# Khadi Mahotsav 2023

**Context**: Union Minister Shri Narayan Rane launched the Khadi Yatra and announced the 'KHADI MAHOTSAV' in Mumbai to celebrate Mahatma Gandhi's birth anniversary.

- Union Minister Shri Narayan Rane launched the 'KHADI MAHOTSAV' festival to support the "Vocal for Local" and 'Atma Nirbhar Bharat Abhiyan' initiatives.
- KVIC sector has seen remarkable growth, with sales surging over four-fold to Rs. 1,34,629.91 crore in FY 2022-23 from Rs. 33,135.90 crore in FY 2014-15.
- Production in the KVI sector has also increased over three-fold to Rs. 95,956.67 crore in FY 2022-23 from Rs. 27,569.37 crore in FY 2014-15.
- 'Khadi Mahotsav' will run from October 2nd to October 31st, promoting Khadi, handloom, handicrafts, and local products.
- Various activities, including contests, awareness campaigns, and exhibitions, are part of the festival to boost local industries and provide employment opportunities.

**Facts about Khadi**

- Khadi, derived from "khaddar," is a hand-spun and hand-woven natural fiber cloth promoted by Mahatma Gandhi as a symbol of self-sufficiency during the Indian freedom struggle.
- The first piece of khadi was made in the Sabarmati Ashram in 1917–18.
- Khadi is made from cotton, silk, or wool and is spun on a charkha (spinning wheel).
- It's known for its versatility, keeping people cool in summer and warm in winter.
- It played a vital role during the Swadeshi movement, promoting self-reliance.
- The American Civil War led to a raw cotton crisis in Britain, and Indian cotton was sourced at low prices.
- The British colonial government exported raw materials for cloth to British mills and re-imported the finished cloth to India, inflating prices.
- The Swadeshi movement boycotted foreign cloth and was supported by nationalist politicians and Indian mill owners.
- In 1922, Gandhi urged the Indian National Congress to start a khadi department, leading to the formation of the All India Khadi Board (AIKB) and the All India Spinner Association (AISA).
- Gandhi encouraged members of the INC to spin cotton themselves and pay dues in yarn to promote spinning and weaving.
- The khadi movement evolved over time, initially focusing on economic solutions and later becoming a fabric for villagers to use themselves.
- Gandhi's personal commitment to khadi included wearing only dhoti and using wool shawls when necessary.
- He invented the Patti Charkha for faster and more controlled spinning.
- The khadi movement extended to regions like Comilla in Bangladesh, where weaving centers were established to promote local production.

**Khadi and Village Industries Commission**

- Khadi and Village Industries Commission (KVIC) is a statutory body established by the Khadi and Village Industries Act, 1956.
- It falls under the Ministry of Micro, Small and Medium Enterprises (MSMEs).
- KVIC was founded in 1957 and has undergone amendments in 1965 and 2006.
- It is a significant constitutional, statutory, and quasi-judicial body in India.
- KVIC's objectives include promoting employment, marketing and selling Khadi articles, and empowering underprivileged and rural sections of society.
- Its functions encompass planning, promoting, organizing, and implementing programs for Khadi and Village Industries (KVI) development.
- KVIC coordinates with various agencies engaged in rural development, maintains raw material reserves, and facilitates common service facilities.
- It supports marketing and sales of KVI products, encourages research and development, and provides financial assistance to individuals and institutions in the sector.
- KVIC enforces product standards and initiates projects, programs, and schemes for the development of Khadi and Village Industries.

**KVIC Schemes**

- **KVIC PMEGP:**
  - Replaced REGP and PMRY.
  - Credit-linked subsidy program for nationwide employment generation.
- **Interest Subsidy Eligibility Certificate (ISEC):**
  - Mobilizes funds from banking institutions for KVIC projects.
  - Bridges funding gaps beyond budgetary allocations.
- **Scheme of Fund for Regeneration of Traditional Industries (SFURTI):**
  - Promotes cluster development in Khadi and Village Industry products.
  - Implemented by KVIC.
- **Market Promotion Development Assistance (MPDA):**
  - Aims to increase income for artisans.
  - Assistance distribution: Artisans (40%), Producers (40%), Sellers (20%).

- **Khadi Reform and Development Program (KRDP):**
  - Focuses on employment generation and enhanced earnings for artisans.
  - Aids in repositioning Khadi to meet contemporary needs.

