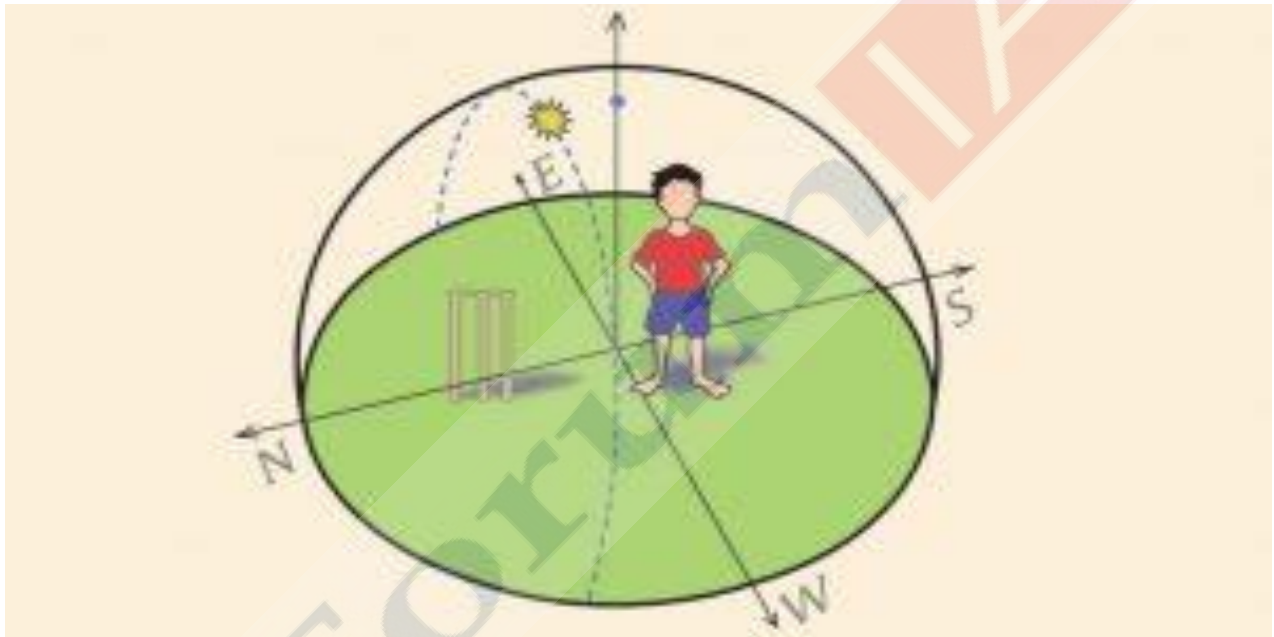
- Cabinet Committees are *extra-constitutional bodies*; i.e., they are not provided for in the Constitution of India.
- Their primary purpose is to *streamline governance* by reducing the workload of the Union Cabinet, allowing smaller groups of ministers to take decisions in specific domains.
- These committees are constituted or reconstituted by the by the *Prime Minister* based on emerging needs:
- List of Cabinet Committees (as of current structure)
 - Cabinet Committee on Security (CCS)
 - Cabinet Committee on Economic Affairs

- Cabinet Committee on Political Affairs
- Cabinet Committee on Investment and Growth
- Cabinet Committee on Parliamentary Affairs
- Cabinet Committee on Accommodation
- Cabinet Committee on Employment and Skill Development
- Appointments Committee of the Cabinet

Zero Shadow Day (ZSD)

News: The Cosmology Education and Research Training Center (COSMOS), Mysuru, of the Indian Institute of Astrophysics observed 'Zero Shadow Day' recently. **Zero Shadow Day (ZSD).**

About Zero Shadow Day (ZSD)



Source – Indian Express

- ZSD is a fascinating astronomical phenomenon that **occurs twice a year** in locations situated **between the Tropic of Cancer and the Tropic of Capricorn**.
- All places whose **latitude equals the angle between the Sun's location and the equator** on that day experience ZSD.
- This event is a **direct result of the Earth's axial tilt (23.5 degrees)** and **revolution around the Sun**.
- **Frequency of phenomenon:**
 - **First time** when the Sun is **directly overhead the Tropic of Cancer** on 21 June (summer solstice in the northern hemisphere) and then journeys southwards as seen from the Earth, called **Dakshinayana**.
 - **Second time** when the Sun is **overhead the Tropic of Capricorn** on 22 December. It is then seen to journey northwards, called **Uttarayana**.
 - Hence, the **Sun is directly overhead locations between the two tropics twice a year**, and this day varies with latitude.
 - When the **Sun is directly overhead**, the shadow of a vertical object falls under it, and hence **no shadow** will be seen at local noon.

