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Vision for Viksit Bharat

India aims to become a USD 30 trillion economy by 2047, the 100th anniversary of its independence. According to a plan by NITI Aayog, called 'Vision for Viksit Bharat @ 2047', the goal is to raise the average income per person to USD 18,000 per year. This plan is designed to help India avoid getting stuck at a middle-income level.

KEY FOCUS AREAS



Education: Enhancing educational infrastructure, increasing school enrollments, and improving the quality of education.



Healthcare: Ensuring accessible and quality healthcare services for all citizens.



Technology: Embracing and innovating technology for the nation's progress.



Infrastructure: Developing robust infrastructure including transportation, communication, and urban facilities.



Agriculture: Modernizing farming techniques and supporting farmers for increased productivity.



Environment: Implementing sustainable practices and preserving natural resources for a cleaner and healthier environment.

Economic Aspirations

To reach this goal, India needs to grow its economy from the current USD 3.36 trillion to USD 30 trillion, which means it has to grow nine times bigger in the next couple of decades. The average income per person also needs to increase from USD 2,392 to USD 18,000.

The report says moving from a middle-income to a high-income country requires a steady annual growth rate of 7-10% for 20-30 years. Only a few countries have managed to maintain such high growth rates consistently.

Defining Viksit Bharat

The idea of Vikshit Bharat means creating a country with high income and advanced social, cultural, technological, and institutional attributes.

According to the World Bank, a high-income country has an average annual income per person of more than USD 14,005 (as of 2023).

The plan identifies several key challenges, such as improving manufacturing and logistics capabilities and reducing the income gap between rural and urban areas. These improvements are essential for turning the agricultural workforce into a strong industrial workforce.

Collective Efforts

NITI Aayog stresses that achieving this vision requires the participation of the entire nation, not just a few individuals or the government.

The document highlights that this is a crucial moment for India, suggesting that the 21st century could be India's century. Success depends on balancing energy security, accessibility, affordability, and sustainability.

About Viksit Bharat

- **Vision for Sustainable Growth:** 'Viksit Bharat,' or 'Developed India,' embodies India's goal for sustainable development by 2047, focusing on reducing poverty, achieving gender equity, and ensuring environmental sustainability.
- **Urbanization and Smart Planning:** With India's urban population expected to reach 600 million by 2031, smart urban planning is crucial. Key areas of focus include digital innovation and renewable energy.
- **Skill Development and Economic Self-Reliance:** The government prioritizes skill development through initiatives like 'Skill India' and promotes local industries via 'Make in India' to foster economic independence and growth.

South Africa's new climate change bill

South Africa's President, Cyril Ramaphosa, has signed a new Climate Change Bill into law. This law requires big fossil-fuel industries to reduce their emissions and makes local governments create plans to adapt to climate change.

This action shows South Africa's dedication to the Paris Agreement, which aims to cut down greenhouse gas (GHG) emissions.

South Africa's Emissions Landscape

South Africa relies heavily on coal for its electricity, placing it among the top 15 countries in the world for GHG emissions. In 2022, the country emitted 405 million tonnes of CO₂, which is a bit less than in previous years. The energy sector is responsible for about 80% of these emissions.

Nationally Determined Contributions (NDC)

Each country has to submit Nationally Determined Contributions (NDCs), which are plans for how they will reduce emissions. South Africa submitted its first NDC in 2016 and updated it in 2021. The updated plan aims to reduce emissions by 31% and set targets of 398-510 million tonnes of CO₂ by 2025 and 350-420 million tonnes by 2030.

Goals for Transition

The updated NDC focuses on a 'just transition,' which means creating sustainable jobs in agriculture, forestry, energy, and waste management.

South Africa estimates it will need \$8 billion each year until 2030 to reach its climate goals, and it aims to have net-zero emissions by 2050.

Policy Framework Development

In 2022, the Presidential Climate Commission released a Just Transition Framework to link climate policies with development needs, supporting significant changes in South Africa's economy.

Contrasting with India

In contrast, India does not have a comprehensive national climate law. Instead, it uses existing environmental laws to address climate issues. Efforts to create a dedicated Council on Climate Change have stalled. However, the Indian Supreme Court has recognized citizens' rights against climate change impacts and urged the government to connect these rights with climate policies.

Asian Disaster Preparedness Center (ADPC)

India will lead the Asian Disaster Preparedness Center (ADPC) from 2024 to 2025, taking over from China on July 25, 2024, in Bangkok, Thailand.

India has made a big step forward in disaster risk reduction (DRR) and climate resiliency with this.

Significance of India's Leadership

India's appointment shows that it is becoming more important in global and regional attempts to manage disasters. The country's dedication to DRR has grown stronger under Prime Minister Narendra Modi, making India a major player in this area.

The Coalition for Disaster Resilient Infrastructure (CDRI)

The CDRI, which was started by Prime Minister Modi, is a key part of building infrastructure that can survive disasters. This project shows that India is taking the lead in making communities more resilient to disasters.

CDRI

- CDRI is a global partnership of national governments, **United Nations** agencies and programmes, multilateral development banks and financing mechanisms, the private sector, and academic and research institutions.
- It aims to **increase the resilience of infrastructure systems to climate and disaster risks**, thereby ensuring **sustainable development**.
- It was launched in 2019, at the **United Nations Climate Action Summit** in New York.
- It is the Government of India's **second major global initiative** after the **International Solar Alliance**, and it demonstrates India's leadership in climate change and disaster resilience issues.
- **Members:**
 - Since its inception, **31 countries, 6 international organisations and 2 private sector organisations** have joined CDRI as members.
 - **6 International Organisations: Asian Development Bank (ADB), World Bank Group, United Nations Development Programme (UNDP), United Nations Office for Disaster Risk Reduction (UNDRR), European Union, European Investment Bank.**
 - **2 Private Sector Organisations: The Private Sector Alliance for Disaster Resilient Societies and Coalition for Climate Resilient Investment.**
 - CDRI has steadily increased its membership by attracting a diverse range of economically advanced, developing, and vulnerable countries to climate change and disasters.

About the Asian Disaster Preparedness Centre (ADPC)

Capacity Building and Training: The Asian Disaster Preparedness Centre (ADPC) works to make 14 Asian countries more disaster-resistant by offering a wide range of training and capacity-building programs.

The goal of these programs is to give local governments, communities, and organizations the skills and information they need to handle disaster risks and lower their impact.

Technological Integration and Early Warning Systems: The ADPC encourages the use of technology to make early warning systems better so that accurate and timely information can be shared during crises.

This integration of technology helps communities and authorities react better, which makes disasters less likely to happen.

- ADPC is an **autonomous international organisation** focused on disaster risk reduction and climate resilience in **Asia and the Pacific region**.
 - It was founded by **India and eight neighboring countries: Bangladesh, Cambodia, China, Nepal, Pakistan, Philippines, Sri Lanka, and Thailand**.
 - ADPC operates as an autonomous international organisation governed by the Board of Trustees, with **headquarters in Bangkok, Thailand** and sub-centers in operational countries.

UNESCO World Heritage site

The Charaideo Moidams in Assam, which are royal burial grounds from the Ahom dynasty, were recently named UNESCO World Heritage Sites. This gives this nationally important area, which is about 30 km from Sivasagar in eastern Assam, international recognition.

What are Moidams?

Moidams are tumuli, which are earth mounds built over the graves of Ahom kings. The moidams of the Ahom royal family are in Charaideo, but you can find other buildings like them all over eastern Assam.

Each moidam usually has a vault with rooms inside, a hemispherical mound on top, and a tower called the chow chali that is surrounded by an eight-sided wall.



The Ahoms, who were related to the Tai people, chose burial over burning, which is different from Hindu customs.

Their unique burial rituals, which were based on old Egyptian practices, meant that these moidams often held more than just the dead. They also held things for the afterlife, servants, animals, and even wives.

The Importance of Charaideo

Charaideo, whose name comes from Tai Ahom words that mean “shining town on a hill,” was the first capital of the Ahom kingdom, which was set up by King Sukaphaa in 1253 AD. It stayed an important power center and is still a place with a lot of historical and cultural value.

Tourism and Preservation

The moidams are popular with tourists today, but many of them are in bad shape. The Archaeological Survey of India only protects 30 of the over 150 moidams.

People know that the Charaideo Moidams are important as a whole, especially since they are different from other similar grave sites in terms of size and number of people buried there. Assam’s culture will always be linked to the Ahom kingdom, which ruled for a long time from 1228 to 1826 AD.

People praise them for how well they run their government and how strong their military is, especially when fighting off foreign attacks. Celebrating people like Lachit Borphukan at events shows how important they are to modern Indian culture, especially as nationalism grows.

Sado Mines

On July 27, 2024, UNESCO added the Sado gold and silver mines in Japan to its World Heritage List after South Korea withdrew its objections. This inclusion is significant due to the historical context of forced labor during World War II, where Korean laborers were conscripted to work under harsh conditions.



Historical Background

The Sado mines have a long history, believed to have been operational since the 12th century. They continued producing gold and silver until after World War II. These mines are particularly notable for their traditional, artisanal mining techniques, which stand in contrast to the mechanized methods seen in European mines during the same period.

This historical and cultural heritage, showcasing the evolution of mining technology and methods over several centuries, makes the Sado mines unique.

Controversy and Objections

South Korea initially opposed the UNESCO listing due to the use of Korean forced labor during Japan's occupation of the Korean peninsula. During the war, Korean workers faced extremely harsh conditions, reportedly more severe than those experienced by their Japanese counterparts. This aspect of the mines' history raised historical and ethical concerns, leading to South Korea's initial objections.

UNESCO Listing Process

Japan advocated strongly for the Sado mines' inclusion on the World Heritage List, emphasizing their cultural, historical, and archaeological significance.

A key argument was the emphasis on preserving traditional mining activities and the unique social organization of the mining community that developed around the Sado mines. After years of diplomatic negotiations and advocacy, South Korea agreed to the listing on the condition that there would be a proper historical acknowledgment of the forced labor issues.

International Impact and Recognition

The addition of the Sado mines to the UNESCO list is part of a broader effort to recognize and commemorate historical mining sites in Japan. This UNESCO recognition aims to improve tourism and raise global awareness about the site's cultural and historical importance.

Additionally, it seeks to address historical injustices by ensuring that the darker aspects of the mines' history, including the discriminatory labor practices during World War II, are not overlooked.

About Sado Gold and Silver Mines

- **Historical Significance and Production:** The Sado Gold and Silver Mines, located on Sado Island in Japan, began operations in the 17th century and were once among the country's largest gold producers, especially prominent during the Edo period.
- **Forced Labor and Unique Features:** The mines utilized forced labor from political exiles and are known for their unique underground tunnels, some of which stretch over 2,000 meters, showcasing the extensive and arduous mining work that took place.
- **Closure and UNESCO Nomination:** Declining production led to the closure of the mines in 1989. Today, they are a UNESCO World Heritage nominee, emphasizing their historical and cultural significance in Japan's complex mining history.

International Tiger day - July 29th

A report by the Rights and Risks Analysis Group (RRAG) on International Tiger Day reveals that Project Tiger in India may displace at least 550,000 Scheduled Tribes and forest dwellers. This is a significant increase in displacement compared to before 2021.

Displacement Statistics

Before 2021, about 254,794 people were displaced from 50 tiger reserves, averaging around 5,000 per reserve. Since then, the average displacement across six reserves has increased to 48,333 per reserve, which is a 967% increase.

Major Affected Areas

The report details that the most significant displacements will occur in:

- Kumbhalgarh Wildlife Sanctuary, Rajasthan: 160,000 people
- Nauradehi Wildlife Sanctuary, Madhya Pradesh: 72,772 people

- Ranipur Tiger Reserve, Uttar Pradesh: 45,000 people.

Other reserves like Ramgarh Vishdhari and Srivilliputhur-Megamalai will also see hundreds displaced.

Violation of Rights

The RRAG report highlights systemic human rights violations related to forced evictions. Indigenous communities often lose their homes, access to resources, and cultural sites.

The report claims that the government bypasses the required free and informed consent mandated by the Forest Rights Act. Evictions are often accompanied by severe human rights abuses. The affected people reportedly face threats, violence, and arbitrary arrests for activities such as collecting food or opposing relocations.

About Project Tiger

Project Tiger, launched in 1973 in India, aimed to protect the declining Bengal tiger population. It was started by then Prime Minister Indira Gandhi. The project initially established nine tiger reserves across India, which have now expanded to over 50.

Significant habitat preservation efforts have led to an increase in tiger numbers from around 1,800 in the 1970s to over 2,900 in 2018 Now 3682. The project's success has inspired global conservation efforts and encouraged community involvement in wildlife protection.

Stamps by external affairs ministry

In July 2024, Laos introduced a special set of commemorative Stamps featuring Lord Rama and Lord Buddha to highlight the cultural ties between Laos and India. This event was attended by India's External Affairs Minister, S. Jaishankar, and his Lao counterpart, Saleumxay Kommasith.



Significance of the Stamp Set

The stamp set includes the world's first depiction of 'Ram Lalla of Ayodhya', showcasing the deep historical and cultural connections between India and Laos. The inclusion of these figures reflects the long-standing bonds between the two nations.

Cultural Heritage

Buddhism has historically linked India and Laos for thousands of years. The Ramayana, known as Ramakien in Laos, is an important cultural story often performed at major events.

MoUs and Development Projects

During the visit, several agreements, known as Memoranda of Understanding (MoUs), were signed. These agreements focus on 10 Quick Impact Projects (QIPs) under the Mekong Ganga Cooperation framework, aimed at improving cooperation between the two countries.

Jaishankar's visit also coincided with important ASEAN meetings hosted by Laos, which was the ASEAN Chair for 2024, showcasing Laos's active role in regional diplomacy. After visiting Laos, Jaishankar was scheduled to attend the Quad Foreign Ministers' Meeting in Japan, continuing his efforts in international relations and collaboration initiatives.

About Laos

- **Location and Borders:** Laos, officially the Lao People's Democratic Republic, is the only landlocked country in Southeast Asia. It is bordered by China, Vietnam, Thailand, Myanmar, and Cambodia.
- **Capital and Landmarks:** The capital city, Vientiane, is home to That Luang, the world's largest stupa. The country also features the Plain of Jars, an archaeological site with ancient stone jars.
- **Natural Features and Culture:** The Mekong River runs over 1,800 kilometers through Laos. The country has rich biodiversity, including endangered species like the Indochinese tiger.

Laos is known for its sticky rice, a staple in its cuisine.

CCPWC

Safe City Projects are organized efforts by local police and city authorities to make cities safer, especially for women, and to fix problems with infrastructure.

These projects are part of national plans to prevent cyber crimes against women and children, supported by the Nirbhaya Fund.

What is CCPWC?

The CCPWC initiative, under the Nirbhaya Fund, focuses on tackling cyber crimes.

A key part of this initiative is the National Cybercrime Reporting Portal (NCRP), where people can report various cyber crimes, especially those targeting women and children.



NCRP and Reporting Mechanisms

The NCRP has been visited over 16.18 crore times and has reported 1.94 lakh incidents of child pornography and related crimes.

Additionally, a partnership between India and the USA improves cooperation in addressing online child exploitation. To help investigate cyber crimes, Cyber Forensic cum Training Labs have been set up in 33 States and Union Territories, with a financial investment of more than Rs. 131.60 crore. These labs help handle and analyze cyber crime data effectively.

Emergency Response Support Systems

The Emergency Response Support System (ERSS) is available in all States and Union Territories, managing over 36.29 crore calls. It works with the Women Helpline (181) to provide better support for women in distress.

Safe City Projects Implementation

The Safe City Projects aim to use advanced technologies for smarter policing in eight cities: Ahmedabad, Bengaluru, Chennai, Delhi, Hyderabad, Kolkata, Lucknow, and Mumbai. These projects focus on addressing safety concerns raised by women and improving public safety infrastructure.

About National Cybercrime Reporting Portal (NCRP)

- **Launch and Purpose:** The National Cybercrime Reporting Portal (NCRP) was launched in 2020 in India to make reporting cybercrimes such as hacking, identity theft, and financial fraud easier.
- **Features:** The NCRP is available 24/7, offers anonymity for reporters, and includes online resources to raise awareness about cyber safety. It also helps law enforcement track cybercrime trends.
- **Broader Initiative:** The portal is part of India's Digital India campaign, aiming to boost public involvement in fighting cybercrime.

Increased tree cover can harm native animals

Increasing tree cover is usually seen as good for protecting nature and fighting climate change. But new research shows that trees spreading into places that have always been open, like savannahs and grasslands, can harm native animals, especially birds that live in grasslands. A major study in Global Change Biology found that grassland bird numbers in the African savannah have dropped by more than 20%.

Understanding Open Ecosystems

Grasslands and savannahs are very important for biodiversity. They make up almost 40% of the Earth's land and support many different species, from large plant-eaters to unique birds.

However, these ecosystems face threats from being turned into farmland, being built on, and being overgrazed. Another threat is woody encroachment.

Woody Encroachment Defined

Woody encroachment happens when open areas, like grasslands and savannahs, start to have more trees and shrubs.

This change makes the ecosystem more uniform, with fewer different types of plants and animals. As a result, the overall biodiversity decreases.

Factors Driving Woody Encroachment

Several things cause woody encroachment:

- **Disruption of Disturbance Regimes:** Natural and human activities, like stopping fires and changing grazing habits, allow trees to grow more.
- **Climate Change:** Higher CO₂ levels help trees grow more than grasses, which leads to fewer grasslands.

Consequences for Biodiversity

The change from open areas to ones with more trees has big effects on biodiversity:

- **Declining Bird Populations:** Bird species that live in grasslands are decreasing because trees are taking over their habitats.
- **Altered Ecosystem Dynamics:** Changes in the soil and higher risk of predation threaten animals like grassland rodents.

Invasive Species and Plantation Effects

Invasive tree species make woody encroachment worse. For example, in India, species like *Prosopis juliflora* have turned grasslands into dense woodlands, harming the habitat even more. To fight the negative effects of woody encroachment, more research is needed to understand its impact and to monitor open ecosystems over time. It's also important to stop misclassifying these habitats as "wastelands" to protect them effectively.

Metacrimes

The Apple Vision Pro, launched in Australia, allows people to enter immersive online environments known as the metaverse. In these virtual spaces, users can experience various activities, but there are also risks, leading to the rise of 'Metacrimes'.