## Operation Kachchhap

**Context:** The Directorate of Revenue Intelligence (DRI) apprehended six individuals in Nagpur, Bhopal, and Chennai with 955 live baby Gangetic turtles of various species.

- The operation was based on intelligence that uncovered a syndicate involved in the illegal trafficking of these turtles.
- Some of these turtles are categorized as vulnerable or near-threatened species under the IUCN Red List and the Wildlife (Protection) Act, 1972.
- This operation resulted in the interception of six individuals and the recovery of the baby turtles.
- The rescued Gangetic turtle species include Indian Tent Turtle, Indian Flapshell Turtle, Crown River Turtle, Black spotted/Pond Turtle, and Brown Roofed Turtle.
- The DRI's ongoing efforts aim to combat illegal wildlife trafficking and protect these vulnerable species from threats like illegal trade and habitat degradation.

**Species of Turtles**

- **Indian Tent Turtle**
  - **Species**: Pangshura tentoria
  - **Common Names**: Pachera (Hindi), Majhari Katha (Bengali)
  - **Max Shell Length**: Up to 11.8 inches
  - **Conservation Status**: Least Concern on IUCN Red List
  - **Description**: Large turtle with an elevated brown carapace, flat sides, and a keel. Pink/yellow plastron with dark blotches and webbed feet. Resembles Indian roofed turtle but lacks eye crescent.
  - **Habitat**: Found in rivers like Mahanadi, Krishna, Godavari, Ganges, and ponds. Endemic to Katarniaghat Wildlife Sanctuary and Dudhwa Tiger Reserve in Uttar Pradesh.
- **Indian Flapshell Turtle**
  - **Family**: Trionychidae
  - **Scientific Name**: Lissemys punctata
  - **Common Names**: Matia, Sundri (Hindi), Til Kachim (Bengali), Pal Aamai (Tamil)
  - **Max Shell Length**: Up to 14 inches
  - **Conservation Status**: Vulnerable on IUCN Red List, Schedule I of the Indian Wildlife Protection Act
  - **Description**: Large freshwater turtle with an olive-brown carapace adorned with yellow spots. Softshell turtle with a leathery shell instead of a hard bony carapace. Pale plastron and yellow-spotted head.
  - **Distribution**: Found across mainland India, including Chambal National Park (Madhya Pradesh), Chilika Lake, Gahirmatha Wildlife Sanctuary, Dudhwa Tiger Reserve (Uttar Pradesh), Harike Lake (Punjab), Hazaribagh Wildlife Sanctuary (Bihar), Kaziranga National Park (Assam), Keoladeo National Park (Rajasthan), Nandan Kadan National Park (Orissa), and Peechi-Vazhani Wildlife Sanctuary (Kerala).
- **Crown River Turtle**
  - **Family**: Geoemydidae
  - **Scientific Name**: Hardella thurjii
  - **Common Names**: Kala Dhond (Hindi), Kali / Kalo Katha (Bengali)
  - **Max Shell Length**: Up to 24 inches (2 feet)
  - **Conservation Status**: Endangered on IUCN Red List, Schedule III of the Punjab Wildlife Act, Schedule I of the Indian Wildlife Protection Act
  - **Description**: Large freshwater turtle with a flat, dark brown carapace featuring a disjointed vertebral keel. Yellowish plastron with black blotches. Four yellow stripes on each side of the head, resembling a crown.
  - **Distribution**: Endemic to various locations in India, including Harike Lake (Punjab), Keoladeo National Park (Rajasthan), Katarniaghat Wildlife Sanctuary, Dudhwa Tiger Reserve (Uttar Pradesh), Kanha National Park, and Chambal Wildlife Sanctuary (Madhya Pradesh), and Kaziranga National Park (Assam).
- **Black spotted/Pond Turtle**
  - **Family**: Geoemydidae
  - **Scientific Name**: Geoclemys hamiltonii
  - **Common Names**: Bhut Katha, Kalo (Bengali), Black Pond Turtle, Indian Spotted Turtle
  - **Max Shell Length**: Up to 14 inches
  - **Conservation Status**: Endangered on IUCN Red List, Schedule I of the Indian Wildlife Protection Act
  - **Description**: Large turtle with distinctive yellow and white spots on the head and limbs. Carapace has three noticeable keels and is black with yellow blotches. Plastron is yellow with black blotches. Webbed feet.
  - **Habitat**: Found in various locations, including Keoladeo National Park (Rajasthan), Dibru Saikhowa National Park, Orang National Park, and Kaziranga National Park (Assam), and Harike Lake (Punjab).