- Although the exact moment of Zero Shadow occurs instantaneously, the effect can be observed for a **short duration**, typically lasting for about a minute to a minute-and-a-half.

United Nations Ocean Conference (UNOC3)-2025

News: The 2025 UN Ocean Conference, co-hosted by the Governments of France and Costa Rica, will take place from 9 to 13 June 2025 in Nice, France. **United Nations Ocean Conference (UNOC3)-2025.**



About United Nations Ocean Conference (UNOC3)-2025

- **Host:** It will be co-hosted by **France and Costa Rica** and held in **Nice, France**.
- **Theme:** “**Accelerating action and mobilizing all actors to conserve and sustainably use the ocean**”
- **Aim:** The Conference **aims to support further and urgent action to conserve and sustainably use the oceans, seas and marine resources** for sustainable development and identify further ways and means to support the **implementation of SDG 14 (Life Below Water)**.
- The Conference has **three priorities** in order to produce an ambitious draft agreement:
 - **Governance:** Working towards **completion of multilateral processes** linked to the oceans, to boost ambition for their protection, e.g. implementation of ‘**Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ Agreement)**’;
 - **Financing:** Mobilizing **sources of finance** to conserve and sustainably use the oceans, seas and marine resources for sustainable development (SDG 14) and support the development of a sustainable **blue economy**;
 - **Knowledge sharing:** Strengthening and better **disseminating knowledge linked to marine science** to enhance policy-making.
- **Expected outcome:** The “**Nice Ocean Agreements**” can form an **international pact** for the conservation and sustainable use of the ocean.

- The Conference will build on the **previous UN Ocean Conferences**, hosted by **Sweden and Fiji in 2017 in New York** and by **Portugal and Kenya in 2022 in Lisbon**.

About Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ Agreement)

- It is also known as the '**High Seas Treaty**'.
- It is an **international treaty** under the **United Nations Convention on the Law of the Sea (UNCLOS)**.
- **Aim:** It aims to address the growing concerns over the **long-term protection of marine biodiversity in the high seas**.
- It sets precise **mechanisms for the sustainable use of marine biological diversity** through international **cooperation and coordination**.
 - The **Parties cannot claim or exercise sovereign rights** over marine resources derived from the high seas and ensure fair and equitable sharing of benefits.
- **India has recently signed the Agreement** to be implemented through the **Ministry of Earth Sciences**.

Key Facts about Crimea

News- Recently, U.S. President Donald Trump suggested formally recognizing Crimea as part of Russia, potentially overturning America's long-standing stance against the annexation. **Crimea**.

About Crimea



Source- The Indian Express

- **Location**– Crimea is an autonomous republic located in southern Ukraine.

- **Maritime Borders**– It is bordered by the *Black Sea to the west and south* and the *Sea of Azov to the northeast*.
- **Other connections:**
 - It is connected to mainland Ukraine by the narrow *Perekop Isthmus* (8 km wide) and separated from the Sea of Azov by the *Arabat Spit*.
 - The *Kerch Strait* links Crimea to Russia, now connected via the strategically significant Crimean Bridge.

Historical Significance: Historically known as the Tauric Peninsula, Crimea has been a contested territory, witnessing the influence and rule of various empires, including the Greeks, Romans, Byzantines, Ottomans, and Russians. Its location has historically made it a prized geopolitical asset in the Black Sea region.

Topography and Natural Resources:

- The southern coastline is dominated by the Crimean Mountains, with *Ai-Petri* as a prominent peak.
- Rivers like the *Salhir and Alma* traverse the interior regions.
- The Kerch Peninsula in eastern Crimea is rich in *iron ore, mud volcanoes, and mineral springs, promoting mining and spa industries*.

Administrative and Strategic Centres:

- **Simferopol** is the administrative capital of Crimea.
- **Sevastopol**, a deep-water port, holds strategic military significance as the headquarters of Russia's Black Sea Fleet.

Mahuadanr Wolf Sanctuary

News- The Mahuadanr Wolf Sanctuary holds the distinction of being India's first and only wolf sanctuary dedicated to conserving the Indian grey wolf. Mahuadanr Wolf Sanctuary.

About Mahuadanr Wolf Sanctuary

- **Location**– It is located in the *Latehar district of Jharkhand*.
- It was declared a sanctuary in 1976.
- **Significance**– It is *India's first and only wolf sanctuary, dedicated to the conservation of the Indian grey wolf (Canis lupus pallipes)*.
- **Association**– The Sanctuary is an integral part of *Palamau Tiger Reserve*.
- **Wildlife**– The sanctuary is home to many species of wild animals including spotted *deer, wild boar, hyena, bear and wolf*.