Understanding the Metaverse

The metaverse is made up of three-dimensional virtual worlds that you access with VR headsets. In these worlds, users can interact in realistic settings. Movies like *Ready Player One* show what these interactive universes can be like bringing new types of online behaviors and crimes.

Defining Metacrimes

Metacrimes are crimes that happen within the metaverse. These crimes are similar to cybercrimes but have unique features that require new ways of reporting and investigating.

One important aspect of meta crimes is the immersive VR experience, which makes negative interactions like harassment more impactful. If there are no recording tools, it can be hard to gather evidence. Current user controls in VR may not stop these incidents effectively.

Risks for Vulnerable Populations

Children are a large group of metaverse users and are at higher risk, facing dangers like grooming and exposure to abusive behavior. Studies show that such negative interactions happen often, raising serious concerns about online safety.

Cases like the first reported rape in the UK's metaverse highlight the urgent need for legal frameworks. Victims report experiencing psychological trauma similar to physical assaults, showing the seriousness of metacrimes.

Challenges in Law Enforcement

Metacrimes complicate accountability and responsibility because traditional laws don't cover crimes involving virtual avatars well. New methods of harm, like manipulating VR technologies, make enforcement even more difficult. With big tech companies investing heavily in the metaverse, it is expected to grow quickly. Predictions from Gartner suggest more people will join the metaverse, making it necessary to create legal and regulatory measures to ensure safety.

About metaverse

- **Integration of Technologies:** The metaverse combines virtual reality (VR), augmented reality (AR), and blockchain technology to create immersive digital environments where users can interact and transact.
- **Popularity and Origins:** The concept originated from Neal Stephenson's 1992 novel "Snow Crash" and gained widespread attention when Facebook rebranded to Meta in 2021.
- **Economic and Social Impact:** The metaverse is significantly influencing various sectors such as gaming, remote work, and education. Virtual real estate is becoming highly valuable, with sales reaching millions, and cryptocurrencies are commonly used for transactions within this digital space.

Women Entrepreneurship Program

On July 31, 2024, Shri Atul Kumar Tiwari, the Secretary of the Ministry of Skill Development & Entrepreneurship, announced big steps forward for women's entrepreneurship. This is mainly through new projects like the Women Entrepreneurship Program, launched by the National Skill Development Corporation (NSDC) in partnership with Britannia Industries.

Collaboration with Ministries

Shri Tiwari highlighted the importance of working together with other ministries, such as Tribal Affairs and Rural Development, to help women entrepreneurs grow. This collaboration aims to give targeted skill training to Women's Self-Help Groups, helping them start strong businesses.

Women Entrepreneurship Program

The Women Entrepreneurship Program focuses on the unique challenges women entrepreneurs face. It offers free self-learning courses in many languages through the Skill India Digital Hub (SIDH). These courses teach important entrepreneurial skills and knowledge. Participants will receive certificates from NSDC, Britannia, and NIESBUD, showing they have gained new skills. The program aims to empower about 2.5 million women, giving them the tools they need for business success.

Financial Grants and Competitions

The program will also feature a finale where the top 50 business ideas will be showcased. Britannia will give ₹10 lakh each to ten standout contestants, encouraging innovation and excellence. The program has two phases:

- **Phase 1:** The first phase offers self-learning courses.
- **Phase 2:** The second phase provides support to 10,000 selected candidates, helping them with business model selection, registration, and funding guidance.

NSDC will regularly check how well the program is working to ensure the businesses are sustainable in the long run. This initiative aims to increase the visibility and reach of women-led businesses, creating a supportive environment for their growth.

Polaris Dawn mission

SpaceX is preparing to launch its Polaris Dawn mission on August 19, which is an important milestone for space tourism. This mission will feature Jared Isaacman, a billionaire from the fintech industry, who will make history by being the first private individual to conduct a spacewalk.

The launch was initially planned for July 31, but it was delayed. The delay happened because SpaceX needed to prioritize another mission called Crew-9, and there were some problems with recent rocket explosions that needed to be addressed.



Mission Overview

The Polaris Dawn mission aims to take Jared Isaacman and his crew farther into space than low Earth orbit, without docking with the International Space Station (ISS). The goal is to explore new aspects of human spaceflight and prepare for future space missions.

Launch Delays

The mission has faced several delays since it was first scheduled for 2022. These delays were caused by various bureaucratic and technical issues. The most recent delay was due to the need to focus on the Crew-9 mission and issues following the explosion of a Falcon 9 rocket.

Significance of the Mission

Polaris Dawn is a major event in space tourism, highlighting the increasing interest in private space travel. Isaacman's participation shows that regular people may soon have the chance to travel to space, and the planned 'ghost ride' adds an exciting new element to the mission.

Sarah Walker, the director of Dragon mission management, explained that the busy operations at the ISS influenced the decision to delay Polaris Dawn. She noted that the mission's timeline is now set for late summer, suggesting a launch window in August.

About Polaris Dawn

- **Mission Goal and Altitude:** Polaris Dawn is a private space mission aiming to be the first commercial crewed flight to the edge of space, reaching altitudes of 130 km, which is higher than typical suborbital flights.
- **Spacecraft and Research:** The mission will use a Crew Dragon spacecraft and include research on spacewalks, communication, and in-space refueling technology. It also aims to study human behavior in microgravity.
- **Space Tourism and Timeline:** Part of SpaceX's broader space tourism initiative, Polaris Dawn is planned for late 2023.

NISAR satellite

NASA has announced that the launch of the NISAR satellite, a joint project between the U.S. and India, will be delayed until after February 2025. This delay is due to ongoing work on the satellite's large deployable antenna and specific needs related to its orbit.

Background on NISAR

NISAR stands for NASA-ISRO Synthetic Aperture Radar. It is a major collaborative project between NASA and the Indian Space Research Organisation (ISRO) aimed at improving Earth observation. This mission is notable as the first major partnership between the two space agencies, with NASA investing over \$1 billion in the project.

Launch Scheduling Complications

The delay is mainly because of issues with the satellite's antenna, which is 12 meters wide. NASA found that the antenna needed a special coating after discovering potential problems with temperature changes when the antenna was stored. This summer, the antenna was sent back from India for these necessary changes.

NASA has also pointed out that the satellite must avoid being launched during certain times due to temperature changes caused by alternating sunlight and shadows. These temperature changes could affect how the antenna's boom deploys. As a result, NISAR cannot be launched between early October 2024 and early February 2025.

Scientific

Goals

Once it is launched, NISAR will use advanced radar to monitor various Earth phenomena, such as glacier movements and volcanic activity. It is designed to map the entire Earth every 12 days, which will greatly support ongoing Earth research.

About NISAR

- **Mission and Purpose:** NISAR (NASA-ISRO Synthetic Aperture Radar) is a joint mission set for 2024 to track changes on Earth's surface using an advanced radar system.
- **Capabilities and Features:** NISAR can detect surface changes as small as a few centimeters and will map forests, glaciers, and natural hazards. It's the first mission to use both L-band and S-band radar.
- **Impact and Collaboration:** The satellite is expected to operate for over three years and will support climate change studies. NISAR highlights international cooperation between NASA and ISRO in Earth science research.

Money Dysmorphia

Generation Z, born between 1997 and 2012, has unparalleled access to financial information and career opportunities compared to previous generations. Despite this advantage, many of them feel anxious about their financial futures.

Understanding Money Dysmorphia

Almost 50% of Gen Z faces a condition referred to as "money dysmorphia," which is characterized by an unrealistic perception of their financial situation. This anxiety leads to constant worry and increased vigilance about their finances, even when there are no real financial problems.

Psychological Impact on Gen Z

Financial therapist Amanda Clayman believes that this phenomenon is linked to the intense mental pressure that Gen Z experiences, especially during critical life transitions such as getting married, buying a home, and changing careers.

Financial Dependence on Parents

A significant 50% of Gen Z relies on parental support to navigate these financial milestones, highlighting a shift in the approach to traditional economic progress compared to previous generations.

Challenges Faced by Gen Z

Previous generations made similar life choices under different circumstances, with less influence from social media pressures and more financial knowledge. This historical context suggests that older generations may have developed healthier attitudes toward money management.

Vaccines from mRNA technology

On July 29, 2024, the World Health Organization (WHO) announced a new project to speed up the development of vaccines for bird flu in poorer countries. This project will use messenger RNA (mRNA) technology. An Argentinian company, Sinergium Biotech, is leading the effort by developing H5N1 bird flu vaccine candidates.

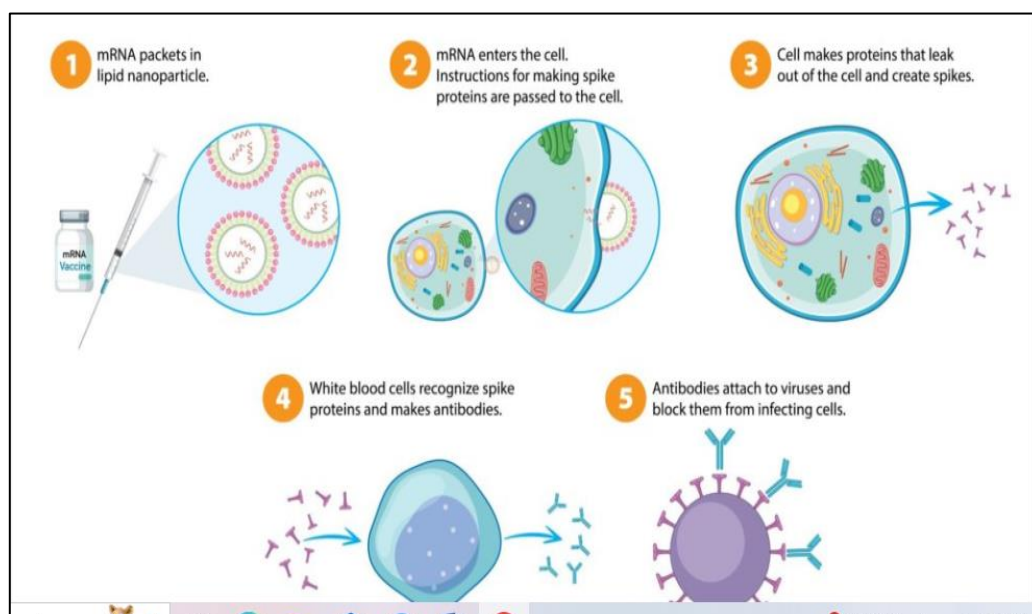
Background on H5N1

The H5N1 strain of bird flu was first detected in 1996 and has been spreading among bird populations worldwide.

Since 2020, there have been more outbreaks, and the virus has also started infecting mammals, raising fears that it could eventually lead to a human pandemic.

The Role of mRNA Technology

The project will use mRNA technology, which teaches the body to make proteins that trigger an immune response. The WHO will work with Sinergium Biotech to prove that the technology works through initial studies. After that, they will share knowledge and resources with vaccine manufacturers in poorer countries.



Aiming for Vaccine Equity

This project builds on the WHO's mRNA Technology Transfer Programme, started during the COVID-19 pandemic to address vaccine shortages worldwide. The program includes 15 manufacturing partners in different countries, helping ensure that everyone has better access to vaccine production.

Preparing for Future Pandemics

The WHO also mentioned that traditional flu vaccines could be adapted to fight H5N1 if it starts spreading among humans. However, mRNA vaccines are preferred because they are more flexible. Manufacturers can quickly switch to producing different vaccines as needed, supporting a sustainable way to make vaccines and treatments.

The WHO's initiative aims to improve vaccine production in lower-income regions, making sure the world is better prepared for future pandemics. This is particularly important because bird flu viruses continue to pose a serious public health risk.

About WHO

- **Foundation and Location:** The World Health Organization (WHO) was founded in 1948 and is based in Geneva, Switzerland, with 194 member countries.
- **Official Languages and Health Standards:** The WHO uses six languages: English, French, Spanish, Russian, Chinese, and Arabic. It created the International Classification of Diseases (ICD) to standardize health data worldwide.
- **Pandemic Response and Funding:** The WHO is essential in fighting pandemics like HIV/AIDS, malaria, and COVID-19. Its Global Health Observatory provides vital health data, and it mainly relies on voluntary contributions for funding.

Rames Mission

The Indian Space Research Organization (ISRO) and the European Space Agency (ESA) are going to work together on the Ramses project, which will focus on the asteroid Apophis, which is going to pass close to Earth in 2029. This project shows how more people around the world are working together to study objects close to Earth.

Objective of the Ramses Mission

The 375-meter asteroid Apophis will pass only 32,000 km from Earth, which is a once-in-a-lifetime chance for scientists to learn more about space. The Ramses mission's goal is to keep a close eye on the asteroid so that we can learn more about possible threats to Earth.

ISRO's Involvement

Somanath, the chairman of ISRO, said that the organization would like to interact with the asteroid during its flyby, but the exact details of the plan are still not clear. Talks with ESA about working together are already going on, to use both groups' skills.

1. Asteroids are pieces of the Solar System that were left over when it was formed. Asteroids have been ignored in the past, but people are becoming more aware of how dangerous they could be to Earth, especially when you think about how dinosaurs died out because of strikes from asteroids.

IS4OM Activities and Future Plans

As part of the IS4OM project, ISRO has started preliminary campaigns to look at asteroids and wants to set up special telescopes for monitoring. Working with foreign groups like IAWN and SMPAG will help it do a better job of assessing the risk of asteroids and protecting the planet.

In the future, ISRO wants to work with other big space agencies like NASA and JAXA to make global efforts in asteroid study and protecting planets stronger. This will improve safety plans at the national and international levels.

KHAAN QUEST

The Indian Army has sent a group to Ulaanbaatar, Mongolia, to take part in the multinational military drill KHAAN QUEST 2024, which will run from July 27th to August 9th, 2024. The main goal of this practice is to improve the world's ability to keep the peace.



Historical Background

The first KHAAN QUEST took place in 2003 as a partnership between the US and Mongolia. Since then, it has grown into a major Multinational Peacekeeping Exercise. The 21st version will be held in 2024. In July 2023, the last drill took place. The U.S. Indo-Pacific Command is one of the sponsors of the drill, which is being held by the Mongolian Armed Forces. This shows that it involves forces from many countries.

Indian Army Contingent Composition

The Indian contingent comprises 40 personnel, including:

- Troops from a Battalion of the Madras Regiment
- Additional personnel from various Arms and Services
- One Woman Officer and two Women Soldiers, promoting gender inclusivity

Main Objectives of Participation

The Indian Army aims to:

- Prepare for peacekeeping missions in multinational settings
- Enhance interoperability and military readiness in peace support operations
- Emphasise a high level of physical fitness, joint planning, and tactical drills

Tactical Drills and Operations

Participants will engage in a variety of exercises, including:

- Establishing Static and Mobile Check Points
- Conducting Cordon and Search Operations

- Performing Patrolling and Evacuation of Civilians from Hostile Areas
- Executing Counter Improvised Explosive Device drills
- Practising Combat First Aid and Casualty Evacuation

Benefits of Participation

Engagement in KHAAN QUEST provides the Indian Army with several advantages:

- Enhanced peacekeeping skills for UN missions
- Valuable international exposure collaborating with diverse military forces
- Improved tactical proficiency through rigorous training exercises

In addition to KHAAN QUEST, India and Mongolia conduct a bilateral military exercise named “Nomadic Elephant,” with the most recent edition held in July 2024 in Meghalaya.

PMGDISHA

The Minister of State for Electronics and Information Technology recently responded to a question regarding the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) in the Rajya Sabha.

Background:

- Under the scheme, around 7.35 crore candidates were enrolled and 6.39 crore were trained, out of which 4.78 crore candidates were certified as per the reply.
- Scheme was to bridge the digital divide, specifically targeting the rural population including the marginalized sections of society like Scheduled Castes (SC) / Scheduled Tribes (ST), Below Poverty Line (BPL), women, differently-abled persons, and minorities.

About Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) :

- Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) is a Digital Literacy Scheme by the Ministry of Electronics and Information Technology (MeitY).

The main features of the PMGDISHA scheme:

- The scheme was implemented only in rural areas i.e. Gram Panchayat/Village to cover 6 crore rural households.
- Only one person (14 – 60 years of age) per eligible household was considered for training.
- The beneficiaries were provided with 20 hours of training consisting of 5 modules namely (i) Introduction to digital devices, (ii) Operating digital devices, (iii) Introduction to the internet, (iv) Communications using the internet, (v) Application of internet (includes citizen centric services) and use of financial tools for undertaking digital cashless transactions.
- The training content was made available in 22 scheduled languages and English. This content was made available in both online and offline mode.
- In addition, keeping in view the thrust of the government on promoting cashless transactions through mobile phones, the content on digital wallets, mobile banking, Unified Payments Interface (UPI), Unstructured Supplementary Service Data (USSD), Aadhaar Enabled Payment System (AEPS), and PoS were included.
- After training of the candidate, a third-party assessment of the trained candidates was carried out by recognized certifying agencies. Digitally Signed Certificates were issued for all successful candidates.

India- U.S deal on cultural property

India and the US signed a deal on cultural property on July 26, 2024. The goal was to make it easier for them to work together to protect cultural heritage. Both countries have made a larger promise to return stolen artifacts and stop the illegal trade of cultural property, which includes this deal.

Purpose of the Agreement

The main goals of the Cultural Property Agreement between the United States and India are twofold:

1. **Justice:** It makes sure that culture items that belong to India are returned to the country.
2. **Cultural Exchange:** It helps people around the world understand Indian culture and shows how important it is to human history.

Signatories and Background

Gajendra Singh Shekhawat, who is Minister of Culture, was there when U.S. Ambassador Eric Garcetti and Indian Union Culture Secretary Govind Mohan signed the deal. It was signed after experts from both countries worked together to negotiate for almost two years.

International Framework

This deal is in line with the UNESCO Convention of 1970, which is meant to stop the illegal sending and receiving of cultural property.

The U.S. has 29 bilateral agreements on cultural property, which show that it wants to protect cultural assets around the world.

Statements of Commitment

Ambassador Garcetti stressed how important this deal is for fairness and cultural understanding. He said again that the US was committed to saving cultural heritage around the world and making Indian culture more well-known. The Cultural Property Agreement between the United States and India is a big step toward working together to stop the illegal trade of cultural items. It also protects and honors cultural history for future generations.

Sturgeon species

Poaching and trafficking are putting four species of sturgeon in the Lower Danube Basin in great danger. This area is an important habitat in southeastern Europe.

A report by the World Wide Fund for Nature (WWF) shows that between 2016 and 2023, there were 395 cases of illegal sturgeon fishing affecting over 1,000 sturgeon. This indicates that there may be even more unreported cases.