- **Brown Roofed Turtle**
  - **Family**: Geoemydidae
  - **Scientific Name**: Pangshura smithii
  - **Common Names**: Chapant, Pachera (Hindi), Vaittal Katha (Bengali)
  - **Max Shell Length**: Up to 9 inches
  - **Conservation Status**: Near Threatened on IUCN Red List
  - **Description**: Moderately sized aquatic turtle with a flattened, keeled carapace. Webbed feet. Olive-brown carapace and black plastron. Gray head with dark top and brown spots behind each eye.
  - **Habitat**: Found in rivers, including the Indus River, Ganges River, and their tributaries in Uttar Pradesh (Katarniaghat Wildlife Sanctuary), Punjab, Bihar, Assam (Orang Wildlife Sanctuary, Manas Tiger Reserve, Kaziranga National Park), as well as in the Brahmaputra and Ganga River systems in Pakistan, Bangladesh, and Nepal.

## mRNA Vaccines

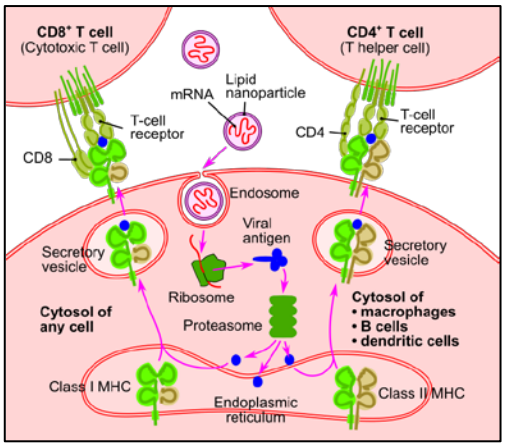
**Context:** Katalin Karikó and Drew Weissman, two scientists, have been announced to win the Nobel Prize in Medicine for their pioneering work on mRNA vaccines, including those against Covid-19.

- Karikó and Weissman identified an issue with lab-grown mRNA: the body's dendritic cells saw them as foreign and triggered inflammation.
- They hypothesized that chemically modified RNA from mammalian cells might be the key to reducing this inflammatory reaction.
- They created mRNA variants with unique chemical alterations and found that modifying the bases significantly reduced the inflammatory response.
- Their research, starting in 2005 and continuing in 2008 and 2010, laid the foundation for mRNA vaccine development.
- Moderna and Pfizer utilized this technology in their Covid-19 vaccines.

**What are they?**

- mRNA vaccines use messenger RNA (mRNA) to stimulate an immune response.
- These vaccines introduce antigen-encoding mRNA into immune cells, instructing them to produce a specific protein associated with a pathogen or cancer cell.
- The immune system recognizes this foreign protein and generates an adaptive immune response, teaching the body to identify and destroy the corresponding pathogen or cancer cells.
- Lipid nanoparticles encapsulate the mRNA, protecting it and aiding absorption into cells.
- Reactogenicity is similar to traditional vaccines, but some individuals prone to autoimmune responses may experience adverse reactions.
- Advantages of mRNA vaccines include ease of design, rapid production, induction of cellular and humoral immunity, and no interaction with genomic DNA.
- Some mRNA vaccines require ultracold storage (e.g., Pfizer–BioNTech COVID-19 vaccine), while others do not (e.g., Moderna, CureVac, and Walvax COVID-19 vaccines).
- mRNA vaccines have been authorized for COVID-19, including Pfizer–BioNTech and Moderna vaccines.
- Vaccines work by preparing the body's immune system to fight pathogens, usually by introducing harmless pieces of bacteria or viruses.
- mRNA vaccines introduce a piece of mRNA corresponding to a viral protein, allowing cells to produce that protein, triggering an immune response.
- Antibodies produced in response to mRNA vaccination help protect against infection and remain in the body for future defense.