About Indian grey wolf (*Canis lupus pallipes*)

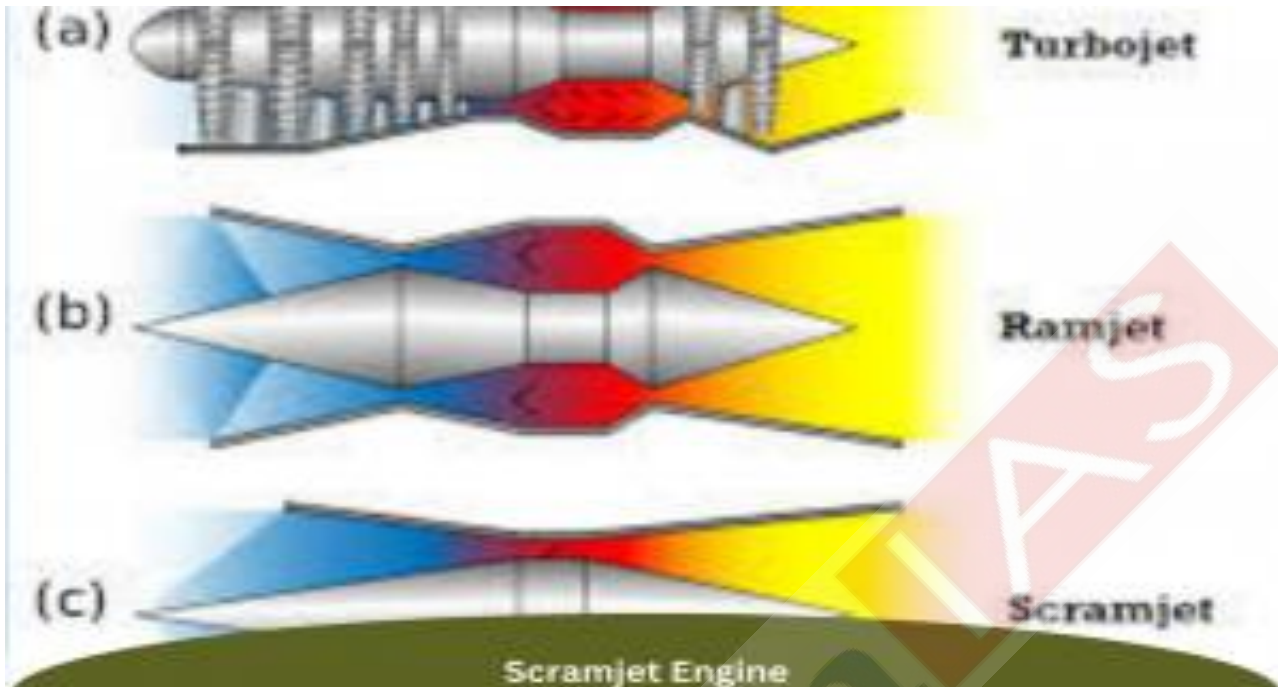


Source- Outlook traveller

- It is a *subspecies of the grey wolf*, found across Southwest Asia and the Indian subcontinent.
- **Distinct features:**
 - It lives in smaller packs and is *less vocal compared to other wolf subspecies*.
 - It is *primarily nocturnal*, hunting from dusk to dawn.
- **Habitat**– It is well-adapted to warmer climates and typically inhabits scrublands, grasslands, and semi arid agroecosystems.
- **Conservation Status:**
 - **IUCN Red List:** Classified as *Endangered*, with the Indian population estimated between 2,000 and 3,000 individuals.
 - **CITES:** Appendix I
 - **Wildlife (Protection) Act, 1972:** Schedule I

Scramjet Engine

News– The Defence Research and Development Laboratory (DRDL), a unit of DRDO, recently achieved a successful ground test of a Scramjet Engine, operating for more than 1,000 seconds in Hyderabad. **Scramjet Engine.**



About Scramjet Engine

- A Scramjet engine (Supersonic Combustion Ramjet) is an **improved version of the Ramjet**, designed to operate at extremely high speeds.
 - A **ramjet is an air-breathing jet engine** that relies on the **vehicle's forward motion** to compress incoming air for combustion, eliminating the need for a rotating compressor. It operates efficiently at supersonic speeds, typically between Mach 3 and Mach 6.
- Scramjet works by using supersonic airflow to generate thrust and functions at hypersonic speeds (**Mach 5+**).
- **Key features:**
 - **Air-Breathing Engine:** Unlike traditional rocket engines, Scramjets use atmospheric oxygen for combustion, eliminating the need to carry heavy oxygen tanks.
 - **No Moving Parts:** Scramjets rely on supersonic airflow, making them highly efficient for sustained high-speed travel.
- **Significance:**
 - Next-generation hypersonic missiles with unmatched speed and accuracy.
 - Faster air travel, potentially reducing flight times drastically.
 - Low-cost satellite launches, making space access more affordable.