The Lower Danube Basin

The Lower Danube Basin is where the Danube River flows into the Black Sea and includes parts of Bulgaria, Romania, and Ukraine. It is crucial for the remaining self-reproducing sturgeon populations in Europe.



Illegal Activities

Between 2016 and 2023, 395 illegal sturgeon activities were recorded: 144 in Bulgaria, 157 in Romania, and 94 in Ukraine. Poachers often use banned traditional fishing methods, like unbaited hook lines (karmaci), and many activities go undetected.

Impact on Sturgeon Species

All four types of sturgeon in the Danube Basin are considered threatened according to the IUCN Red List. The stellate sturgeon, Russian sturgeon, and beluga sturgeon are Critically Endangered, while the sterlet is Endangered. All of these sturgeons are affected by poaching.

Species Breakdown

All four sturgeon species in the Danube Basin are considered threatened by the IUCN Red List. These species are:

- **Sterlet (*Acipenser ruthenus*):** Most frequently reported, involved in 78 poaching cases in 2018. It is classified as Endangered.
- **Stellate Sturgeon (*Acipenser stellatus*):** Documented in 76 cases. It is Critically Endangered.
- **Russian Sturgeon (*Acipenser gueldenstaedtii*):** Reported in 39 cases. It is Critically Endangered.
- **Beluga Sturgeon (*Huso huso*):** Present in 32 cases. It is also Critically Endangered.

About World-Wide Fund for Nature (WWF)

The World Wide Fund for Nature (WWF) was founded in 1961 and originally called the World Wildlife Fund for Nature.

Its panda logo, created in 1961, represents endangered species. WWF's "Earth Hour" campaign started in 2007 and encourages global participation in climate action.

The organization works in over 100 countries, focusing on wildlife conservation and reducing humanity's ecological footprint.

WWF is one of the largest conservation organizations in the world, funding over 1,300 conservation projects. It also promotes sustainable practices in agriculture and fishing industries.

Russia and China digital assets deal- QiFa

Digital assets are being used more and more in cross-border transactions between Russia and China. This is mostly because traditional banking has been slow for a long time because of international bans. QiFa, a digital tool, has come up as a way to solve these payment problems by using cryptocurrencies to speed up transactions.

Overview of QiFa

When QiFa was first started in 2013, its main goal was to bring Chinese goods into Russia. As the economies of the two countries changed and trade between them grew, QiFa changed its focus to make trade between the two countries easier in 2023.

Sanctions and Payment Delays

Because of the sanctions, bank transactions are taking a long time. Some payments are taking months. Chinese banks have made it harder for Russian companies that don't know about these new rules to make payments because they have to follow more rules.

Use of Digital Assets

To deal with these problems, Qifa has turned to digital asset transactions, especially using the stablecoin Tether (USDT). By going around standard banking systems, this method of payment makes transactions possible quickly – often in just one day.

Legislative Developments

Russia is thinking about passing laws that would allow cryptocurrencies to be used in international trade. This would make deals involving digital assets even more legal and speed them up. Qifa is closely watching the rules in both Russia and China to make sure they are followed.

Compliance Issues

More checks for compliance have slowed down payments, which has made process times longer. One thing Qifa says is that many Russian businesses are starting to adjust to these rules, but problems still exist with paperwork and products that can be used for two different things.

Qifa wants to go public on the Moscow Exchange and is looking into business chances in Kazakhstan and other former Soviet countries. This shows a bigger regional goal at a time when international trade is changing.

About Bilateral Trade

When two different countries trade with each other, this is called bilateral trade. It can make economic ties stronger, which usually leads to trade deals that lower taxes. In particular, trade between the US and China is very important and makes up a big part of all trade in the world.

Foreign investment can grow with the help of bilateral trade deals. Surprisingly, about 60% of all trade in the world takes place through regional deals instead of bilateral ones. A lot of emerging countries also depend on trade between two countries to grow their economies.

Humayun Tomb

India's first sunken museum, located at the Humayun Tomb complex in Delhi, will have its grand opening on July 29, 2024. It will be open to visitors starting July 30. The museum's launch aligns with the 46th UNESCO World Heritage Committee session, which will be attended by Union Culture and Tourism Minister Gajendra Singh Shekhawat and Prince Rahim Aga Khan.

Significance of Humayun's Tomb

Humayun's Tomb, a UNESCO World Heritage Site, is renowned for its architectural and historical significance. Constructed in the 16th century, this monument is a prime example of Mughal heritage and stands as a key cultural landmark in Delhi. It exemplifies the grandeur and intricate design of Mughal architecture, highlighting the era's artistic and cultural achievements.

Inspiration behind the Museum Design

The newly inaugurated sunken museum at the Humayun Tomb complex draws inspiration from traditional Indian 'baolis' (stepwells or water tanks), skillfully blending historical elements with contemporary exhibition techniques. This innovative design not only improve the visual appeal of the museum but also connects visitors with historical architectural styles.

Exhibits and Artifacts

The museum features a range of historical artifacts, including:

- The final of Humayun's Tomb was restored after storm damage in 2014.

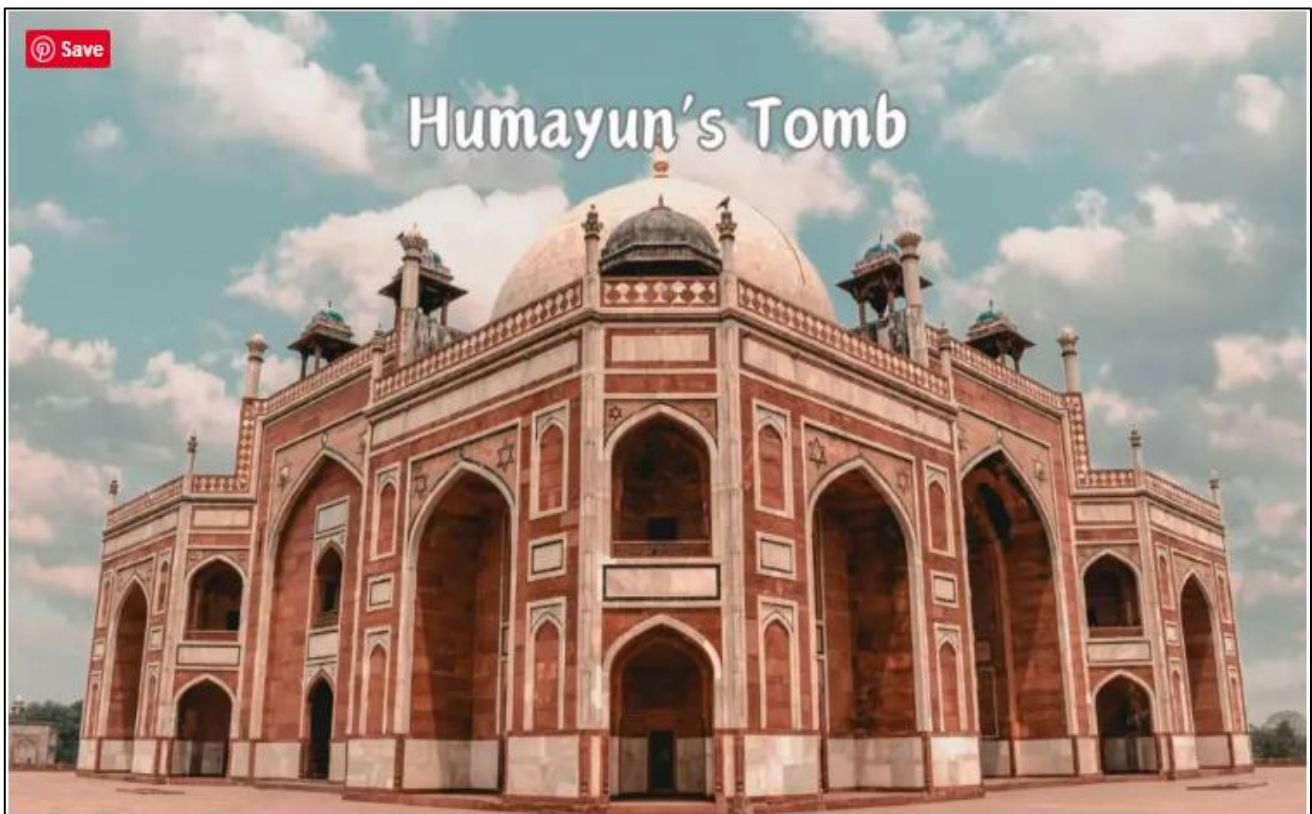
- Rare items such as ‘farmans’ (decrees), an astrolabe, a celestial sphere, and a warrior’s helmet from the 16th or 17th century.

Construction of the museum began in April 2015, with an initial completion target set for 2017. The museum was strategically placed at the entrance of the World Heritage complex, establishing a link between various cultural sites within the area.

Technological Integration

The museum uses the latest technology to make your visit more exciting and informative. It includes 3-D videos that show historical scenes, helping you see what the past was like. There are also detailed scale models of the nearby Nizamuddin Dargah complex, which was built in the 14th century. These models show how the site has changed over time, making it easier to understand its long history and significance.

About Humayun’s Tomb



- **Historical Significance and Design:** Humayun’s Tomb, a UNESCO World Heritage Site, was commissioned in 1569-70 by Empress Bega Begum, Humayun’s widow. It is the first garden tomb built in India, showcasing Persian architectural influences and serving as a model for future Mughal architecture.
- **Architectural Features:** The tomb complex includes over 100 other tombs and a large charbagh (four-fold) garden. Its design, featuring a central dome and symmetrical layout, later inspired the creation of the Taj Mahal.
- **Restoration and Decoration:** In the 20th century, the tomb underwent restoration with support from the Aga Khan Trust. The building is constructed from red sandstone and is decorated with intricate geometric patterns and calligraphy, highlighting its artistic and architectural significance.

Bioplastic from Cassava starch

A consortium of smallholder farmers in Mokokchung, Nagaland, is pioneering a sustainable shift away from traditional plastics by producing and adopting compostable bioplastic bags derived from Cassava starch.



Background:

- Despite government efforts to ban single-use plastics, the impact has been limited due to the lack of alternative lightweight materials.

Key takeaways :

- Nagaland's smallholder farmers are leading a remarkable initiative by producing compostable bioplastic bags made from cassava starch.
- This effort aims to reduce plastic usage and promote eco-friendly alternatives.
- The initiative producing compostable bioplastic bags made from cassava starch is supported by the North East Centre for Technology Application and Reach (NECTAR), this project is spearheaded by Eco Starch, a local MSME.
- The primary goal is to replace single-use plastics with biodegradable alternatives.
- The concept of 'cassava village' is central to this initiative, emphasizing local economic growth, alternative livelihoods, and employment opportunities.

Cassava-Based Bioplastics:

- Cassava, a root crop, serves as the raw material for these bioplastic bags.
- Eco Starch has established a manufacturing facility in Mokokchung, Nagaland, where they produce these eco-friendly bags.
- Farmers within a 30-40 km radius are mobilized to cultivate cassava, ensuring a steady supply of raw materials.
- The first cassava harvest is expected within a year, demonstrating the feasibility of this approach.

Key Lessons:

- Sustainable Alternatives: Using locally available resources like cassava showcases the potential for sustainable alternatives to traditional plastics.
- Community Involvement: Empowering women's self-help groups (SHGs) and local youth fosters community engagement and inclusive growth.
- Economic Empowerment: Developing 'cassava villages' provides alternative livelihoods and generates employment, benefiting the local economy.
- Scalability and Expansion: Diversifying product lines can create more jobs and cater to a broader market, further enhancing local economic benefits.

NPS Vatsalya Mission

The finance minister recently made the announcement of a new pension scheme under the National Pension Scheme (NPS), called NPS Vatsalya.

Background:

- In addition to NPS Vatsalya, the Budget 2024 also brought significant changes to NPS contribution limits, aimed at increasing tax benefits for both employees and employers.

About NPS Vatsalya Scheme :

- The NPS Vatsalya Scheme proposed in Budget 2024 enables parents and guardians to start a National Pension Scheme (NPS) for their children.
- It is designed to help parents and guardians plan for their children's future financial needs.
- Under the scheme, parents or guardians can open an account for their minor children and make contributions towards their retirement savings.
- The funds will accumulate until the child turns 18.
- Once the child reaches adulthood, the accumulated amount will be transferred to the standard NPS account.
- This plan could be seamlessly converted into a non-NPS plan when the child becomes an adult.
- The scheme operates similarly to the existing NPS.
- The NPS scheme introduced by the Central Government provides pension income to individuals to support their retirement needs. Thus, the NPS Vatsalya scheme is one of the finest retirement options, guaranteeing the child's financial security.

Bangladesh Crisis

The resignation of Sheikh Hasina as Prime Minister of Bangladesh marks a significant turning point in South Asian geopolitics. As she fled the country amid protests and sought refuge in India, the **stability of Bangladesh and its relationship with India have come into question.**

- This upheaval could have far-reaching consequences not only for the region but also for **India's national security.**

What is the Current Situation in Bangladesh?

- **Protests and Unrest:** Bangladesh has been engulfed in protests **over job quota issues fuelled by authoritarian policies and suppression of opposition**, leading to significant unrest, the largest seen since Sheikh Hasina's tenure began in 2008.
- **Economic Challenges:** Sheikh Hasina's departure raises concerns about the country's economic recovery from the **Covid-19 pandemic**, which has already been strained by **rising inflation** and currency depreciation.
- **Political Landscape:** The Bangladesh Army is set to form an interim government, emphasising the fluidity of the situation. The potential return of **radical Islamist forces could threaten Bangladesh's secular governance.**
- **Disruption in Export Flow: Bangladesh's textile sector**, which significantly contributes to its export revenue, is facing major disruptions. The ongoing unrest has led to a breakdown in supply chains, affecting the movement of consignments and production schedules.
 - Bangladesh is a major player in the global clothing industry, **accounting for 7.9% of global trade in clothing.** The country's **USD 45 billion garment sector, which employs over four million workers, represents more than 85% of its merchandise exports.**
 - The country has a significant market share in the **European Union, the UK and the US**, with a 10% share in the US market.

- International buyers are reassessing their supply sources due to the uncertainty in Bangladesh. **This could result in a shift of orders to alternative markets, including India.**
- India stands to gain substantially if it captures a **portion of the displaced orders from Bangladesh.**
- Industry experts estimate that **India could see an additional USD 300-400 million in monthly business if 10-11% of Bangladesh's textile exports are redirected to Indian hubs such as Tiruppur.**

How does the Political Instability in Bangladesh Affect India?

- **Loss of a Trusted Ally:** India has lost a key partner in Sheikh Hasina, who has been instrumental in **countering terrorism and strengthening bilateral relations.**
 - Hasina's leadership enabled India to work closely with Bangladesh on security matters, a relationship now in jeopardy as political dynamics shift.
 - India-Bangladesh bilateral trade reached USD 13 billion in FY 2023-24, making **Bangladesh India's largest trade partner in the subcontinent.**
 -
 - Duty-free access was provided on most tariff lines under the **South Asian Free Trade Area (SAFTA)** agreement under Hasina's administration.
 - India's support for her administration has now become a liability as her unpopularity and **controversial governance might impact India's regional standing.**
- **Western Scrutiny and Potential Backlash:** India's backing of Hasina has created friction with Western allies, specifically the US who have criticised her undemocratic practices. Balancing international relations while supporting a **now-unpopular leader poses challenges for India.**
 - With Hasina's unpopularity growing, India may face backlash from **Bangladeshi citizens who view India as an ally of the ousted leader.** The situation could strain **India-Bangladesh relations.**

Significance of Bangladesh for India

- The country acts as an important corridor for trade and transportation, linking India's Northeast with the rest of the country and facilitating access to international markets.
- A stable and friendly Bangladesh is essential for regional security. Cooperation on counter-terrorism, border security, and other security matters is crucial for maintaining peace in South Asia.
- Bangladesh is India's biggest trade partner in South Asia and India is the second largest trade partner of Bangladesh in Asia.
 - The economic relationship supports India's goals under its foreign trade policy and contributes to its aim of becoming a USD 5 trillion economy.
- Active collaboration between India and Bangladesh is crucial for the success of regional forums like BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) and SAARC (South Asian Association for Regional Cooperation).

What Challenges Lie Ahead for India in Engaging with a New Regime?

- **Uncertain Political Environment:** The nature of the new government, whether it is led by opposition parties or the military will significantly impact India's strategic interests.
 - A new administration that is less friendly to India could **re-energize anti-India militant groups**, adding pressure to an already tense **security situation along the borders.**
 - The Hindu minority may face increased risks if **Islamist extremism** rises. India must navigate citizenship promises for Hindu refugees carefully to avoid regional tensions.

- **Regional Geopolitics:** The political instability in Bangladesh could provide an opportunity for **China to expand its influence in the region.**
 - India must be vigilant as Beijing might offer lucrative deals to the new regime, similar to how it has leveraged regime changes in **Sri Lanka and the Maldives.**
 - India will need to engage in strategic partnerships to ensure that **extremist elements do not gain a foothold** and that Bangladesh's economic stability is supported.
 - The turmoil in Bangladesh comes at a time when India faces challenges on multiple fronts, including tensions with Pakistan, **instability in Myanmar, strained relations with Nepal, Taliban's seizure of power in Afghanistan,** and the Maldives.
- **Impact on Indian Investments:** Indian businesses and investments in Bangladesh might face uncertainties due to the political upheaval. **Disruptions in trade and payment delays** could impact the profitability and stability of these investments.
 - The unrest will influence Indian-owned textile manufacturing units in Bangladesh. **Around 25% of textile units in Bangladesh are owned by Indian companies.** There is a likelihood that these units may shift their operations back to India due to the current instability.
 - As discussions around a **potential free trade agreement (FTA)** began in October 2023, hopes soared that it could boost Bangladesh's exports to India by up to 297% and India's exports by 172%.
 - However, the political instability raises doubts about the future of these negotiations and could disrupt existing trade flows.
- **Infrastructure and Connectivity Concerns:** Infrastructure and connectivity have been vital in strengthening Indo-Bangladesh relations. **India has provided USD 8 billion in credit since 2016 for road, rail, and port projects,** including the **Akhaura-Agartala rail link** and the **Khulna-Mongla Port rail line.**
 - However, current unrest threatens these crucial connections, potentially **disrupting trade and access to India's Northeast region,** and jeopardising earlier agreements.
- **Balancing Act:** India must strike a **balance between supporting democratic forces and managing relationships with regional powers.**
 - The **challenge will be to avoid getting entangled in internal disputes** while maintaining a robust diplomatic presence in Bangladesh.