**Mechanism of mRNA Vaccines**




- **Vaccine Goal**: Stimulate the adaptive immune system to produce specific antibodies against a pathogen's antigens.
- **Traditional Vaccines**: Use antigens, attenuated viruses, inactivated viruses, or recombinant viral vectors grown outside the body.
- **mRNA Vaccines**: Introduce synthetic RNA fragments of the virus's RNA sequence.
- **Uptake by Dendritic Cells**: mRNA fragments are taken up by dendritic cells via phagocytosis.
- **Intracellular Production**: Dendritic cells use ribosomes to read mRNA and produce viral antigens.
- **mRNA Degradation**: mRNA fragments are naturally degraded within a few days.
- **Translation in Cytoplasm**: mRNA is translated in the cell's cytoplasm, not affecting genomic DNA.
- **Antigen Processing**: Antigens are broken down by proteasomes.
- **MHC Molecules**: Class I and class II MHC molecules transport antigens to the cell membrane, activating dendritic cells.

- **Migration to Lymph Nodes**: Activated dendritic cells move to lymph nodes.
- **Presentation to T and B Cells**: Dendritic cells present antigens to T cells and B cells.
- **Antibody Production**: This triggers antibody production targeted at the antigen, leading to immunity.

# NEWS IN BETWEEN THE LINES

## Staghorn Coral

**About the Staghorn Coral:**

- Staghorn coral is one of the most crucial **coral species** in the **Caribbean region.**
- Along with **elkhorn coral** and **star corals**, it has played a significant role in building Caribbean coral reefs over the last **5,000** years.
- It can create dense groups known as "**thickets**" in **shallow waters**.
- Its colonies are typically **golden tan** or **pale brown** with **white tips**.
- It is commonly found in **clear**, **shallow water** (**15–6 0 feet**) on coral reefs throughout the **Bahamas**, **Florida** and the **Caribbean**.
- **Threats:**

Staghorn coral faces several threats, including:

- **Climate Change:** Rising **sea temperatures** and **ocean acidification** harm coral reefs.
- **Diseases:** It is particularly susceptible to diseases like **white band disease** and **white plague.**
- **Unsustainable Fishing Pressure: Overfishing** can disrupt the coral reef ecosystem.

**About White Band Disease:**

- White band disease is a common **tissue loss disease** affecting corals.
- The exact **pathogen** causing this disease has not been **definitively identified**, but studies suggest it is **communicable** in nature.

## Nobel Prize

**About the Nobel Prize:**

- The Nobel Prize was established through the will of **Alfred Nobel**, a renowned **inventor, entrepreneur** and **scientist**, to recognize outstanding contributions in **physics**, **chemistry**, **physiology** or **medicine**, **literature** and **peace**.
- The first Nobel Prizes were awarded in **1901**, and they have been presented annually since then.
- Nobel Day is celebrated on **December 10th** each year, marking **Alfred Nobel's death anniversary** and the day when Nobel Prizes are presented.
- **Rabindranath Tagore** was the **first Indian** and the **first Asian** to receive a Nobel Prize in **1913** for his collection of poems titled **"Geetanjali."**

**Interruptions:** There were interruptions in awarding the Nobel Prizes during **World War I (1914-1918**) and **World War II** (**1939-1945**).

**2023 Nobel Prize in Medicine:**

- Awarded to **Katalin Kariko** and **Drew Weissman**.
- Recognized for their contributions to **mRNA COVID vaccines**.

## Sela Tunnel

**About the Sela Tunnel:**

- Sela Tunnel is located in the **West Kameng** district of **Arunachal Pradesh.**
- After the completion of Sela Tunnel, it will be the **world's longest bi-lane tunnel** at an altitude above **13,000 feet**.
- It ensures all-weather connectivity between **Guwahati** in Assam and **Tawang** in Arunachal Pradesh.
- The Border Roads Organisation (**BRO**) is responsible for its construction under **Project Vartak**, commencing on **April 1, 2019**.

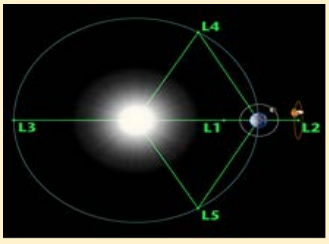
**Project Components:**

- **Tunnel 1: Single-tube tunnel** with a length of **980 meters**.
- **Tunnel 2: Bi-lane tunnel** with a length of **1555 meters**, including an escape tunnel for emergencies.
- **Roads:** Approach to Tunnel **1 (7100m),** road between the two tunnels (**1340m**) and approach to Tunnel **2 (340m).**

**About Sela Pass:**

- Sela Pass is a **high-altitude mountain pass** situated in the **Tawang** district of Arunachal Pradesh.
- It stands at an elevation of **4,170 meters** above sea level.
- Sela Pass connects **Tawang Valley** to the **rest of India** and remains open throughout the year, **managed by the BRO**.