Hypersonic Missiles

- . These missiles can fly at speeds of at least Mach 5 (five times the speed of sound).
- . A key feature of hypersonic missiles is their *Mid-Flight maneuverability*, unlike ballistic missiles that follow a fixed path.
- . There are two types of hypersonic weapons:

- . **Hypersonic Glide Vehicles (HGVs):** Launched by a rocket and then glide to the target.
- . **Hypersonic Cruise Missiles (HCMs):** Powered by air-breathing engines or “scramjets” after locking onto the target.

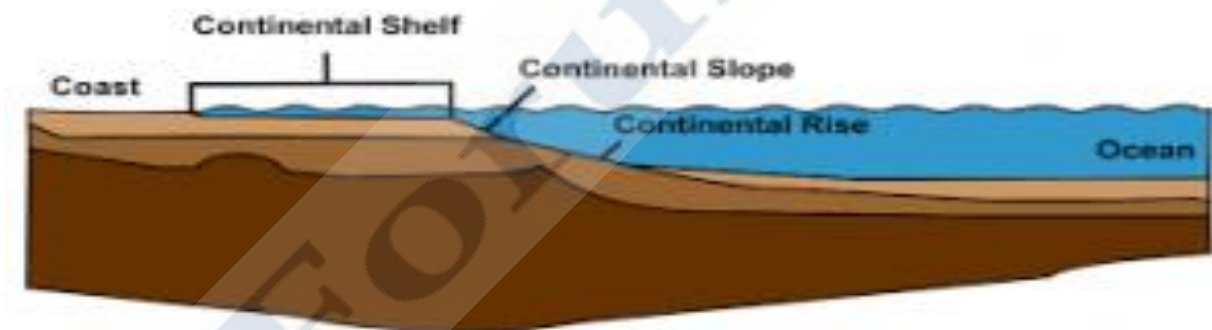
Continental Shelf

News: India raises continental-shelf claim in Arabian Sea region by nearly 10,000 square km.

About Continental Shelf

The ocean floors can be divided into **four major divisions**: (i) **Continental Shelf**; (ii) **Continental Slope**; (iii) **Deep Sea Plain**; (iv) **Oceanic Deeps**. Besides, these divisions there are also major and minor relief features in the ocean floors like **ridges, hills, sea mounts, guyots, trenches, canyons**, etc.

Continental Shelf



Source – Wikipedia

- It is the **extended margin of each continent** occupied by relatively **shallow seas and gulfs**.
- It is the **shallowest** part of the ocean showing an average **gradient of 1° or even less**.
- **Shelf break:** The shelf typically ends at a very steep slope, called the **shelf break**.
- **Continental slope:** From the break, the shelf descends toward the deep ocean floor in what is called the continental slope.
- **Width:** The **width** of the continental shelves **varies from one ocean to another**. The average width of continental shelves is about 80 km.
 - **Narrow shelves:** The shelves are **almost absent or very narrow** along some of the margins like the coasts of Chile, the west coast of Sumatra, etc.
 - **Wide shelves:** On the contrary, the Siberian shelf in the Arctic Ocean, the largest in the world stretches to 1,500 km in width.

- **Depth:** The depth of the shelves also varies. It may be as shallow as 30 m in some areas while in some areas it is as deep as 600 m.
- **Sediment deposition:** They are covered with variable **thicknesses of sediments brought down by rivers, glaciers, wind**, from the land and distributed by waves and currents, becoming the **source of fossil fuels**.

Legal aspects

- **UNCLOS definition:** Under the **United Nations Convention on the Law of the Sea (UNCLOS)**, the continental shelf is the **seabed and subsoil extending up to 200 nautical miles from a coastal state's baseline** or further if the natural margin extends beyond this limit.
- **Sovereign rights:** Coastal nations have **exclusive rights to explore and exploit resources** on the continental shelf.
- **Extended Continental Shelf (ECS):** Countries can **claim beyond 200 nautical miles** if they can prove the natural prolongation of their landmass, as India has done in the Arabian Sea and Bay of Bengal.

African Hyena

News: The four extant species of hyena or hyaenids found on the African continent are facing increasing threats, leading to population declines, according to conservation organisation, Wild Africa.

About African Hyena

- They belong to the **Hyaenidae family of Hyaena genus**.
- They are **hunters** and catch their prey **using their teeth instead of claws**.