How Should India Approach Its Foreign Policy Moving Forward?

- **Building New Alliances:** India is maintaining a cautious approach, closely monitoring the situation in Bangladesh while adopting a "**wait-and-watch**" strategy. This involves assessing the developments and their potential impacts on regional stability.
 - Further, India should engage with various political factions in Bangladesh, to foster a more inclusive relationship. India must develop a flexible strategy that accommodates the evolving political landscape in Bangladesh.
 - Engaging with a broader spectrum of Bangladeshi society will be crucial to counteract any negative perceptions of India. **India needs to move beyond the 1971 liberation narrative.**
- **Enhancing Security Measures:** India should bolster its security measures along the border and in areas with significant Bangladeshi expatriate populations to address potential spillover effects and maintain stability.
- **Digital Connectivity Corridor:** Developing a digital connectivity corridor can enhance trade, technological exchange, and e-commerce.
 - Evaluate the feasibility of an FTA with Bangladesh in light of the new political climate.
- **Geopolitical Manoeuvring:** India must anticipate that Pakistan and China will seek to exploit the situation in Bangladesh to their advantage.

- Collaborating with international partners, including the US, UK, and European nations, will be key to mitigating these risks.
- India should work with Gulf partners like the UAE and Saudi Arabia to support **Bangladesh's economic stabilisation and counter extremist influences**. This cooperation can help maintain regional stability and prevent Bangladesh from drifting away from its traditional allies.

Coastal Erosion

Coastal erosion in Tamil Nadu is increasingly endangering livelihoods and infrastructure, driven by both natural processes and human activities.

Background:

- Tamil Nadu, with India's second-longest coastline, faces significant erosion challenges. According to recent studies, nearly 43% of Tamil Nadu's coastline is experiencing erosion.
- This erosion is driven by both natural factors, such as sea level rise, cyclones, and wave action, and human activities like construction of ports, harbours, seawalls, and beach sand mining.



What is Coastal erosion?

- Coastal erosion is the process by which coastlines are worn away due to the action of natural forces such as waves, tides, and currents, as well as human activities.

Process of Coastal Erosion

- **Wave Action:** Waves hitting the shore exert pressure on the rocks and soil, causing them to break down.
- **Tidal Action:** The rise and fall of tides can lead to the removal of sediments from the shore.
- **Currents:** Ocean currents can transport sediments away from the coast.
- **Weathering:** Physical and chemical weathering processes break down rocks and minerals along the coast.

Causes of Coastal Erosion

- **Natural Causes:**
 - **Sea Level Rise:** Rising sea levels increase the rate of erosion by allowing waves to reach further inland.
 - **Storms and Cyclones:** These events can cause significant erosion in a short period.
 - **Wave Action:** Continuous wave action can gradually wear away the coastline.
- **Human Activities:**
 - **Construction:** Building of ports, harbours, and seawalls can disrupt natural sediment flow.
 - **Sand Mining:** Extraction of sand from beaches and riverbeds reduces the amount of sediment available to replenish the coast.

- Deforestation: Removal of vegetation that stabilizes the soil can lead to increased erosion.

Effects of Coastal Erosion

- Loss of Land: Erosion can lead to the loss of valuable land and property.
- Damage to Infrastructure: Roads, buildings, and other infrastructure near the coast can be damaged or destroyed.
- Impact on Ecosystems: Coastal habitats such as mangroves and coral reefs can be degraded.
- Economic Impact: Coastal erosion can affect tourism, fisheries, and other industries dependent on the coast.

Measures of Prevention

- Breakwaters: Offshore structures that reduce the energy of incoming waves.
- Beach Nourishment: Adding sand or sediment to beaches to replace what has been lost.
- Dune Stabilization: Planting vegetation or using other methods to stabilize sand dunes.
- Managed Retreat: Allowing certain areas to erode naturally while protecting more valuable areas.
- Mangrove Restoration: Planting mangroves to stabilize the shoreline and provide a buffer against waves.
- Coral Reef Protection: Protecting and restoring coral reefs to reduce wave energy.

Sariska Tiger Reserve

Recently, the Supreme Court-mandated Central Empowered Committee has flagged serious harm to wildlife in the Sariska Tiger Reserve in Rajasthan.

Background:

- The committee highlighted that the heavy vehicular traffic within the core area of the reserve is severely affecting tiger breeding and causing significant stress to the animals.
-
- To address these issues, the CEC has recommended a blanket ban on private vehicles in the reserve.



About Sariska Tiger Reserve :

- Sariska Tiger Reserve is located in Aravali hills and forms a part of the Alwar District of Rajasthan.
- Sariska was declared a wildlife sanctuary in 1955 and was declared the tiger reserve later in 1978, making it a part of India's Project Tiger.
- Sariska is the first tiger reserve to have successfully relocated Royal Bengal tigers in India.
- The Reserve is immensely rich in flora and fauna;
- Flora: Scrub thorn arid forests, rocky landscapes, semi-deciduous woodlands. Trees like Tendu, Dhok, and Khair.
- Fauna: Home to Royal Bengal Tigers, leopards, Nilgai, Sambar, chital, and various bird species including peafowl, vultures, and eagles.
- The Sanctuary houses ruined temples, forts, pavilions and a palace.
- Kankarwadi fort is located in the center of the Reserve and it is said that Mughal emperor Aurangzeb had imprisoned his brother Dara Shikoh at this fort in struggle for succession to the throne.
- The Reserve also houses a famous temple of lord Hanuman.

Disaster Management Act of 2005

The government recently introduced a bill in Parliament to amend the Disaster Management Act of 2005.

Background:-

- It proposes to make important changes in the Act, aimed mainly at improving the operational efficiencies in responding to a natural disaster.

Background and Importance of the DM Act

- Enactment Context: The Disaster Management (DM) Act was enacted following the 2004 tsunami, with initial ideas stemming from the 1998 Odisha super cyclone.
- Institutional Framework: The Act established:
 - National Disaster Management Authority (NDMA)
 - State Disaster Management Authorities (SDMAs)
 - National Disaster Response Force (NDRF)
 - National Institute of Disaster Management (NIDM)
- The Act was followed by a National Disaster Management Policy in 2009 and a National Disaster Management Plan in 2016. The framework has been effective in saving lives, providing relief, rescue, and rehabilitation services.
- Climate Change: Increasing natural disasters have made agencies such as NDMA more important than ever, requiring the assignment of greater responsibilities and resources.

Proposed Amendments in the Bill:

- Urban Disaster Management Authorities: The disaster management structure already extends to the district level, with district disaster management authorities in operation.
- However, the Bill acknowledges the unique needs of large metropolitan cities, which often encompass multiple districts. So the bill proposes:
 - Creation of Urban Disaster Management Authorities in all state capitals and cities with a municipal corporation to be headed by municipal commissioner for unified city-level disaster management.

- State Disaster Response Force (SDRF): While most states have disaster response forces modelled after the NDRF over the years, the 2005 Act does not mandate the creation of an SDRF. In the 2024 bill :
 - Mandatory for every state to establish and maintain an SDRF, addressing current inconsistencies in size and capacity.
- National Crisis Management Committee (NCMC):
 - Legal status granted to the NCMC, headed by the Cabinet Secretary, to handle disasters with serious or national ramifications.
- Enhanced Role of NDMA:
 - NDMA to periodically assess disaster risks, including emerging threats.
 - Creation and maintenance of a national disaster database.
 - SDMA to establish state-level disaster databases.
- Compensation Guidelines:
 - NDMA to recommend minimum relief standards and compensation for loss of life, property, and livelihoods.
- Clarification on Man-made Disasters:
 - Exclusion of law-and-order situations from the definition of man-made disasters.
- Day to day functioning of NDMA:
 - Amendment allows the chairperson or vice-chairperson to designate a member of NDMA for day-to-day functioning, legitimizing the currently vacant vice-chairperson role.
- Unaddressed Issues in the bill:
 - Elevation of NDMA: Suggestion to elevate NDMA to a government department or ministry for enhanced coordination and authority.
 - Leadership and Political Support: The post of vice-chairperson has been vacant for about a decade. There is a need for vice-chairperson to provide leadership and political heft necessary to deal with states and other central government agencies.
 - Administrative and Financial Powers: NDMA's lack of direct administrative financial powers causes inefficiencies. Routing every small decision through the Home Ministry is an inefficient and time-consuming process.
 - Staffing: NDMA is under-staffed at the top, with only three members instead of the previous six to seven, affecting disaster management.

Parametric Insurance

Nagaland has become the first state in India to start a disaster management insurance scheme by signing an agreement with SBI General Insurance. This new program called the Disaster Risk Transfer Parametric Insurance Solution (DRTPS), is designed to protect against natural disasters.

What is Parametric Insurance?

Parametric insurance works by giving predetermined payouts based on specific events, such as the strength of a natural disaster. This means that after a disaster, financial support is given quickly without the need for detailed damage assessments.

Objectives of the MoU

The main aim of the agreement is to protect Nagaland's important infrastructure and reduce economic losses caused by natural calamities. The scheme will cover the whole state, helping with proactive disaster management.

The Nagaland State Disaster Management Authority (NSDMA) and SBI General Insurance are working together on this, showing a joint effort to strengthen the state's ability to handle disasters.

Significance of the Initiative

By being the first state in India to use this type of financial mechanism, Nagaland is setting an example for other states.

This innovative approach is intended to improve disaster preparedness and response, ensuring better protection for its people and resources.

More About Nagaland

Nagaland is a state in northeastern India, home to 16 major tribes, each with its own unique customs. It has the world's second-largest bamboo species, *Dendrocalamus giganteus*.

The Hornbill Festival, held every year, celebrates the state's cultural diversity. Kohima, the capital, was the site of a significant battle in World War II.

The people of Nagaland traditionally practice shifting cultivation, known as 'jhum.' English is the state's official language. Nagaland is also known for its handcrafted shawls and vibrant festivals like Moatsu and Sekrenyi.

PARIVESH portal

The PARIVESH portal, meant to assist in the effective delivery of various environmental clearances, has now crossed the milestone of 50,000 clearances, the government said recently.

Background:

- According to the government, the average time taken for receiving an Environmental Impact Assessment clearance (EC) has been reduced from 105 days to double digits in 2023-2024, while the average time for receiving an Forest clearance (FC) has been reduced to 150 days.

About PARIVESH portal :

- The PARIVESH portal (Pro-Active and Responsive facilitation by Interactive, Virtuous and Environmental Single-window Hub) is an initiative by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India.
- It serves as a comprehensive online platform for the submission, monitoring, and tracking of various environmental, forest, wildlife, and Coastal Regulation Zone (CRZ) clearances required for different projects in India.

Key Features of PARIVESH:

- **Single-Window Clearance:** PARIVESH provides a single-window solution for obtaining multiple environmental clearances, making the process more streamlined and efficient.
- **Online Submission and Tracking:** Project proponents can submit their proposals online and track the status of their applications in real-time. This ensures transparency and reduces delays.

- **Role-Based Access:** The portal offers role-based access to different stakeholders, including project proponents, citizens, and government officials, ensuring that each user can interact with the system according to their specific needs.
- **Automated Processes:** The portal leverages emerging technologies such as GIS and advanced data analytics to automate various processes, facilitating quicker and more effective decision-making without compromising environmental safeguards.
- **Interactive Features:** Users can interact with scrutiny officers, receive online clearance letters, and get alerts in case of delays beyond the stipulated time for processing applications.
- **User-Friendly Interface:** The portal is designed to be user-friendly, with features like online mailers, alerts, and a comprehensive helpdesk to assist users in navigating the system.

Yen carry trade

Recently, major stock markets across the world experienced their sharpest decline in decades and the yen carry trade was one reason behind this decline.

Background:

- The yen carry trade is a classic example of how interconnected global financial markets are, and how changes in one country's monetary policy can have widespread effects.

About Yen carry trade



- A carry trade is a trading strategy that involves borrowing at a low-interest rate and investing in an asset that provides a higher rate of return.
- It typically involves borrowing in a low-interest rate currency and converting the borrowed amount into another currency.
- The proceeds are generally deposited in the second currency if it offers a higher interest rate.
- Alternatively, the proceeds could be deployed into assets such as stocks, commodities, bonds, or real estate denominated in the second currency.

Yen Carry Trade:

- The Japanese yen is one of the most widely used currencies for carry trades.
- In a yen carry trade, investors, including retail Japanese investors, borrow at a low interest rate at home and purchase assets in another country with higher returns, such as overseas equities and bonds.

- The yen has been popular for carry trades because Japan has maintained a zero-interest rate policy for over two decades. The idea behind low interest rates is to stimulate economic activity.
- For instance, such low interest rates incentivize investors to borrow cheaply in yen and invest in other countries (such as Brazil, Mexico, India, and even the US) to earn better returns. These carry trades are called yen carry trades.

Recent Developments:

- **Interest Rate Increase:** The Bank of Japan recently raised its interest rate to 0.25%, causing the yen to strengthen.
- **Investor Reaction:** As the yen appreciated, investors who had borrowed yen were forced to sell their higher-yielding assets to repay their loans, leading to a sell-off in global markets.

Methanotrophs

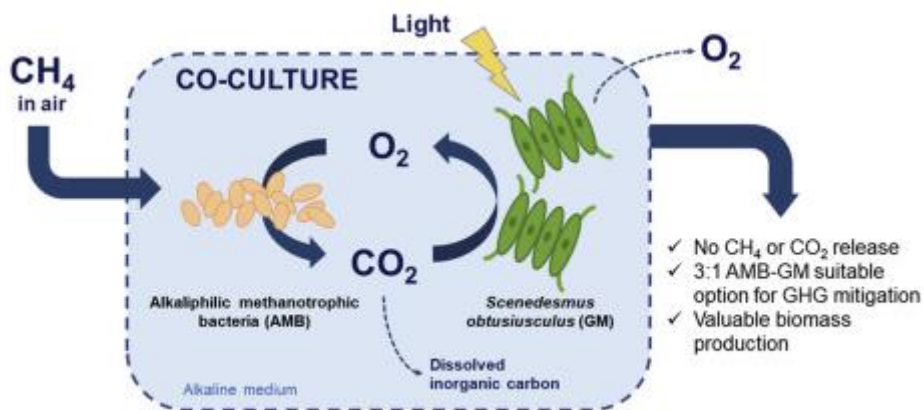
Researchers at MACS Agharkar Research Institute, under the Department of Science and Technology, have isolated and described the first indigenous methanotroph cultures in India.

Background:

- The discovery of native methane-eating bacteria in the country’s rice fields and wetlands offers a promising natural solution to mitigate climate change and combat greenhouse gases

About methanotrophs :

- Methanotrophs, also known as methanophiles, are fascinating microorganisms that metabolize methane as their primary source of carbon and energy.
- They can be either bacteria or archaea and are capable of growing in both aerobic (with oxygen) and anaerobic (without oxygen) conditions.



Key Characteristics:

- **Metabolism:** Methanotrophs utilize methane, converting it into formaldehyde, which is then used to produce energy or assimilated into biomass.
- **Habitat:** These organisms are commonly found in environments where methane is produced, such as wetlands, soils, marshes, rice paddies, landfills, and aquatic systems like lakes and oceans.
- **Environmental Role:** Methanotrophs play a crucial role in reducing methane emissions to the atmosphere, thereby helping mitigate global warming.

Applications:

- **Environmental:** Methanotrophs are being explored for their potential in bioremediation and wastewater treatment, where they can help reduce methane emissions.
- **Biotechnology:** They are also being studied for their ability to convert methane into valuable bioproducts, such as biofuels and bioplastics.

Ol Doinyo Lengai Volcano

Ol Doinyo Lengai Volcano has been steadily sinking into the ground for the past 10 years, a new study shows, and the cause could be a deflating reservoir directly beneath one of the volcano's two craters.



Background:

- The research reveals that the ground around the summit of Ol Doinyo Lengai volcano, which sits along an active rift zone in East Africa, subsided at a rate of 1.4 inches (3.6 centimeters) per year between 2013 and 2023.

About Ol Doinyo Lengai Volcano :

- Ol Doinyo Lengai, meaning “Mountain of God” in the Maasai language, is a unique and active stratovolcano located in the Gregory Rift, south of Lake Natron in Tanzania.

Geography and Structure

- Location: Situated in the Arusha Region of Tanzania.
- Elevation: The volcano rises to an elevation of approximately 2,962 meters (9,718 feet).
- Crater: It has two main craters, with the northern crater being the active one.
- Unique Lava:
 - Ol Doinyo Lengai is the only known volcano on Earth that is actively erupting carbonatite magma – extremely runny magma that is saturated with alkali elements, such as calcium and sodium, and poor in silica.
 - Most terrestrial magmas are rich in silica, a compound made from bonded chains of silicon and oxygen that binds molten rock together and gives it a viscous consistency.
 - But unlike those other magmas, whose weight is between 45 and 70% silica, the magma that feeds Ol Doinyo Lengai contains less than 25% silica by weight.
- Appearance:
 - Although the lava is black or dark gray when it erupts, it quickly turns white once it dries.
 - It is because carbonatite lava weathers differently than silicate lava due to its chemical makeup.

PM-KUSUM scheme

The PM-KUSUM scheme, started in 2019 to introduce solar energy in Indian agriculture, is facing difficulties. According to a report by the Centre for Science and Environment (CSE), only 30% of the scheme's targets have been met. With the 2026 deadline approaching, improvements are urgently needed.

Overview of the PM-KUSUM Scheme

The scheme has three main parts:

- **Component A:** Installing mini-grids on barren lands.

- **Component B:** Replacing diesel water pumps with off-grid solar water pumps.
- **Component C:** Replacing electric water pumps with on-grid solar pumps and creating mini-grids for agricultural solarisation.



2020

Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan (PM-KUSUM)

-  Scaled up to achieve Enhanced Solar Capacity of 30.8 GW by 2022 with revised Financial Support of Rs.34,035 Cr
-  For ease of availability of finance the Reserve Bank of India included the three components of the Scheme under Priority Sector Lending Guidelines
-  Scope of scheme has been increased by including pasturelands and marshy lands owned by farmers
-  Size of solar plant has been reduced so that small farmers can participate
-  Water User Associations/Farmer Producer Organisations /Primary Agriculture Credit Societies or cluster based irrigation system can avail Central Financial Assistance under scheme

Progress and Successes

Component B has made good progress in states like Haryana, Rajasthan, Maharashtra, and Uttar Pradesh. By replacing diesel pumps with solar-powered ones, farmers are saving up to Rs 55,000 annually. This also helps them avoid power cuts, making irrigation more reliable.