## Lagrange Points




**Lagrange Points:** Lagrange Points are **specific locations** in space where gravitational forces balance, allowing a body to remain relatively stationary.

**Types:** There are **five Lagrange Points**, denoted as **L1**, **L2**, **L3**, **L4**, and **L5**.

**Significance of L1:** L1 is **ideal for satellites** and spacecraft due to its **near-motionless** appearance from Earth and effective communication.

**Astronomical Observatories:** Several **astronomical observatories** are located at Lagrange points for optimal observations of the Earth and the solar system.

**Role in Space Exploration:** Lagrange points are **essential for space exploration**, offering **stable positions for satellites** and **observatories**.

**Use in Missions:** Prominent missions, including **Aditya-L1** and **NASA** missions, are directed to Lagrange points for specific purposes.

**Potential for Space Colonies:** Lagrange points, especially **L4** and **L5**, are considered for **future space colonies** due to their **stability** and **low fuel** requirements.

## JuMBO

**About JuMBOs:**

- JuMBOs (Jupiter Mass Binary Objects) are **Jupiter-sized objects** recently found in space without any **connection to stars**.
- They are observed in **pairs** and were discovered by the **James Webb Space Telescope** (**JWST**) during a survey of the **Orion Nebula**.
- JuMBOs may have formed in regions of the **nebula lacking** material density to create **full-fledged stars**.

**Orion Nebula:**

- JuMBOs were found in the **Orion Nebula (M42)**, the closest large star-forming region to Earth.
- The Orion Nebula contains numerous **young stars**, some with **gas** and **dust discs** that may be **forming planets**.

**James Webb Space Telescope (JWST):**

- The **JWST** is a high-resolution, **infrared-sensitive** space telescope that conducted the survey.
- The Orion Nebula is approximately **1**,**400 light-years** from Earth.

## Place in News

## Bojjannakonda

**Location: Bojjannakonda** is situated near **Visakhapatnam** in the state of **Andhra Pradesh**, India.

**Type:** Bojjannakonda is an **ancient Buddhist heritage site** and a significant **archaeological site**.

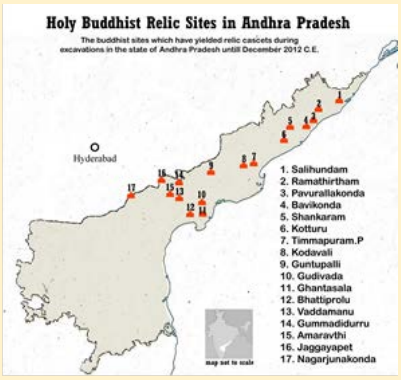
**Historical Significance:** It dates back to the **3rd century BC** and consists of two ancient Buddhist monasteries - **Bojjannakonda** and **Lingalametta**.

**Main Stupa:** The main stupa at Bojjannakonda is notable for being a **rock-carved** structure covered with **bricks** and **adorned** with **sculptures of Buddha**.

**Monolithic Stupas: Lingalametta**, another part of the site, features rows of rock-cut **monolithic stupas**.

**Buddhist Phases:** Bojjannakonda represents elements of all three Buddhist phases: **Theravada**, **Mahayana** and **Vajrayana**. It showcases the evolution of Buddhism from a teacher-focused approach to a more devotional and esoteric form.

**Archaeological Features:** The site is known for its votive stupas, **rock-cut caves**, **brick-built structures**, **early historic pottery** and **Satavahana** coins dating back to the **1st century AD**.




**Other Buddhist Sites:** The region of Visakhapatnam is also renowned for other Buddhist sites like **Thotlakonda**, **Appikonda** and **Bavikonda**.

## POINTS TO PONDER

- **Bharat Drone Shakti exhibition 2023' was inaugurated in which state/UT?** - Uttar Pradesh
- **Which country has hosted 27th World Road Congress?** - Czech Republic
- **Which Union Ministry issued the 'Foreign Contribution (Regulation) Amendment Rules, 2023'?** - Ministry of Home Affairs
- **Which country's women's cricket team has clinched a gold medal at the Asian Games 2023?** - India
- **Which company launched 'Indus Appstore' developer platform?** - PhonePe