Source – Wikipedia

here are **four** distinct species of hyena found in **African continent** –

- i. Spotted hyena (*Crocutta crocutta*)
- ii. Striped hyena (*Hyaena hyaena*), also found in **the Middle East and Asia**
- iii. Brown hyena (*Parahyaena brunnea*)
- iv. Aardwolf (*Proteles cristatus*)

About Spotted hyena

- It is the most widespread of the four species, found throughout **sub-Saharan Africa**.
- It is also known as the '**laughing hyena**'.
- It is among the continent's most skilled predators.
- It can hunt up to 90 per cent of their food using **strategy, teamwork and endurance**.
- **IUCN Status: 'Least Concern'** but population is declining, with fewer than 50,000 estimated left across the African continent.

About Striped hyenas

- It is found in **North and East Africa**.
- It is primarily **nocturnal** and **solitary**.
- It is **omnivores** and feed on small animals, fruits and vegetables.
- They are also the **biggest carcass-scavengers** of the family.
- It uses "**natural lavatories**" to communicate via scent—sharing information about their territory, reproductive status, and group presence.
- **IUCN Status: 'Nearly Threatened'** with less than 10,000 mature individuals left in the wild.

About Brown hyena

- It is found mainly in **southern Africa's arid deserts and savannas**.
- It is predominantly a **scavenger**, but also **supplements its diet** with fruits and vegetables, insects, bird eggs, and occasionally small animal prey.
- It lives in **small clans**, typically consisting of related females and their cubs, while **males** may remain in their **natal clan**, become nomadic, or join new groups.
- One fascinating adaptation is its **incredibly powerful sense of smell**, used to locate carcasses over long distances.
- **IUCN Status: 'Near Threatened'**, population with just over 10,000 left in Africa.

About Aardwolf

- It is the **smallest and most specialized**
- It is **not wolves** or related to them. It simply shares the name due to **similar size and shape**.
- It feeds almost **exclusively on termites**.
- They are socially **monogamous**, and typically live **alone or in pairs**.
- **Threat:** As they feed mostly on insects, one of the biggest threats to aardwolves is **pesticide use**, aimed at controlling locusts and termites.
- **IUCN Status: 'Least Concern'**, indicating they are not threatened, but their exact numbers are unknown due to their shy nature.

'Revive Our Ocean' Initiative

News: A new global initiative called 'Revive Our Ocean' was launched on April 24, 2025, with a goal to scale up effective, community-led marine protected areas (MPAs) through local action. **'Revive Our Ocean' Initiative.**



About 'Revive Our Ocean' Initiative

- It aims to help communities **profit from efforts to protect at least 30% of the world's oceans** by the end of 2030. It will **assist local communities** in their efforts to establish "marine protected areas" in coastal waters.
- One of the biggest goals of the initiative is to **end destructive fishing practices**, especially bottom trawling.
- **Launched by:** NGO Dynamic Planet together with the National Geographic Society's Pristine Sea programme.
- **Financing:** The initiative also plans to **launch a microfinance program** to help communities get **loan and grants** for starting or expanding their own protected areas.
- **Focus countries:** It will focus initially on tackling overfishing and ocean climate impacts in **Britain, Portugal, Greece, Turkey, Mexico, the Philippines and Indonesia**.
- **Part of 30By30 Target:** The 30By30 target of the Kunming-Montreal Global Biodiversity Framework (KMGBF) aims to **protect 30 per cent of the oceans by 2030**.
 - As per Protected Planet Report, 2024, though more than 16,000 MPAs have been established globally, amounting 8 per cent of the world's oceans, **only three per cent are currently under full protection**.

About Kunming-Montreal Global Biodiversity Framework (KMGBF)

- It is a landmark international agreement adopted in December 2022 at the **COP15** to the **UN Convention on Biological Diversity (CBD)**.
- It is widely regarded as the “**Paris Agreement for Nature**,” setting an ambitious **global roadmap to halve and reverse biodiversity loss and ensure humanity lives in harmony with nature by 2050**.
- **One of the notable Targets of Framework includes – 30×30 Target:** Conserve and effectively manage at least 30% of the world’s land, inland waters, and oceans by 2030.

Padma Awards 2025

News- Recently, the Padma Awards 2025 were conferred at a ceremonial function at Rashtrapati Bhavan. The awards are given in three categories: Padma Vibhushan, Padma Bhushan, and Padma Shri. **Padma Awards 2025:**



About Padma awards

spects

etail

History	<ul style="list-style-type: none">) The Government of India instituted two civilian awards-Bharat Ratna & Padma Vibhushan in 1954.) Padma Vibhushan had three classes namely Pahela Varg, Dusra Varg and Tisra Varg.) These were subsequently renamed as Padma Vibhushan, Padma Bhushan and Padma Shri vide Presidential Notification issued on January 8, 1955.
About	<ul style="list-style-type: none">) The Padma Awards are one of the highest civilian honours of India.) They are announced annually on the eve of Republic Day.) These Awards are conferred by the President of India at ceremonial functions which are held at Rashtrapati Bhawan usually around March / April every year.
Ministry	The awards come under the aegis of the Ministry of Home Affairs .
Objective	To acknowledge achievements in all fields of activities or discipline where element of public service is involved.
Categories	<p>The Awards are given in three categories:</p> <ul style="list-style-type: none">) Padma Vibhushan (for exceptional and distinguished service),) Padma Bhushan (distinguished service of higher-order) and) Padma Shri (distinguished service). <p>Padma Vibhushan is highest in the hierarchy of Padma Awards followed by Padma Bhushan and Padma Shri.</p>