Challenges in Implementation

- **Cheap Electricity:** The availability of inexpensive electricity makes farmers less interested in switching to solar pumps.
- **Pressure to Buy Larger Pumps:** Farmers are often pressured to buy bigger pumps than they need, which increases their costs.
- **Centralisation:** The centralized implementation process is inefficient and varies by state.

Recommendations for Improvement

The CSE report suggests several strategies to improve the scheme's success:

Decentralisation: Allow local agencies with expertise to manage implementations more effectively.

Financial Viability: Offer installment payment options for upfront costs to make solar pumps more accessible to farmers

Upasthiti Portal

Chief Minister Hemant Soren has recently introduced the Upasthiti Portal under the Health, Medical Education, and Family Welfare Department.

This initiative aims to accurately track the daily attendance of all health department staff, including doctors and paramedical workers. It shows the government's dedication to improving health services in Jharkhand.

Purpose of the Upasthiti Portal

The Upasthiti Portal uses biometric attendance to verify that health department employees are present and working. This system is meant to ensure accountability and enhance the efficiency of healthcare services in the state.

Government's Commitment to Health Services

During the launch, Chief Minister Soren emphasized the government's focus on improving medical facilities. The government ensures that hospitals and health centers have enough resources, including proper maintenance, necessary repairs, diagnostic services, and medicine supplies.

First BIMSTEC Business Summit

The Ministry of External Affairs of India, together with the Confederation of Indian Industries (CII), is organizing the first BIMSTEC Business Summit on August 6, 2024, in New Delhi.

This summit aims to improve cooperation among the countries that are part of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC).

The goal is to boost trade and investment relationships among the participating countries.

Participation

More than 300 important people will attend the summit. These include ministers responsible for trade, commerce, and industry from BIMSTEC countries, as well as officials in charge of energy, government representatives, policymakers, entrepreneurs, and members of industry associations.

Focus Areas

The main topics to be discussed at the summit are:

- Making trade easier
- Improving regional connectivity
- Ensuring energy security
- Promoting inclusive growth
- Encouraging sustainable development

About BIMSTEC Business Summit

BIMSTEC, which started in 1997, includes seven countries: Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan, and Nepal.

Its focus is on improving trade, investment, and economic cooperation among its members. The summit promotes sectors like energy, trade, and technology.

It has also addressed challenges such as climate change. The first formal summit took place in 2004, but BIMSTEC has become more active since 2015. The last summit was held in 2022 in Sri Lanka, during a time of regional political tensions.

The infographic displays the flags of the seven BIMSTEC member states: India, Nepal, Bangladesh, Bhutan, Sri Lanka, Myanmar, and Thailand. It is divided into three main sections: Objective, Main Sectors of Cooperation, and Factors.

OBJECTIVE
To accelerate the economic growth and social progress in the sub-region through joint endeavors in a spirit of equality and partnership.

6 JUNE 1997
is the establishment date of **BIMSTEC**.

FACTORS

- BIMSTEC has headquarters in **Dhaka, Bangladesh**.
- BIMSTEC countries house **1.73 billion** people
- BIMSTEC has combined GDP of **\$ 4.4 trillion**.
- The current Secretary General of the **BIMSTEC** is Ambassador **Tenzin Lekphell** from **Bhutan**.

MAIN SECTORS OF COOPERATION

Trade & Investment, Transport & Communication, Energy, Tourism, Technology, Fisheries, Agriculture, Public Health, Poverty Alleviation, Counter-Terrorism & Transnational Crime, Environment & Disaster, Management, People-to-People, Contact, Cultural Cooperation, Climate Change.

Peacock Sanctuary Designation

Recently, Union Minister for Environment, Forest, and Climate Change, Mr. Bhupender Yadav, announced the creation of two new Peacock Sanctuaries in India: Adichunchanagiri in Karnataka and Choolannuar in Kerala. This decision shows the government's ongoing effort to protect wildlife and the national bird, the peacock.

Peacock Sanctuary Designation

Declaring Adichunchanagiri and Choolannuar as Peacock Sanctuaries is an important move to protect peafowl (peacocks) and their habitats.

Sanctuaries offer a safe space where these birds can live and thrive without human disturbance.

Cause of Peacock Deaths in Delhi

In response to questions about peacock deaths in Delhi, the Minister explained that the deaths were caused by heat stroke, not bird flu. This clarification helps calm public fears about disease outbreaks among wildlife.

Conservation Measures

The Ministry of Environment, Forest, and Climate Change has taken several steps to boost peacock conservation. These include setting up breeding and conservation centers aimed at increasing the peafowl population.

Peacocks, which are India's national bird, are important for biodiversity and cultural heritage. Their conservation helps maintain ecological balance and preserves India's natural heritage.

About peacock conservation

Peacock conservation involves protecting both the Indian blue peacock and the green peafowl. These birds face threats from habitat loss and hunting, so efforts include restoring their habitats and preventing poaching. Peafowl play key roles in ecosystems, such as spreading seeds. The International Union for Conservation of Nature (IUCN) lists the green peafowl as Near Threatened. Local communities are engaged in these conservation efforts, emphasizing the importance of cultural awareness in protecting these birds, which symbolize beauty and grace across cultures.

e-Sankhyiki portal

Ministry of Statistics and Programme Implementation (MoSPI) launched the e-Sankhyiki portal. This new portal is a big step forward for how India manages and shares data. It makes it easier to access and analyze important information.

Key Features

- **Comprehensive Data Listing:** Users can easily search for and download important data from the Ministry.
- **Time Series Data:** Provides access to important economic indicators over time, making it easier to analyze trends.
- **Data Filtering and Visualization:** Improved tools for filtering data and creating visual representations to better understand the information.
- **Metadata Access:** Detailed information that comes with the data sets to help with deeper analysis.

Data Safety Protocols

The portal has several features to keep data safe:

- **Cloud Storage:** Data is securely stored on the National Informatics Centre (NIC) cloud.
- **Security Audits:** Regular checks are conducted to ensure data integrity.
- **SSL Implementation:** Secure Sockets Layer (SSL) is used for secure connections.
- **Vulnerability Assessments:** Continuous evaluations are done to find and fix potential security issues.

Cybersecurity Support

CERT-In, part of the Ministry of Electronics and Information Technology (MeitY), supports the portal by:

- **Advisories and Guidelines:** Providing security guidelines to enhance data protection.
- **Training and Sensitization:** Conducting workshops and training sessions to raise cybersecurity awareness.
- **Cyber Threat Exchange:** Offering platforms to share threat information among stakeholders.



- **Cyber Crisis Management:** Developing plans for managing cyber crises and getting support from the National Cyber Coordination Centre (NCCC).

About e-Sankhyiki portal

The e-Sankhyiki portal, launched by the Indian government, aims to make the process of collecting and using statistical data more efficient and digital. It provides real-time access to data, helping with better planning and decision-making. The portal focuses on various sectors like agriculture, health, and education. It improves transparency and makes data more accessible to the public. Users can submit data online, reducing paperwork and increasing efficiency. The portal also supports strong data analysis, helping create evidence-based policies. Additionally, it encourages collaboration among government agencies, improving overall statistical management.

Minimum Support Price (MSP)

On August 4, 2024, Haryana Chief Minister Nayab Singh Saini announced that the state would buy all crops at the Minimum Support Price (MSP), making Haryana the first state in India to do this on such a wide scale.

This move is seen as a strategic effort before the upcoming Assembly elections, especially after the ruling party's poor performance in the recent Lok Sabha elections.

Key Announcements

Here's a breakdown of the key announcements:

- **All-Crops MSP Procurement:** Saini promised that the Haryana government would buy all crops at MSP. This is a significant expansion from the current practice, where only 14 crops were covered. Now, nine additional crops will also be included.
- **Waiving Irrigation Charges:** The Chief Minister announced that Rs 133 crore in outstanding canal water irrigation charges would be waived. This is expected to save farmers about Rs 54 crore each year.
- **Pending Compensation Payments:** He committed to paying Rs 137 crore in pending compensation to farmers who have been affected by natural disasters. The payments will be made quickly, within a week.
- **Expanded Motor Purchase Options:** Farmers will now be able to buy three-star motors for their tube-wells from any registered company in India. This provides them with more options and better access to necessary equipment.

About Minimum Support Price

Minimum Support Price (MSP) is a price set by the government at which it buys certain crops directly from farmers. It was established in India in 1966 to protect farmers from price drops. MSP is announced for 23 crops, including cereals, pulses, and oilseeds.

It is a crucial tool for agricultural stability because it encourages production and helps with food security. However, how it's implemented can vary by region, and some critics say it may lead to overproduction. MSP affects market prices and farmer incomes, shaping agricultural policies.

Retreat of glaciers in the Andes

Recent research published in Science reveals an unprecedented retreat of glaciers in the Andes, surprising scientists who thought these changes would take decades to become apparent.

This rapid glacier decline signals troubling climatic changes that could impact global environments.

The research found that the exposed bedrock had not been uncovered during the Holocene Era (about 11,700 years ago) and likely dates back to the last interglacial period, over 115,000 years ago. This suggests that the glaciers are currently smaller than they have been in thousands of years.

Geographical Significance

The Andes contain 99% of the world's tropical glaciers, making them especially sensitive to climatic changes. Their location near freezing temperatures means they react quickly to shifts in weather patterns.

Gorin warns that the changes observed in the Andes might be a sign of broader global climate shifts. He suggests that similar changes could soon occur in other regions, indicating a move away from the stable climate conditions that modern civilization depends on.

About Andes mountains

The Andes, stretching over 7,000 km, are the longest mountain range in the world. They form a natural barrier between the Pacific Ocean and the Amazon Basin.

The range is home to over 7,000 plant species and includes the world's highest active volcano, Ojos del Salado, at 6,893 meters. The Andes support diverse ecosystems, including the unique puna grassland, and were the center of the advanced Inca civilization.

Additionally, the Andes are a major source of valuable minerals, especially copper and lithium



Astra Mark 1 air-to-air missiles

The Indian Air Force (IAF) has recently given Bharat Dynamics Limited (BDL) the go-ahead to manufacture 200 Astra Mark 1 air-to-air missiles. This is a big step forward for India's homegrown missile production abilities.

The decision was made when Air Marshal Ashutosh Dixit, the IAF Deputy Chief, visited the Defence Research and Development Organisation (DRDO) in Hyderabad.

Development Background

The Astra Mark 1 missiles were developed by DRDO, and BDL is the main company chosen to produce them. The project received funding approval from the Defence Acquisition Council (DAC) of over ₹2,900 crore during the 2022-23 fiscal year, after the missiles successfully passed all required tests.

Production Clearance

BDL got the green light to start production after a detailed review of the missile's development and testing phases. This is an important step for the Astra missile system, which will boost India's aerial combat capabilities.

Integration with Aircraft

The Astra missiles are designed to be used with various fighter aircraft, including the Russian Su-30 and the Indian-made LCA Tejas. This compatibility allows the IAF to deploy the missiles more flexibly in different operations.



About Astra Mark 1 missiles

Advanced Missile: The Astra Mark 1 is India's first air-to-air missile that can hit targets beyond visual range, up to 110 kilometers away and at altitudes up to 20 kilometers.

Homegrown Technology: Developed by DRDO, it uses an Indian-made radar seeker and advanced guidance systems, showcasing India's technological progress.

Versatile and Tested: The missile works with various aircraft, including the Su-30MKI. Its first successful test flight was in May 2014, boosting India's defense strength.

AMRUT 2.0

The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0 is an important project started in 2021 by the National Democratic Alliance (NDA) government. Its goal is to improve city infrastructure in India with a big investment.

So far, the tendering processes are finished, and the selected contractors are ready to start the projects. Out of 8,205 planned projects, 4,065 have been awarded.

These projects will improve water supply, sewage treatment, and the overall management of city environments. Around 50% of these projects focus on water supply and sewage management. The rest aim to rejuvenate water bodies and develop parks. The plan includes building sewage treatment plants (STPs) and water treatment plants to help local households.

Completion Timeline

As part of the government's 100-day agenda, many big projects are expected to be up and running soon, focusing on immediate improvements in city infrastructure before the upcoming Lok Sabha elections. Plans include approving long-pending proposals, such as a detailed Delhi Master Plan 2041, and creating new greenfield cities. These are important for sustainable urban development and managing resources effectively.

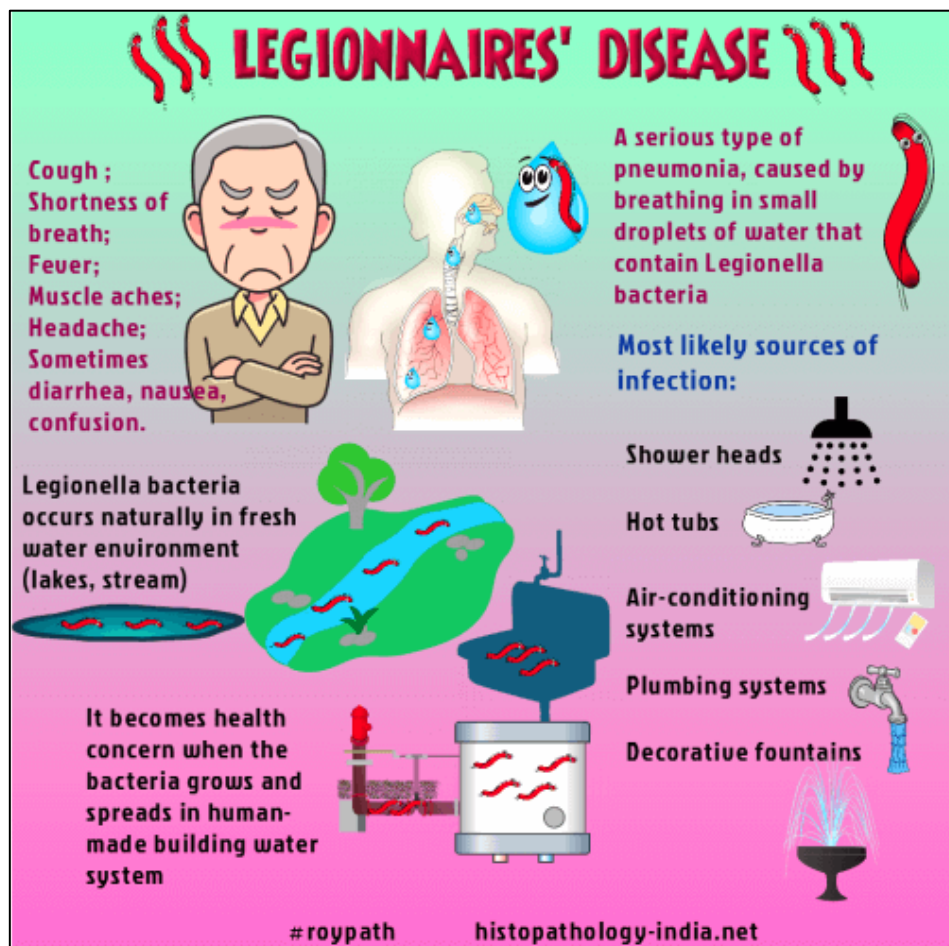
About Atal Mission for Rejuvenation and Urban Transformation (AMRUT 2.0)

- **Basic Services:** AMRUT 2.0, launched in 2021, aims to improve essential services like water supply and sewage management in cities.
- **Green and Smart Cities:** The mission focuses on creating green spaces and implementing smart city projects, promoting a cleaner and more efficient urban environment.
- **Citizen Participation:** It encourages people to take part in planning their cities, aiming to improve the quality of life and sustainability in 500 cities with a budget of ₹2.77 lakh crore

Legionnaires' disease

A rising outbreak of Legionnaires' disease in Victoria, Australia has caused concern among health officials.

The number of confirmed cases has increased from 22 to 33, with an additional 10 cases suspected. Chief Health Officer Clare Looker has noted a troubling rise in cases, mostly in the northern and western suburbs of Melbourne.



Understanding Legionnaires' Disease

Legionnaires' disease is a serious type of pneumonia caused by the Legionella bacteria. It usually happens when people breathe in water droplets contaminated with these bacteria. This contamination often comes from sources like air-conditioning systems, spas, and misting devices.

Transmission Information

The disease is not spread from person to person. Instead, people get infected through environmental sources, particularly from aerosols created by cooling towers or similar equipment.

Current Health Advisory

Authorities are advising people in metropolitan Melbourne to watch for symptoms such as fever, chills, cough, headaches, and muscle aches. If someone has these symptoms, they should seek medical help as soon as possible. People over 40 years old, especially those with existing health conditions or weakened immune systems, are at the highest risk. Dr. Looker stressed the importance of monitoring the health of these vulnerable groups. Investigators are trying to find the source of the outbreak. They suspect that a cooling tower might be involved but are also considering other possibilities. Efforts to trace contacts and identify the source are ongoing.

About Legionnaires' disease

- **Cause and Discovery:** Legionnaires' disease is caused by Legionella bacteria and was first identified after an outbreak at a 1976 American Legion convention.
- **Symptoms and Sources:** It mainly affects the lungs, causing pneumonia-like symptoms, and the bacteria grow in warm water sources like hot tubs and cooling towers.
- **Diagnosis and Treatment:** Symptoms show up 2 to 10 days after exposure and include cough, fever, and muscle aches. It's diagnosed with urine tests or lung imaging and treated with antibiotics, but it can be deadly for vulnerable people.

Global South Summit

India will host the third Voice of the Global South Summit on August 17, 2024. This virtual event will address major global issues like conflicts, development challenges, and climate change.

Prime Minister Narendra Modi will lead the summit, which will involve discussions with representatives from various countries.

Purpose of the Summit

The summit provides a platform for countries in the Global South – those in Latin America, Africa, and parts of Asia to share their views, difficulties, and priorities.

Its goal is to improve communication and cooperation among developing nations. The first summit took place in January 2023, and the second in November 2023, just after the G20 Summit. Each event involved over 120 countries.

Themes of Previous Summits

Themes for the Summits:

- **First Summit (January 2023): "Unity of Voice, Unity of Purpose"**
 - **Second Summit (November 2023): "Together, for Everyone's Growth, with Everyone's Trust"**
- Both themes focused on working together and collective effort.