Factly Compilation [Fourth Week] April 2025

Discipline	The Awards are given in various disciplines/ fields of activities, viz.- art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, music etc.
Eligibility	All persons without distinction of race, occupation, position or sex are eligible for these Awards.
Selection process	<ul style="list-style-type: none">) All nominations received for the Padma Awards are placed before the Padma Awards Committee constituted by the Prime Minister every year.) The Padma Awards Committee is headed by the Cabinet Secretary and includes the Home Secretary, the Secretary to the President, and four to six eminent persons as members.) The recommendations of the committee are submitted to the Prime Minister and the President of India for approval.
Some important facts	<ul style="list-style-type: none">) The total number of awards to be given in a year (excluding posthumous awards and NRI/foreigners/OCIs) should not be more than 120.) The award does not amount to title and cannot be used as a suffix or prefix to the awardees' name.) These were discontinued in 1978 and 1979 and from 1993 to 1997.

River Cities Alliance(RCA)

News- The National Mission for Clean Ganga (NMCG) has approved an annual master plan for the River Cities Alliance (RCA) to advance and expand sustainable urban river rejuvenation efforts. **River Cities Alliance(RCA)**



About River Cities Alliance(RCA)

- **Launched in:** 2021
- **Objective:** It is a platform designed to enhance institutional capacity, encourage inter-city collaboration and facilitate the formulation of Urban River Management Plans (URMPs).
 - The URMP Framework, launched in 2020 by National Institute of Urban Affairs (NIUA) and NMCG, guides cities in managing rivers through an integrated approach that includes environmental, social, and economic aspects.
- **Implementation:** It is being implemented by a partnership of the Ministry of Jal Shakti and the Ministry of Housing and Urban Affairs
- **Members cities-** As of 2025, a total of 145 cities have joined the alliance. Any river city can join the Alliance at any time.
- **Core activities of the RCA include:**
 - Promoting river-sensitive planning in urban areas,
 - Enabling peer-to-peer learning among cities,
 - Conducting capacity-building and training programs for Urban Local Bodies (ULBs).

About National Mission for Clean Ganga (NMCG)

- It was registered as a society on 12th August 2011 under the Societies Registration Act 1860.
- It acted as the implementation arm of the National Ganga River Basin Authority (NGRBA) which was constituted under the provisions of the Environment (Protection) Act (EPA), 1986.
 - NGRBA replaced by National Ganga Council (chaired by Prime Minister) in 2016
- The aim of the mission is *cleaning and conserving the Ganga River*.

- It is the key agency responsible for implementing the *Namami Gange Programme*, which was launched in 2014 to coordinate efforts for restoring the health of the Ganga.

Ancient Muziris Port

News- Historian MGS Narayanan, a pivotal figure behind the Muziris Heritage Project (MHP), was remembered in the Kerala State Assembly. **Ancient Muziris Port.**



About Ancient Muziris Port

Location: It was located on the *Malabar Coast* in present-day Kerala.

Historical Period: It was active from around the 1st century BCE to the early medieval period.

Historical references: It was also mentioned in the writings of *Pliny the Elder* and in the *Periplus of the Erythraea*.

Trade significance: It served as a major international trading port in the Indian Ocean network. It connected South India with Persia, the Middle East, North Africa, and the Mediterranean (notably Greek and Roman civilizations).

Major exports: It was renowned for its spice trade, especially black pepper, often called black gold. Other items of export included semi-precious stones, ivory, pearls, etc.

Golconda Blue

News: The **Golconda Blue diamond** – “among the rarest and most important...ever discovered throughout history”, has been expected to fetch \$35 million to \$50 million at **an auction** in Geneva on May 14.

About Golconda Blue



Source – India Today

- It is a **legendary 23.24-carat fancy vivid blue diamond**, renowned for its exceptional clarity, rich blue hue, and royal provenance.
- **Origin:** The diamond traces its origin to the **famed Golconda mines** in present-day **Telangana**, India, which historically produced some of the world's most celebrated diamonds, including the **Koh-i-Noor**, the pale pink **Darya-i-Nur** and **Hope Diamond**.
- It is considered **one of the rarest and most valuable diamonds** in the world, with an estimated value between \$35 million and \$50 million.

Historical Background

- It belonged to **Yeshwant Rao Holkar (1908-62)**, the **Maharaja of Indore**, who, along with his wife **Sanyogitabai Devi**, often collected paintings, jewellery, and other fine goods in Europe.
- Later, it was commissioned into exquisite jewelry by leading Parisian jewelers, including Chaumet and Mauboussin, and **worn by Maharani Sanyogita Devi of Indore** in a famous portrait.

Historical Accounts of Golconda Diamonds

- The French merchant **Jean-Baptiste Tavernier (1605-89)** wrote that **diamond mining in the Golconda district** grew at an explosive rate in the **mid-17th century**. At the Kollur mine, 60,000 digger and washers were employed.
- The **French traveller Jean de Thévenot (1633-77)** noted there was **no uniformity in diamond price** and the **king** established a **monopoly in mining**.
- The **French Catholic physician Gabriel Dellon**, who traveled to India in the late **1660s**, noted that **th Surat** is a place of great commerce; **diamonds are brought** there out of the Kingdom of Golconda.

Rajamannar Committee on Centre-State Relations

ews: Tamil Nadu Government has formed a three-member high-level committee to review Centre-State relations, echoing Rajamannar committee of past. **Rajamannar Committee on Centre-State Relations.**



About Rajamannar Committee on Centre-State Relations

- It was formed by **Tamil Nadu government in 1969** and it gave its Report in **1971**.
- It was the **first state-level initiative** to review **Centre-State relations**.
- **Members:** It was **headed** by **V. Rajamannar** (former Chief Justice of the Madras High Court) and **Lakshmanaswami Mudaliar** and **P. Chandra Reddy** were the members.

Recommendations

- It **criticised the growing centralisation of power** that undermined state autonomy.
- **Augmenting financial resources of States:**
 - The committee recommended that the **base of devolution of revenue to the States be widened**.

- It suggested that a **number of subjects** —stock exchanges, futures markets, and regulation and development of oil fields — be transferred **from the Union/Concurrent List to the State List**
- The committee criticised the **Planning Commission**, created by an executive order of the Centre and sole decider of grants to be given to States.
- **Repeal Article 356:** The committee recommended that Article 356—the provision that allows the Centre to impose President's Rule in a state—be repealed entirely.
- **Dispute resolution mechanism:** It recommended that a strong **Inter-State Council** be set up under **Article 263** to resolve differences in a spirit of dialogue.
- **Re-distribution of items in Lists:** The committee suggested the formation of a committee for **redistribution** of entries in the Union and Concurrent Lists of the Constitution.
 - Among the subjects identified by the committee for the transfer were trade unions, industries and labour disputes, shipping and navigation on inland waterways, factories, electricity, newspapers, and books and printing processes.
- **Abolition of All-India Services:** The committee recommended the abolition of All-India Services (IAS, IPS, and IFS) to reduce the Central Government's control over State administration.

Rafale-Marine Fighter Jet

News: India and France has inked an Inter-Governmental Agreement (IGA) for the procurement of **26 Rafale** aircraft – 22 single-seater and four twin-seater – for the Indian Navy.

About Rafale-Marine Fighter Jet

- It is a **single-seat, carrier-borne, 4+ generation** aircraft capable of performing a wide range of missions including deep strikes, air defence, and reconnaissance.
- **Manufactured by:** France's Dassault Aviation
- It is also described as an "**omnirole aircraft**", meaning that it can conduct **both air-to-air and air-to-ground missions**
- It is designed to **operate from aircraft carriers** and will be deployed on aircraft carriers **INS Vikram and INS Vikramaditya**, replacing the ageing MiG-29K fleet.
 - This is possible because of various **modifications**, including a reinforced **undercarriage**, strengthened **landing gears**, **folding wings** and a longer and strengthened nose.
- **Weaponry:** It will be loaded with the **Meteor and MICA** air-to-air missiles, **SCALP** cruise missiles, **Exocet** anti-ship missiles and **ASTRA Mk1** air-to-air **Beyond Visual Range Missile**.
- A great advantage that accrues with the induction of the 26 Rafale Ms for the Indian Navy is the **commonality with the IAF Rafales** which provides the desirable scope for **interoperability and joint training**.