Key Issues Addressed

Main Focus Areas of the Summits:

- Climate change
- Sustainable development
- Global governance

Ministerial sessions covered various topics like foreign affairs, education, finance, environment, energy, health, and trade.

Initiatives Announced

- Global South Centre of Excellence ('Dakshin')
- Global South Science and Technology Initiative
- Global South Scholarship Programme
- Cooperation in the health sector
- Global South Young Diplomats Forum

These initiatives aim to promote knowledge sharing and cooperation on important issues.

About Global South Summit

The Global South Summit, which started in 2004 in Havana, Cuba, seeks to enhance cooperation among developing nations. It includes diverse cultures and economies and focuses on sustainable development, climate change, and social equality.

The Global South, often misconceived as a purely geographical concept, encompasses diverse countries, drawing upon geopolitical, historical, and developmental factors.

While it is not solely defined by location, it broadly represents nations facing developmental challenges.

Many countries included in the Global South are in the northern hemisphere, such as India, China and all of those in the northern half of Africa.

Whereas, Australia and New Zealand, both in the southern hemisphere, are not in the Global South.

The outcomes of these summits can influence UN policies and improve partnerships among member states, with rotating leadership to ensure inclusivity.



CAR-T cell therapy

CAR-T cell therapy is a ground breaking type of immunotherapy that uses the patient's immune system to fight certain blood cancers. It is particularly promising for treating leukemia and lymphoma.

Understanding the Immune System

The immune system is the body's defense against diseases, composed of various types of cells:

- **White Blood Cells (WBCs):** Made in the bone marrow, they fight infections.
- **Neutrophils:** Attack harmful invaders.
- **Lymphocytes:** These include B-cells (which make antibodies) and T-cells (which kill infected cells).
- **Monocytes:** Turn into macrophages to eat up invaders.
- **Eosinophils:** Fight parasites and reduce inflammation.
- **Basophils:** Involved in inflammatory responses.

Immune Response Mechanisms

The immune system has two main strategies:

- **Innate Immunity:** Provides quick, general defense using barriers and certain cells.
- **Adaptive Immunity:** Uses lymphocytes for a targeted response, creating memory cells for future protection.

T-Cells and CAR-T Therapy

T-cells are important in CAR-T cell therapy because they can remember and attack specific harmful invaders. In this therapy, scientists change the T-cells using genetic engineering. They add special receptors called chimeric antigen receptors (CARs) to the T-cells. These CARs help the T-cells recognize and stick to cancer cells. This allows the T-cells to find and destroy the cancer cells more effectively.

The CAR-T Cell Therapy Procedure

T-cells are vital in this therapy because they can remember and attack specific pathogens. Here's how the therapy works:

- **Apheresis:** Collecting T-cells from the patient's blood.
- **Genetic Modification:** Altering T-cells in the lab to add CARs (Chimeric Antigen Receptors) that recognize and bind to cancer cells.
- **Expansion:** Growing a large number of modified T-cells.
- **Reinfusion:** Putting the modified T-cells back into the patient's bloodstream

Benefits of CAR-T Cell Therapy

- **Targeted Precision:** Directly attacks cancer cells, sparing healthy tissues and reducing side effects.
- **Personalized Treatment:** Customized to the patient's specific type of cancer.
- **Long-Lasting Effects:** Provides a prolonged immune response against cancer.
- **Reduced Healthcare Costs:** Fewer hospital stays and less need for ongoing treatment.
- **Advances in Research:** Constant improvements lead to new treatment options and better patient outcomes.
- **Affordability:** Innovations like NexCAR19 make the therapy more accessible.

Ceropegia Shivrayiana

A new flowering plant called *Ceropegia Shivrayiana* has been discovered in the Vishalgad area of Kolhapur. This discovery was detailed in a research paper published in the journal *Phytotaxa*, highlighting the biodiversity and ecological importance of Vishalgad Fort.

The name *Ceropegia shivrayiana* honors Chhatrapati Shivaji Maharaj, reflecting the region's cultural heritage.

Researchers believe that naming the plant after Shivaji pays tribute to his appreciation for the ecological importance of forts and their surroundings.

Ceropegia shivrayiana is a rare plant found only in India. It has unique, tubular flowers that attract moths. The plant grows in rocky places and can survive in soil with few nutrients.



It is part of the *Asclepiadaceae* family, which includes many medicinal plants. Conservation is crucial due to habitat loss, making this plant a key subject for ecological studies. Its unusual shape makes it interesting to plant enthusiasts.

AITIGA

The 5th AITIGA Joint Committee and related meetings took place from July 29 to August 1, 2024, at the ASEAN Secretariat in Jakarta, Indonesia. The goal of these meetings was to strengthen economic cooperation between ASEAN countries and India, emphasizing the importance of the ASEAN-India Trade in Goods Agreement (AITIGA).

Background on AITIGA

AITIGA, established in 2009, aims to make trade easier between ASEAN countries and India by reducing barriers and promoting free trade, thereby strengthening economic ties. The recent meetings focused on reviewing and updating this agreement to fit current trade conditions.

Structure of Recent Meetings

The meeting was co-chaired by Shri Rajesh Agrawal from India's Department of Commerce and Ms. Mastura Ahmad Mustafa from Malaysia. Delegates from all 10 ASEAN countries and India attended, ensuring that all sides were represented in the trade discussions. Discussions to review AITIGA started in May 2023. The Terms of Reference and Negotiating Structures were established, and negotiations began in February 2024.

Sub-Committees and Their Functions

Eight sub-committees addressed important areas such as:

- National Treatment and Market Access
- Rules of Origin
- Standards, Technical Regulations, and Conformity Assessment Procedures
- Sanitary and Phytosanitary Measures
- Legal and Institutional Issues
- Customs Procedures and Trade Facilitation
- Trade Remedies
- Economic and Technical Cooperation

Each sub-committee reported their findings to the Joint Committee to guide future discussions.

Bilateral Engagements

During the meetings, the Indian delegation also had bilateral talks with delegates from Malaysia, Singapore, Indonesia, and Vietnam to better understand the issues at hand. At a dinner organized by the Indian Embassy in Jakarta, the delegation spoke with Indian businesses to gather insights and expectations about the AITIGA review, emphasizing the initiative's goal of achieving practical outcomes for industry stakeholders.

India is preparing for the World Bank's new Business-Ready (B-Ready) index, which will evaluate the global business environment and investment climate. This new index replaces the Doing Business index and focuses on key factors that affect how businesses operate.

Transition from Doing Business Index

The B-Ready index aims to give a more complete picture than the Doing Business index. It will compare countries based on ten important topics that cover the entire life cycle of businesses. The B-Ready report will focus on crucial areas such as:

- **Business entry:** How easy it is to start a business
- **Labour:** Employment regulations and workforce conditions
- **Financial services:** Access to banking and financial products
- **International trade:** How efficiently goods are imported and exported
- **Taxation:** Tax policies and their impact on businesses

These topics will provide insights into the rules and conditions that businesses operate under.

International Trade Assessment

One of the key areas is international trade, which looks at how efficiently goods are imported and exported. This includes customs procedures and the role of digital trade, which makes it easier to access global markets. Digital trade helps increase transactions across borders, making international markets more accessible. Simplifying processes and lowering compliance costs are essential for maximizing the benefits of international trade, according to officials.

Target for E-commerce Exports

India aims to reach \$200-300 billion in e-commerce exports by 2030. Currently, e-commerce exports make up only a small part (0.9-1.1%) of the country's total merchandise exports, so there is a need to become more efficient and increase capacity.

About B-Ready index

The B-Ready index also evaluates how prepared businesses are for economic shocks and crises. Created by the Global Business Network, it looks at resilience and adaptability, considering factors like supply chain stability, workforce flexibility, and technology use. Countries with higher B-Ready scores often recover faster from crises.

The index encourages proactive risk management strategies and has been useful during the COVID-19 pandemic in helping businesses identify weaknesses. Small and medium-sized enterprises (SMEs) often score lower due to limited resources. The index highlights the importance of sustainable practices for long-term resilience.

Biofortification

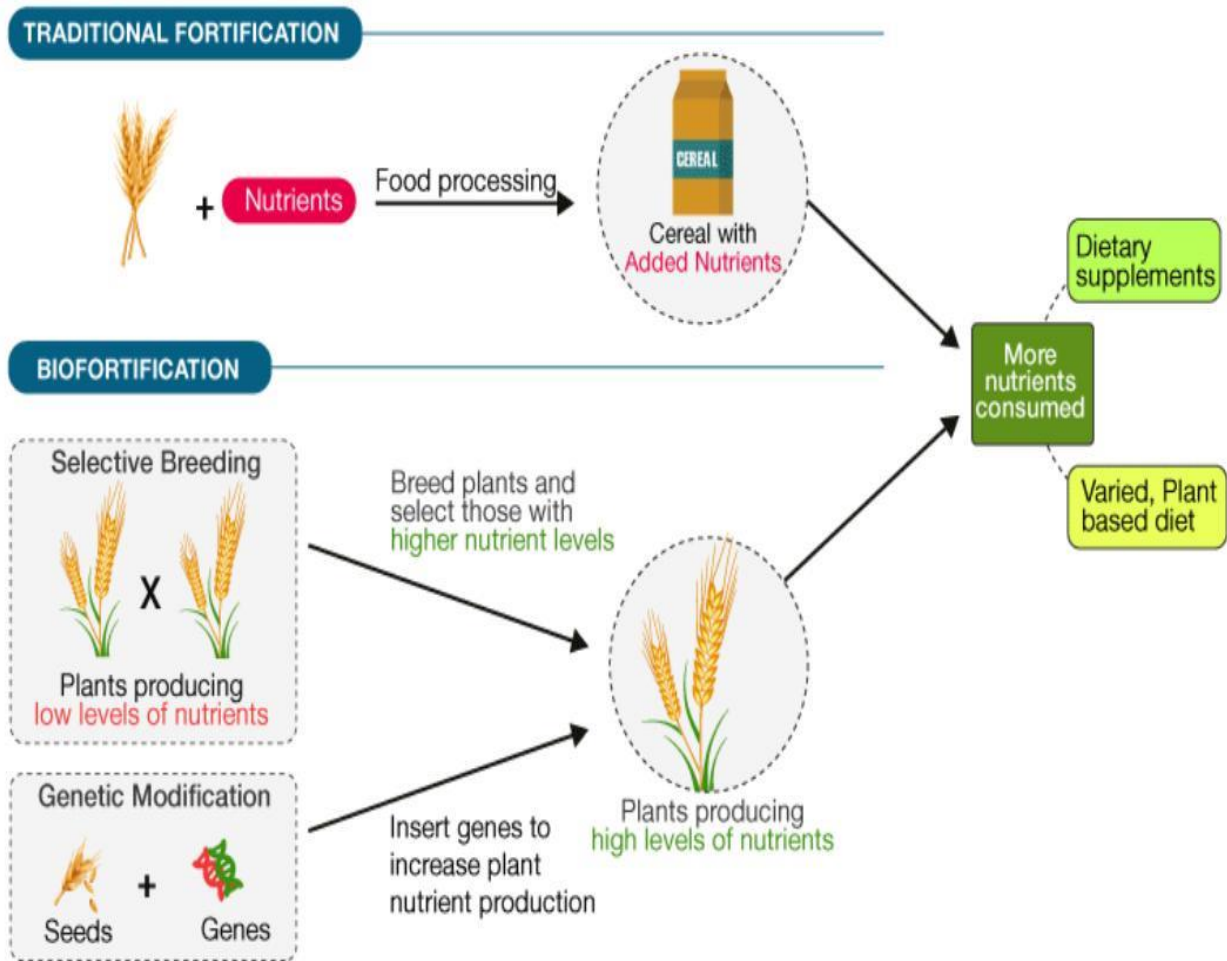
Recently, the Prime Minister of India released 109 high yielding, climate resilient and biofortified varieties of crops at India Agricultural Research Institute, New Delhi.

Background:

- The launch of these varieties represents a significant advancement in the government's effort to strengthen and future-proof Indian agriculture.

About Biofortification

- Biofortification is the process of improving the nutritional quality of food crops. This can be achieved through two main methods:
 - Conventional Breeding: This involves selecting and crossbreeding plants that naturally have higher levels of certain nutrients. Over time, this process enhances the nutrient content of the crops.
 - Genetic Engineering: This method involves directly modifying the plant's genes to increase the levels of specific nutrients.
- It aimed at developing and disseminating crops that are naturally rich in essential micronutrients, containing higher levels of vitamins, minerals, and other nutrients.



Benefits:

- Improved Nutrition: Helps combat micronutrient deficiencies, especially in low and middle-income countries.
- Accessibility: Provides essential nutrients to rural populations who may not have access to commercially fortified foods.

Examples:

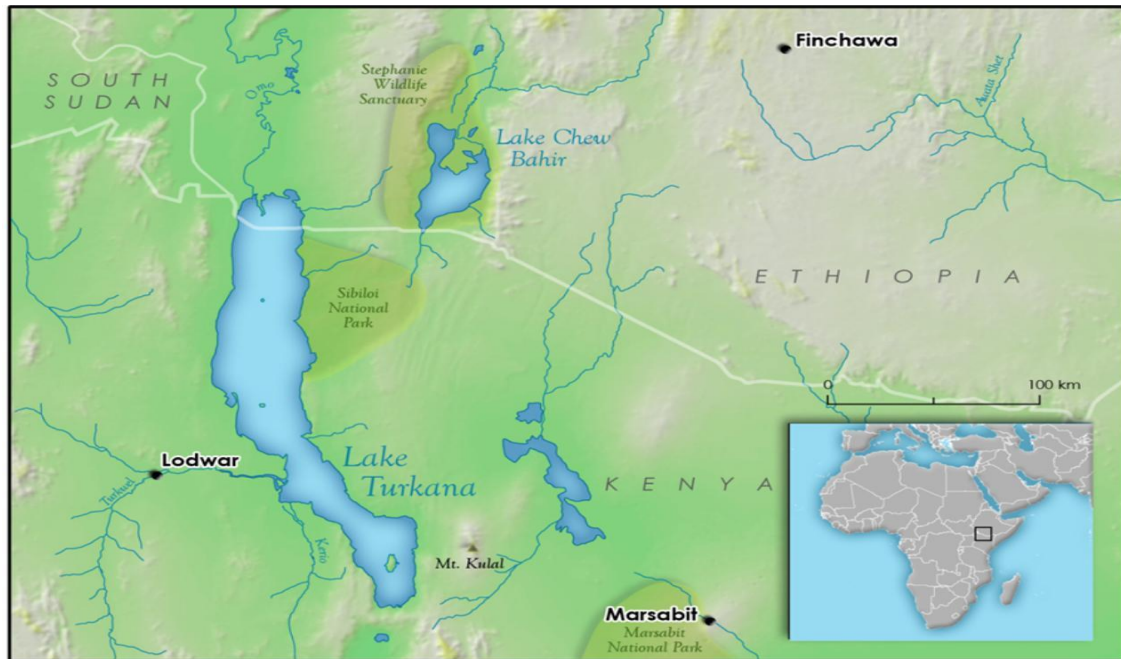
- Golden Rice: Enhanced with beta-carotene to address vitamin A deficiency.
- Iron and Zinc-Enriched Wheat: Developed through radiation breeding to improve iron and zinc content.

Lake Turkana

Findings of the first comprehensive survey of Lake Turkana in 50 years was released recently.

Background:

- Lying in a hot, arid, and remote region, Lake Turkana provides resources for communities on the lakeshore and surrounding areas.
- However, its semi-saline waters, driven by high evaporation rates and fluctuating lake levels of up to 8 meters per decade, have historically hindered sustainable development initiatives.



- **Location:** Lake Turkana is located in the Great Rift Valley in northern Kenya, extending into southern Ethiopia.
- **Size and Rank:**
 - Lake Turkana is Africa’s 4th largest lake.
 - It is the world’s largest permanent desert lake and the largest alkaline lake.
- **Geographical Features:**
 - The lake is surrounded by volcanic rock and desert.
 - It is fed by three main rivers: the **Omo, Turkwel, and Kerio**.
 - **The lake has no outlet, which contributes to its high salinity and alkalinity.**
- **Biodiversity:**
 - Lake Turkana is home to diverse wildlife, including Nile crocodiles, hippos, and various fish species.
 - It is also a critical habitat for migratory birds and other endemic species.
- **Cultural Significance:**
 - The region around Lake Turkana is known as the **“Cradle of Mankind”** due to the **discovery of some of the oldest human fossils.**
 - It is inhabited by indigenous communities, including the **Turkana, El Molo, and Dassanach people**, who rely on the lake for fishing and livestock.
- **Environmental Concerns:**
 - The lake faces environmental challenges, including declining water levels due to dam construction on the Omo River in Ethiopia.
 - Climate change and overexploitation of resources are also significant threats to the lake’s ecosystem.

- UNESCO World Heritage Site: Lake Turkana is part of the Lake Turkana National Parks, a UNESCO World Heritage Site since 1997, recognized for its ecological and archaeological importance.
- Economic Importance:
 - The lake supports local economies through fishing, tourism, and livestock grazing.
 - It also holds potential for hydroelectric power generation, though this has led to environmental debates.

AYUSHMAN Bharat scheme

Beneficiaries aged 70 years and above made up over 12 percent of all admissions under the government's flagship Ayushman Bharat health insurance scheme, with their treatment costs accounting for nearly 14 percent of the total expenditure till January, according to data presented in Parliament by the Union Ministry of Health and Family Welfare.

Background:


- India's population over the age of 60 years is estimated to increase from 8.6 per cent in 2011 to 19.5 per cent by 2050. Health coverage is crucial for older age group.

Ayushman Bharat Pradhan Mantri – Jan Arogya Yojana (AB PM-JAY):


- Ayushman Bharat, a flagship scheme of the Government of India, was launched as recommended by the National Health Policy 2017, to achieve the **vision of Universal Health Coverage (UHC)**.
- This initiative has been designed to meet Sustainable Development Goals (SDGs) and its underlining commitment, which is to "leave no one behind."
- It is the world's largest health insurance scheme fully financed by the government.
- It is an entitlement-based scheme that targets the **beneficiaries** as identified by the latest **Socio-Economic Caste Census (SECC) data**.
- **The National Health Authority (NHA)** has been constituted as an autonomous entity under the **Society Registration Act of 1860** for the effective implementation of PM-JAY in alliance with state governments.

About ABPM-JAY

- It is the **world's largest health assurance scheme** (launched in 2018 by MoH&FW). It provides medical insurance of **Rs 5 Lakh to over 10 Cr marginalized families** (identified through SECC 2011 data) for secondary and tertiary care hospitalization.
- Centrally **sponsored** scheme
- Funding: **60:40 & 90:10** (NE states and three Himalayan states- J&K, Himachal and Uttarakhand)
- **No limit** on family size covered or age of members.
- It covers **pre-existing diseases**
- Implementation by **National Health Authority**



Ayushman Bharat Digital Mission (ABDM)



- It aims to develop the **digital backbone** for integrated digital health infrastructure.
- launched in **2021**, it is **Central sector scheme**
- It contains: ABHA health account numbers; ABHA App; Health Facility Registry and Unified Health Interface (for patients and health provider interactions)
- Implementation: **National Health Authority** under MoH&FW.

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Objectives of AB-PMJAY:

- To reduce the financial burden of out-of-pocket expenditure (OOPE) on healthcare for the beneficiaries.
- To improve the access and affordability of healthcare services for the beneficiaries.
- To enhance the quality and efficiency of healthcare delivery systems in the country.
- To promote preventive, promotive, and curative health interventions for the beneficiaries.

Provisions/Features of AB-PMJAY:

- It is a centrally sponsored scheme where the funding ratio is **60:40 for most states, 90:10 for northeastern states and Himalayan states, and 100:0 for union territories without a legislature.**
- It **provides a health cover of Rs 5 lakh per family per year for secondary and tertiary care hospitalization to more than 12 crore families.**
- It covers medical and surgical procedures for almost all health conditions through a comprehensive list of 1,949 packages, including cancer care, cardiac care, neurosurgery, orthopaedics, burns management, mental disorders, etc.
- **It uses a robust IT platform to ensure seamless delivery of services and prevent fraud and abuse.** The platform includes features such as a beneficiary identification system, hospital empanelment module, transaction management system, claim management system, grievance redressal mechanism, etc.
- It has a network of more than 27,000 empanelled hospitals across the country, out of which more than half are private hospitals.
- It has a dedicated workforce of **Pradhan Mantri Arogya Mitras (PMAMs) who guide and assist the beneficiaries at every step of their journey under the scheme.** They are responsible for beneficiary verification, registration, pre-authorisation, claim submission, etc.
- It has a monitoring and evaluation mechanism to ensure accountability and transparency.
- It has a National Anti-Fraud Unit (NAFU) that designs, implements, and oversees anti-fraud initiatives.
- It has a call centre that makes calls to every beneficiary who has availed of treatment within 48 hrs of discharge to verify the quantity and quality of the treatment. Another call is made after 15 days to know about the prognosis.

Issues/Challenges faced by AB-PMJAY:

- Many eligible beneficiaries are not aware of their entitlements or how to avail them. It faces a low awareness level among the potential beneficiaries, especially in rural areas.
- There is an uneven distribution and availability of healthcare infrastructure and human resources in the country which results in a supply-side constraint.
- It faces the challenge of ensuring timely and adequate reimbursement of claims to empanelled hospitals, especially private ones.
- There is a loophole in preventing and detecting fraud and abuse by some unscrupulous elements who try to exploit the scheme for personal gain.

Antarctica Heatwave

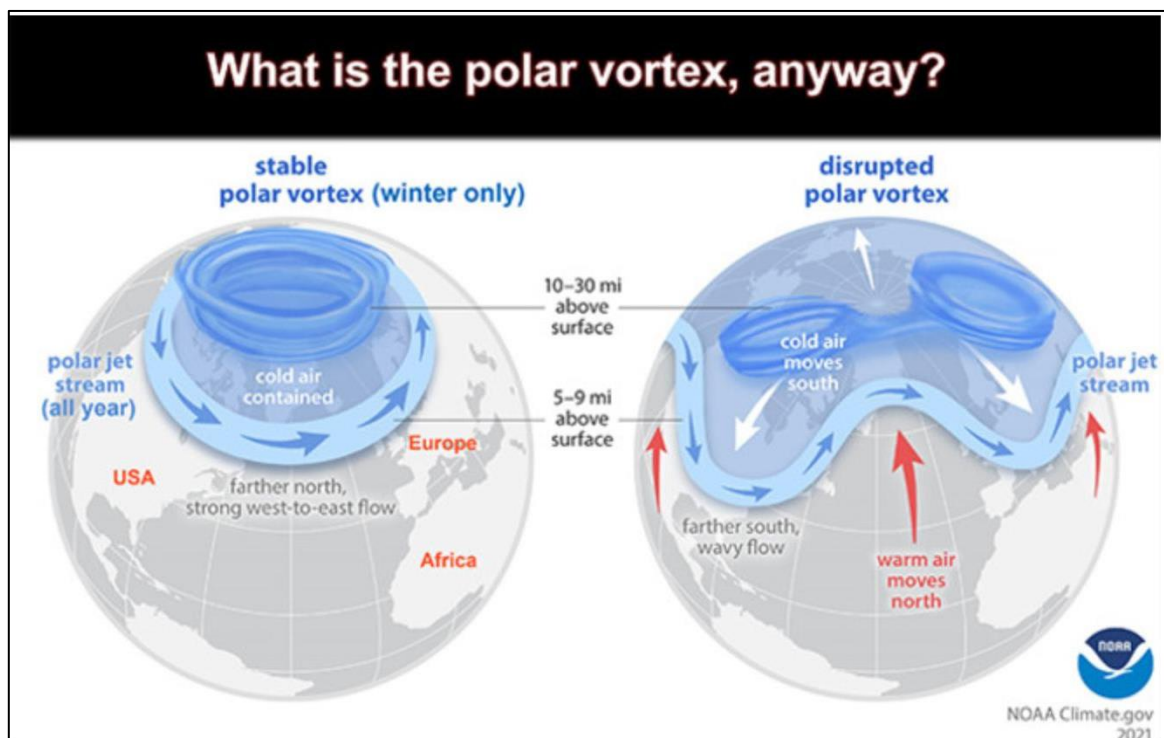
For the second time in two years, Antarctica is experiencing an unprecedented heatwave during its winter season. Since mid-July, ground temperatures have been 10 degrees Celsius above the seasonal norm, with some days seeing spikes as high as 28 degrees above average.

Background:-

- In East Antarctica, where higher elevations dominate two-thirds of the world's coldest continent, temperatures are currently ranging from minus 25 to minus 30 degrees Celsius. Typically, deep-winter temperatures in this region fall between minus 50 and minus 60 degrees Celsius.

Reasons for the Heatwave

- Weakening of the Polar Vortex:
 - The polar vortex, a band of cold air and low-pressure systems around Earth's poles, usually remains strong during the southern hemisphere winter, trapping cold air over Antarctica.
- The polar vortex is a large area of low pressure and cold air surrounding both of the Earth's poles.
- It **ALWAYS** exists near the poles, but weakens in summer and strengthens in winter.
- The term "**vortex**" refers to the counter-clockwise flow of air that helps keep the colder air near the Poles.
 - This year, large-scale atmospheric waves disturbed the vortex, allowing trapped cold air to escape and warmer air to enter, raising temperatures as this warm air descended from the upper atmosphere.



- Reduction in Antarctic Sea Ice:
 - The extent of Antarctic sea ice in June was the second-lowest on record for that time of year, slightly above the lowest extent in June 2023
 - **Sea ice plays a critical role in cooling the polar regions by reflecting sunlight and acting as a barrier between cold air and warmer water. Reduced sea ice likely contributed to warmer winter weather over Antarctica.**
- Impact of Global Warming:
 - **Antarctica is warming nearly twice as fast as the global average, with temperatures increasing at a rate of 0.22 to 0.32 degrees Celsius per decade.**
 - **Global warming's impact on Antarctica is exacerbating the frequency and intensity of heatwaves.**
- Possible Consequences
 - **Ice Sheet Loss and Sea Level Rise:**
 - The ongoing heatwave could accelerate the loss of the Antarctic Ice Sheet, potentially leading to a significant rise in global sea levels.
 - Antarctica has already lost 280% more ice mass in recent decades compared to the 1980s and 1990s, with catastrophic events like the 2022 collapse of a Rome-sized portion of the ice sheet.
 - Impact on Global Ocean Circulation:
 - Melting Antarctic ice is slowing down the global ocean circulation system, which is crucial for regulating climate by transporting heat, carbon, nutrients, and freshwater.
 - A slowdown in this system could lead to less heat and CO₂ absorption by the oceans, intensifying global warming and increasing the frequency and severity of extreme weather events like floods and droughts.

World Biofuel Day

Every year on August 10, World Biofuel Day is observed to underline the significance of biofuels as a sustainable source of energy.

Background:

- In recent years, biofuels have garnered significant attention due to growing concerns about climate change and the health impacts of air pollution from fossil fuels, which are not only costly but also finite in supply.

Understanding Biofuels

- Biofuels are renewable fuels derived from the biomass of plants or animal waste. Common sources include corn, sugarcane, and animal waste like cow dung. Unlike fossil fuels, biofuels are sustainable energy sources.
- The two most common types are ethanol and biodiesel.
 - Ethanol: Produced by fermenting crop residues such as corn and sugarcane. It is often blended with petroleum to reduce emissions, with Ethanol-10 (E10) being a common blend containing 10% ethanol.
 - Biodiesel: Made from used cooking oil, yellow grease, or animal fats, biodiesel is produced by burning these materials with alcohol in the presence of a catalyst.

Importance of Biofuels

- **Environmental Benefits:** Biofuels can mitigate the negative environmental impacts of fossil fuels, such as greenhouse gas emissions and resource depletion, while also improving waste management.
- **Energy Security:** As the world's third-largest consumer of crude oil, India's reliance on imports for over 85% of its needs poses energy security challenges. Biofuels offer a way to reduce this dependency.
- **Economic Benefits:** Increased biofuel use can decrease reliance on imported oil, lower import bills, and boost farm income by creating demand for crops like corn and sugarcane.

Government Initiatives and Policies on Biofuels

- **National Policy on Biofuels (2018):** Aimed at reducing import dependency and promoting fuel blending, this policy supports ethanol, biodiesel, and bio-CNG production. In 2022, the policy was amended to advance the 20% ethanol blending target from 2030 to 2025-26.
- **Global Biofuels Alliance (GBA):** Launched in 2022, this multi-stakeholder alliance, including governments and international organizations, promotes global cooperation and sustainable biofuel use. Additionally, it aims to facilitate global biofuel trade and provide technical support for national biofuel programs.
- **Reduced GST on Ethanol:** The government lowered the GST on ethanol for blending from 18% to 5% under the Ethanol Blended Petrol (EBP) Programme.
- **Pradhan Mantri JI-VAN Yojana:** This initiative supports Second Generation (2G) ethanol production from cellulosic and lignocellulosic materials, offering financial incentives.

Challenges Related to Biofuels

- **Environmental Concerns:** **Biofuel production can strain land and water resources and contribute to air and groundwater pollution. It may also alter cropping patterns, affecting agricultural balance.**
- **Food vs. Fuel Dilemma:** The competition between food security and energy security arises depending on the choice of feedstock and production processes.

Great Barrier Reef (GBR)

An adversely changing climate and rising sea surface temperatures (SST) have exposed the Great Barrier Reef (GBR) to its highest temperature in more than 400 years and pose an existential threat to the world heritage site.

Background:

- Scientists in their recent assessment have found that the ocean temperatures at the reef are hottest in the past 407 years and threaten the ecosystem that is larger than the size of Italy.

About Coral Reefs

- Coral reefs are diverse underwater ecosystems formed by colonies of tiny marine animals called coral polyps.
- They are often referred to as the "rainforests of the sea" due to their rich biodiversity, supporting around 25% of all marine species. This is a remarkable statistic given the fact that

reefs cover just a tiny fraction (less than one percent) of the earth's surface and less than two percent of the ocean bottom.

- Coral reefs provide vital ecosystem services, including coastal protection, tourism, and fisheries.

Formation:

- Coral polyps secrete calcium carbonate, which accumulates over time to form the hard structures of reefs.
- Reefs thrive in warm, shallow waters with plenty of sunlight, typically found in tropical and subtropical regions.
- **The Indo-Pacific region account for 90.9% of world's reef area while the Atlantic-Caribbean and Eastern Pacific regions account for 7.6% and 0.5% respectively.**
- With a highly skewed distribution, Indonesia and Australia alone account for 35% of the world's reef area.
- High near shore turbidity and freshwater runoff from rivers, limit reef development and thus the Indian Subcontinent has a scanty growth of reefs along the coastline.

Coral reefs are mainly found to have three characteristic structures:

- (i) Fringing reef- reefs grow close to the shore, forming the border of the continents and project seaward (fringing reefs are found in Gulf of Mannar, Palk bay and in Andaman and Nicobar Islands of India);
- (ii) Barrier reef- separated from the main land mass by a lagoon or a narrow region of sea, like the GreatBarrier Reef in Australia;
- (iii) Atoll- the low reefs mostly oval or circular ring in shape enclosing a lagoon (Atolls in India are mainly found in Lakshadweep islands).



The Great Barrier Reef

- Location: The Great Barrier Reef (GBR) is located off the northeastern coast of Australia, in the Coral Sea.
- It is the largest coral reef system in the world, stretching over 2,300 kilometers.
- The GBR is home to thousands of species, including over 1,500 species of fish, 400 types of coral, and numerous species of sharks, rays, and marine mammals.
- It also hosts several endangered species, such as the dugong and large green sea turtle.
- World Heritage Status: Designated a UNESCO World Heritage site in 1981 for its outstanding universal value and exceptional natural beauty.

Anemia mukt Bharat

Anaemia is a significant public health challenge in India.

Key takeaways:

- Anemia is a problem of **not having enough healthy red blood cells or hemoglobin to carry oxygen to the body's tissues**. Hemoglobin is a protein found in red cells that carries oxygen from the lungs to all other organs in the body.
- There are many forms of anemia: Aplastic anemia, Iron deficiency anemia, Sickle cell anemia, Thalassemia, Vitamin deficiency anemia.
- **Iron deficiency anaemia results in impaired cognitive and motor development in children and decreased work capacity in adults.** The effects are most severe in infancy and early childhood.
- In pregnancy, iron deficiency anaemia can lead to perinatal loss, prematurity and low birth weight (LBW) babies.
- Anemia Mukht Bharat strategy is implemented to reduce anaemia among six beneficiaries age group - children (6-59 months), children (5-9 years), adolescents (10-19 years), pregnant and lactating women and in women of reproductive age group (15-49 years) in life cycle approach through implementation of six interventions via six robust institutional mechanisms.



The six interventions under Anemia Mukh Bharat strategy are as follows:

- Prophylactic Iron Folic Acid Supplementation
- Periodic deworming
- Intensified year-round Behavior Change Communication Campaign
- Testing of anemia using digital invasive haemoglobinometer and point of care treatment.
- Mandatory provision of Iron and Folic Acid fortified foods in government-funded health programmes.
- Intensifying awareness, screening and treatment of non-nutritional causes of anaemia in endemic pockets, with special focus on malaria, haemoglobinopathies and fluorosis.

Neelakurinji

Neelakurinji (*Strobilanthes kunthiana*) has been added to the IUCN Red List of threatened species.

Background:

- The IUCN Red List is a critical indicator of the health of the world's biodiversity.


About Neelakurinji

- Neelakurinji, also known as Kurinji, is a shrub found in the shola forests of the Western Ghats in Kerala, Karnataka, and Tamil Nadu.
- It belongs to the Acanthaceae family and is known for its purplish-blue flowers.
- This plant is famous for its unique blooming cycle, flowering once every 12 years.


NEELAKURINJI

Scientific name:
Strobilanthes Kunthiana

These flowers are also known as **Kurinji**



They grow at an altitude of **1,300 to 2,400 m**



They are currently in full bloom in **Mullayanagiri peak, Chikmagalur, Karnataka**

In Neelakurinji, '**neela**' means **blue**, and '**kurinji**' refers to the flowers. The flowers give the Nilgiri Mountain range its name.
At maturity, the light blue color of flowers changes to purple bluish.

- Neelakurinji grows at altitudes ranging from 1300 to 2400 meters.
- It used to cover the Anamalai Hills, Cardamom Hills, Nilgiri Hills, Palani Hills, Kudremukh, and Bababudangiri.
- The Paliyan tribal people of Tamil Nadu used the blooming of Neelakurinji to calculate their age.
- The flower has also given the Nilgiri Mountains their name, with “Nilgiri” meaning “blue mountains” in Tamil and Malayalam.
- Neelakurinji (*Strobilanthes kunthiana*) has been added to the IUCN Red List of threatened species. It is classified as “Vulnerable” on the IUCN Red List.
- The main threats to Neelakurinji include habitat loss due to conversion for tea and softwood plantations, urbanization, and the invasion of exotic species like eucalyptus and black wattle. Climate change and infrastructure development also pose significant risks.

Clean Plant Programme (CPP)

The Union Cabinet, chaired by the Prime Minister Shri Narendra Modi, recently approved the Clean Plant Programme (CPP) proposed by the Ministry of Agriculture and Farmers Welfare.

Background:

- This programme is expected to significantly boost India’s horticultural sector, aligning with broader initiatives like Mission LiFE and One Health.

About Clean Plant Programme (CPP)

- The Clean Plant Programme (CPP) is a transformative initiative for India’s horticultural sector.
- By promoting **sustainable and eco-friendly agricultural practices**, it aims to **reduce dependence on imported planting materials and enhance the quality and productivity of fruit crops.**



CABINET DECISION
9TH AUGUST, 2024

Cabinet approves the **Clean Plant Programme (CPP) under Mission for Integrated Development of Horticulture**

- Investment of **Rs.1,765.67 Cr**
- CPP will provide access to virus-free, high-quality planting material to farmers regardless of their landholding size or socioeconomic status
- Streamlined certification processes & infrastructure support to nurseries
- Nine world class state-of-the-art Clean Plant Centers will be established across India
- It will address diverse agro-climatic conditions across India by developing region-specific clean plant varieties & technologies

- The CPP's implementation by the National Horticulture Board, in collaboration with the Indian Council of Agricultural Research (ICAR), ensures that it leverages the best scientific and agricultural expertise available.
- This program aligns with broader initiatives like Mission LiFE and One Health, emphasizing environmental sustainability and public health.