Rafale M vs Rafale: How are they different

Feature	Rafale M	Rafale
Airframe	Strengthened for carrier landings	Standard airframe
Wing	Foldable	Non-foldable
Tailhook	Yes	No
Radar	Maritime-optimized	Standard radar
Weapons	Wider range of weapons, including anti-ship missiles	Standard range of weapons
Mission	Carrier operations	Air superiority, ground attack, air-to-air refueling

TOI

Source – Times of India

About the deal

- Indian Navy will become the **first international user of Rafale-M**.
- **Composition:** The deal for **26 Rafale-M fighter jets** includes **four trainer aircraft (twin-seater)**.
- The agreement includes **Transfer of Technology for integration of indigenous weapons** in India.
- It also includes **setting up of a production facility** for Rafale **fuselage** as well as **Maintenance, Repair and Overhaul facilities** for aircraft engine, sensors and weapons in India.
- **Delivery time:** It would begin between the **next three to four years** and is likely to be **completed by 2030**.

RNA-Based Antiviral to Combat Cucumber Mosaic Virus (CMV)

News– A team of scientists from Germany has developed an innovative RNA-based antiviral agent using RNA interference that offers protection against the Cucumber Mosaic Virus (CMV)- one of the most damaging plant viruses globally.



Source- The Hindu

About Cucumber Mosaic Virus (CMV)

- **Type:** Plant virus affecting over 1,200 plant species.
- **Affected Crops:** Cucumbers, melons, cereals, bananas, pumpkins, etc.
- **Transmission:** Spread by aphids, making outbreaks difficult to control.
- **Symptoms:** Mosaic discoloration, stunted growth, and poor fruit development.
- **Impact in India:**
 - It causes 25–30% yield loss in crops like banana.
 - It leads to direct economic losses and increased pest management costs.

About RNA silencing

Definition: A gene regulation mechanism where small RNA molecules (like siRNA or miRNA) bind to messenger RNA (mRNA) to:

- Destroy mRNA, or
- Block it from being translated into protein.

Working of Plant's RNA-Based Defense Mechanism

- When a virus infects a plant, it introduces *double-stranded RNA (dsRNA)*, which is recognized by the plant as a danger signal.
- In response, the plant activates specific enzymes called *Dicer-like enzymes (DCLs)*. These enzymes cut the viral dsRNA into smaller fragments known as *small interfering RNAs (siRNAs)*.
- The siRNAs act as guides, directing the plant's immune system to identify and destroy the viral RNA, thereby preventing the virus from replicating.

- However, not all siRNAs are equally effective, and viruses often mutate rapidly, allowing them to evade the plant's natural defenses.

NA-based crop protection techniques against Cucumber Mosaic Virus (CMV)

- **Host-induced gene silencing (HIGS)**- It works by *genetically modifying plants to produce virus-targeting double-stranded RNA (dsRNA) within their own cells*. This offers continuous protection throughout the plant's lifecycle.
 - **Cons**- Its widespread use is limited due to regulatory challenges, high production costs, and the risk of viruses developing resistance.
- **Spray-induced gene silencing (SIGS)**- In this method, *plants are treated with RNA sprays instead of being genetically modified*. The leaves absorb the dsRNA, which then triggers the plant's natural immune response without altering its DNA.
 - **Cons**- Although SIGS is cost-effective, environmentally friendly, and does not require genetic modification, its effectiveness is short-term and may be influenced by environmental factors such as sunlight, rain, and soil microbes.

Kuldiha Wildlife Sanctuary

News- A poacher was arrested recently after an exchange of fire with forest guards at Kuldiha Wildlife Sanctuary in Balasore district. **Kuldiha Wildlife Sanctuary.**



About Kuldiha Wildlife Sanctuary

- **Location:** It is located in the *Balasore district of Odisha*, within the Eastern Ghats.
- **Area:** It spans an area of 272 sq.km. and falls under the *Chota Nagpur Plateau region*.
- **Conservation significance:** It forms a part of the *Similipal-Kuldiha-Hadgarh Elephant Reserve*, serving as an important corridor for elephant movement and conservation.
- **Ecological connectivity:** The sanctuary is ecologically linked to the *Simlipal Tiger Reserve* through the *Nato and Sukhupada hill ranges*.
- **Water systems:** The sanctuary is drained by the *Kuldiha stream and its tributaries*, which play a crucial role in maintaining the region's hydrological and ecological balance.
- **Vegetation:** The forest type is a mix of *Peninsular Sal forests and moist mixed deciduous forests*. It is bordered by the Nilgiri forest to the north and the Mayurbhanj forest to the west, forming a contiguous forest ecosystem.
- **Flora:** Prominent tree species include *Sal (Shorea robusta)*, *Jamun (Syzygium cumini)*, *Piyas (Pterocarpus marsupium)*, *Bahera (Terminalia bellirica)*, *Mango (Mangifera indica)*, and *Simul (Bombaya ceiba)*.
- **Fauna:** The sanctuary is home to a variety of wildlife, including elephants, wild cats, leopards, *gaurs*, *long tailed monkeys*, and *giant squirrels*. Notable bird species found here include *peafowl*, *hill mynas*, and *hornbills*.