Core Components:

- **Clean Plant Centers (CPCs):** Establish nine state-of-the-art centers equipped with advanced diagnostic and tissue culture labs to produce and maintain virus-free planting material.
- **Certification and Legal Framework:** Implement a robust certification system supported by the Seeds Act 1966 to ensure accountability and traceability in planting material production and sale.
- **Enhanced Infrastructure:** Provide support for large-scale nurseries to develop infrastructure for efficient multiplication of clean planting material.

Key Benefits of the Clean Plant Programme (CPP):

- **Farmers:** The CPP will provide access to virus-free, high-quality planting material, leading to increased crop yields and improved income opportunities.
- **Nurseries:** Streamlined certification processes and infrastructure support will enable nurseries to efficiently propagate clean planting material, fostering growth and sustainability.
- **Consumers:** The initiative will ensure that consumers benefit from superior produce that is free from viruses, enhancing the taste, appearance, and nutritional value of fruits.
- **Exports:** By producing higher-quality, disease-free fruits, India will strengthen its position as a leading global exporter, expanding market opportunities and increasing its share in the international fruit trade.

Lieutenant governor of Delhi

The Supreme Court has ruled that the Lieutenant Governor of Delhi can independently nominate 10 aldermen to the Municipal Corporation of Delhi without consulting the council of ministers. This decision has heightened tensions between the Union government, the Delhi government, and the local administration.

Background:

- People of Delhi should get responsible and responsive governance from all three layers of government irrespective of party in power.

Evolution of the Delhi Government

- 1950: At the commencement of the Constitution, Delhi was a Part C State.
- 1956: During the States Reorganisation, Delhi was made a Union Territory, governed by an administrator.

- The Municipal Corporation of Delhi (MCD) was established in 1958 and a limited local government was established since 1966
- 1991: **Following the Balakrishnan Committee's (1989) recommendations, the 69th Constitutional Amendment provided Delhi with a Legislative Assembly and a council of ministers.** However, public order, police, and land remained under Union government control. Government of NCT of Delhi Act, 1991 provided detailed provisions regarding Delhi's legislature, executive, and administration.

Present Issues

- Political Conflict (2015-Present):
 - Ongoing clashes between the Union government (BJP) and the Delhi government (AAP) over various issues.
 - The judgments of the Supreme Court have resulted in amendments to the Government of NCT of Delhi Act that have curtailed the powers of the elected government in Delhi.
- MCD and Local Governance:
 - Apart from the issues between the Union and the Delhi government, the MCD with its elected representatives add another dimension to the problem as was witnessed in the recent unfortunate loss of lives due to electrocution and flooding in Delhi.
 - Public accountability has been undermined by the blame-shifting among elected officials.

The Union versus Delhi

Since 2015, the Union government led by the BJP and the Delhi government led by AAP have been at loggerheads on various issues

Case / Amendment	Brief description	Implication
<i>Govt of NCT of Delhi vs Union of India (UOI) (2016)</i>	The Delhi High Court ruled that the LG of Delhi exercised complete control of all matters relating to the NCT of Delhi	It made the appointed LG the executive head, reducing the powers of the elected government of Delhi
<i>Govt of NCT of Delhi vs UOI (2018)</i>	On appeal against the Delhi HC judgment, the Supreme Court held that the LG was bound by the 'aid and advice' of the council of ministers headed by the Chief Minister of Delhi except on matters relating to public order, police and land	This restored the powers of the elected government of the NCT of Delhi in matters of day-to-day administration
Government of NCT of Delhi (Amendment) Act, 2021	It required the council of ministers to obtain the opinion of the LG before any executive action on matters specified by the LG	This amendment tilted the balance of power again in favour of the LG
<i>Govt of NCT of Delhi vs UOI (2023)</i>	A Constitution Bench of the Supreme Court in May 2023 had held that the Delhi assembly and government shall have legislative and executive powers over 'services' except in relation to public order, police and land	This restored the powers of the elected government of the NCT of Delhi in matters of day-to-day administration including postings and transfers
Government of NCT of Delhi (Amendment) Act, 2023	It created the National Capital Civil Service Authority for deciding on matters relating to 'services'. This authority will consist of the Chief Minister, the Chief Secretary and the Home Secretary of Delhi	This had the effect of again reducing the importance of the elected government and Chief Minister in decisions relating to 'services'

Proposed Way Forward

- As part of its judgment in 2023, the Supreme Court mentioned that there is a triple chain of accountability in a democracy. The officials are accountable to the ministers; the council of ministers are collectively responsible to the legislative assembly; and the legislative assembly members are accountable to the people.
- The constant tussle between various layers of government ruptures such a chain of accountability.

Geoglyphs & petroglyphs Ratnagiri

The Maharashtra government has officially designated the geoglyphs and petroglyphs in Ratnagiri as protected monuments under the **Maharashtra Ancient Monuments and Archaeological Sites and Remains Act, 1960**. This decision responds to growing concerns about preserving these important cultural artifacts.

Significance of Geoglyphs and Petroglyphs

Geoglyphs and petroglyphs are ancient forms of art from the Mesolithic era, featuring various animal figures and footprints. These artworks offer valuable insights into prehistoric life and human creativity.



Location and Scope: In Ratnagiri, over 1,500 such artworks are found at around 70 sites, covering a protected area of 210 square meters. Seven of these sites are even on UNESCO's tentative World Heritage list.

Characteristics of Petroglyphs: The petroglyphs in Deud, dating back 20,000 to 10,000 years, depict animals like rhinos, deer, and monkeys, reflecting the artistic abilities of early humans.

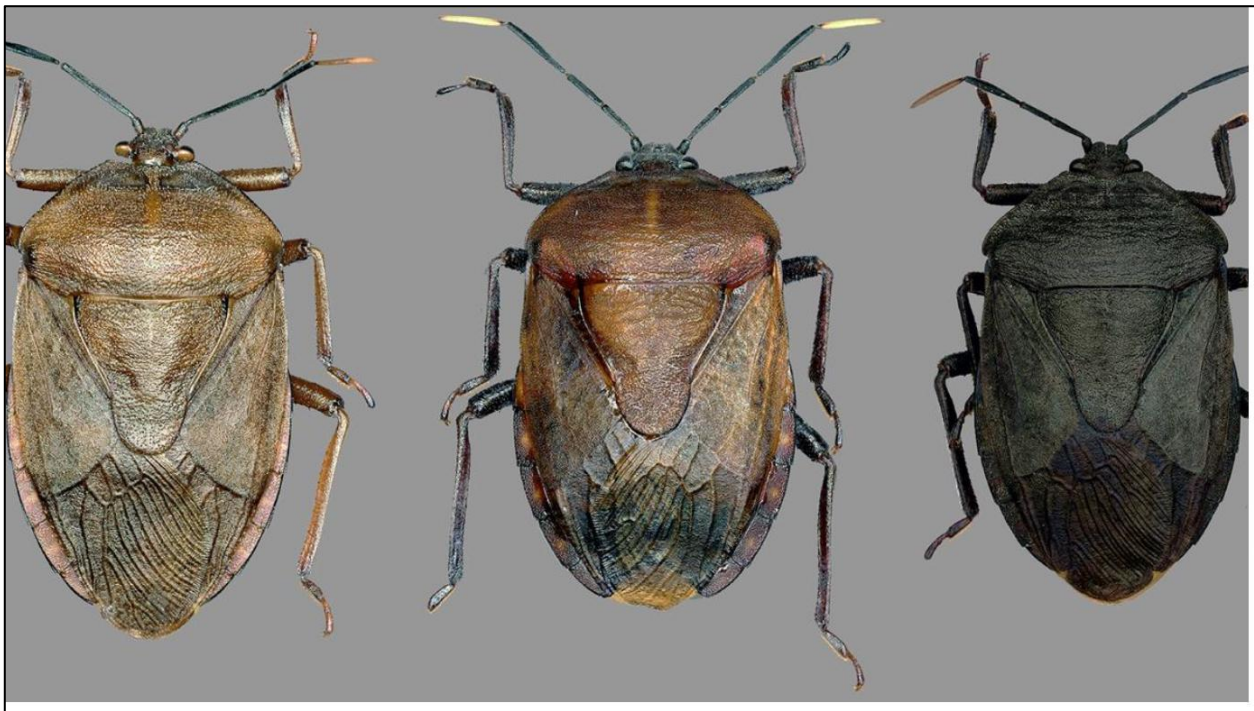
Characteristics of Geoglyphs: The geoglyphs stretch along the 900 km Konkan coast and are large-scale designs carved into the earth's surface. Ratnagiri stands out for its high concentration of these artworks in both Maharashtra and Goa.

Cultural Importance

UNESCO recognizes these rock art collections as significant open-air examples of prehistoric human expression. They represent ancient ecosystems and diverse life forms, crucial for understanding our natural and cultural heritage. However, there are concerns that a proposed oil refinery in Barsu could endanger these heritage sites, potentially causing irreversible damage to Ratnagiri's geoglyphs and petroglyphs.

Edible bugs

Entomologists from the Ashoka Trust for Research in Ecology and the Environment (ATREE) in Bengaluru have recently identified three new species of edible bugs that are traditionally eaten by indigenous communities in North-East India. This discovery underscores the importance of documenting and preserving traditional knowledge about edible insects, as many such species are still not well-documented despite their role as important food sources.



Significance of the Findings

The research has catalogued over 500 species of edible insects, highlighting their cultural and nutritional significance in local diets. The identification of these new species points to a growing recognition of entomophagy (the practice of eating insects) and its potential for sustainable food production.

Identification of New Species

The newly discovered bugs are part of the genus *Coridius* and belong to the family Dinidoridae. They range in size from 15 mm to 25 mm and primarily feed on plant sap. The researchers used a comprehensive approach, combining genetic analysis, measurements of physical traits, and classical taxonomy to identify these species. The new species are named

- ***Coridius adii***
- ***Coridius esculentu***
- ***Coridius insperatus***.

Health Concerns and Ecological Studies

While some edible bugs are linked to health issues, such as neurotoxic reactions that can cause symptoms like photophobia (sensitivity to light), the study highlights the need for more research into the safety of consuming different insect species.

It also emphasizes the importance of recording and safeguarding indigenous knowledge about these insects, ensuring that local communities are involved in managing their resources and that traditional practices are honored.

Globally, around two billion people consume insects, with over 2,000 species recognized as edible. This research supports the promotion of insects as a sustainable protein source, which can complement traditional livestock farming that often has significant environmental impacts.

Long Range Bomb - Gaurav

On August 13, 2024, the Defence Research and Development Organisation (DRDO) of India successfully carried out the first flight test of a long-range glide bomb named Gaurav.

This test, conducted using a Su-30 MK-I fighter jet from the Indian Air Force, is a significant step forward in India's efforts to develop its own advanced defence technologies.

What is Gaurav?

Gaurav is a cutting-edge air-launched glide bomb that weighs 1,000 kg. It is designed to hit targets from a long distance and is equipped with a sophisticated navigation system that uses multiple guidance methods to ensure it strikes with high accuracy.



Development and Design

The Gaurav bomb was developed by the Research Centre Imarat in Hyderabad. This project is a key example of India's focus on achieving self-reliance in defence technology, reducing the need to rely on military equipment from other countries.

Flight Test Details

The first test flight took place off the coast of Odisha, where the glide bomb successfully hit a target on Long Wheeler's Island. To gather detailed information during the test, advanced telemetry and electro-optical tracking systems were used.

Involvement of Key Partners

The project saw collaboration from private companies, including Adani Defence and Bharat Forge, which acted as Development cum Production Partners.

Their involvement highlights the growing role of the private sector in India's defence industry.

Defence Minister Rajnath Singh praised this successful test, calling it a crucial milestone in enhancing India's self-sufficiency in defence technologies. The success of this test boosts the capabilities of the Indian Armed Forces and demonstrates the country's progress in military technology.

What is long-range glide bomb?

Long-range glide bombs like Gaurav can travel over 110 kilometers without needing propulsion.

They are guided by GPS to ensure they hit their targets accurately and are designed to avoid detection by radar.

Other similar bombs include the GBU-39/B, which has similar long-range capabilities, and the UK's Paveway IV, which can be adapted for different missions.

The JDAM (Joint Direct Attack Munition) is another example, turning regular free-fall bombs into precision-guided weapons. Such technologies were first developed by Israel in the 1980s. These bombs are typically launched from strategic bombers or fighter jets and are designed to be hard to detect, increasing their effectiveness in military operations.

Dynamic Reference rate

India and Russia are working on introducing a "dynamic reference rate" for their currencies, the Indian Rupee (INR) and the Russian Rouble (RUB), to make financial transactions between the two countries easier and to reduce the impact of U.S. sanctions on Russia.

Despite these efforts, India's Reserve Bank Governor, Shaktikanta Das, has clarified that there are no plans to completely stop using the U.S. dollar, which remains the dominant currency in global trade.

Current Financial Transaction Challenges

Currently, converting Indian Rupees to Russian Roubles is a complicated process. It usually involves first converting INR to U.S. dollars (USD) and then from USD to RUB.

This process is made even more complex by U.S. sanctions, which limit Russian banks' access to international financial systems, particularly for large transactions.

Additionally, because India imports more from Russia than it exports, Russian banks end up holding large amounts of Indian Rupees, which complicates financial dealings further.

Proposed Solutions

To simplify this, India and Russia are considering setting up a direct exchange rate between the INR and RUB. This rate would be adjusted according to the market by both the Reserve Bank of India and the Bank of Russia. **This plan is similar to a system India has with the UAE, where local currency settlements are used for transactions.**

Additionally, there is potential for Russia to invest its funds in Indian financial markets, which could strengthen economic ties between the two countries.

Continuation of US Sanctions

However, U.S. sanctions continue to restrict Russian banks' access to global financial services, forcing them to rely on smaller banks for some transactions. This situation highlights the need for better systems for INR-RUB exchanges and investments, especially for large trade deals.

India's Strategic Moves toward De-Dollarisation

Efforts to reduce dependence on the U.S. dollar were also discussed by Indian Prime Minister Narendra Modi and Russian President Vladimir Putin in July 2023. **These discussions were part of**

a broader initiative within BRICS (Brazil, Russia, India, China, and South Africa) to lessen reliance on the dollar in international trade.

India has also started a digital platform with ASEAN countries to conduct cross-border trade without using the dollar. Currently, about 60% of trade with Russia is done in local currencies.

The BRICS Initiative

BRICS countries are exploring the possibility of creating a new reserve currency backed by their collective currencies, although this has not yet been implemented. Projects like the BRICS Bridge are looking into using blockchain technology to enhance financial integration among member countries, especially through central bank digital currencies.

About Dynamic Reference Rate

The “Dynamic Reference Rate” (DRR) that India and Russia are considering would adjust according to real-time market conditions. It would serve as a benchmark for various financial products, such as loans and derivatives.

Unlike fixed rates, the DRR is designed to increase transparency and reflect the rates set by central banks, which can help stabilize markets during volatile times. The use of DRR is growing, especially in emerging markets, as digital finance continues to advance.

Plastic eating fungi

Scientists in Germany have found fungi that can eat plastic, which could help tackle the global problem of plastic pollution.

Every year, millions of tonnes of plastic waste end up in the oceans. While these plastic-eating fungi offer a promising solution, experts warn that relying on fungi alone won't solve the problem.



It's still essential to focus on reducing plastic waste at its source to effectively address this widespread issue. Research at **Lake Stechlin** found that certain microfungi can break down synthetic plastics even without extra carbon sources. These fungi can turn some plastics into biomass.

Key Findings

The study identified 18 fungal strains, with four showing a strong ability to degrade plastics, especially polyurethane. However, plastics like polyethylene, used in bags and packaging, break down more slowly. Microplastics from tire wear are also challenging due to harmful additives.

Limitations of Fungi in Pollution Mitigation

Despite the fungi's potential, Hans-Peter Grossart warns that they shouldn't be the only solution for reducing plastic waste. The breakdown of plastics still releases CO₂, similar to burning fossil fuels.

The fungi's effectiveness also depends on environmental conditions, such as temperature and nutrients. The research highlights the need for broad strategies to cut down plastic production and waste.

Global Plastic Production Trends

In 2021, global plastic production soared to 390 million tonnes, up from just 1.7 million tonnes in 1950. Even though recycling rates have improved, less than 10% of plastic waste is recycled worldwide, underscoring the urgent need for better waste management solutions.

About Plastic-Eating Fungi

Plastic-eating fungi, mainly from the genera *Aspergillus* and *Pestalotiopsis*, have shown the ability to break down polyurethane, a common type of plastic, in laboratory settings. In 2011, *Pestalotiopsis microspora* was found in the Amazon rainforest and was noted for its ability to degrade plastic even in low-oxygen environments.

These fungi use enzymes like laccases to metabolize plastics, indicating they could be useful for bioremediation – using biological organisms to clean up pollution.

Mycoremediation is a field that applies fungi to clean up contaminated environments, harnessing their plastic-degrading abilities. Researchers are exploring these fungi as eco-friendly alternatives for recycling and tackling plastic waste. Other fungal species are also being studied for their potential to break down microplastics.

CEMS

The Continuous Emission Monitoring System (CEMS) is now an important tool for accurately tracking pollution in India's industries. The Central Pollution Control Board (CPCB) made it mandatory to install CEMS in 2014.

However, even though it's very important, many industries don't use it as much as they should because they worry about how reliable it is.

Regulatory Mandate

In 2014, the CPCB made it mandatory for 17 types of highly polluting industries to install CEMS to meet environmental standards. However, problems with data reliability have made it difficult to use these systems effectively for regulation.

Certification and Quality Assurance

To improve reliability, a strong certification system is necessary. In August 2019, the Council of Scientific & Industrial Research-National Physical Laboratory (CSIR-NPL) was appointed as the national agency responsible for verifying CEMS.

Certification Development

After five years of work, CSIR-NPL has set up a certification program and testing facilities for CEMS. Now, manufacturers can apply for certification for systems that monitor gas emissions, and certification for systems that measure particulate matter will be available soon. To get certified, manufacturers must submit two identical CEMS units for testing. A committee, which includes different stakeholders, manages the certification process by directing tests and reviewing the results. Proper certification makes sure that CEMS meets both national and international standards. This prevents the use of outdated systems, helping to ensure that pollution data is accurate and reliable.

Monkey Pox

Africa is facing a serious outbreak of mpox, and the World Health Organization (WHO) has held an urgent meeting to decide if this situation should be declared a Public Health Emergency of International Concern. Currently, 15 African countries, including Burundi, Kenya, Rwanda, and Uganda – which previously had no cases – are reporting confirmed cases of mpox.

Current Statistics

There have been 2,030 confirmed cases of mpox and 13 deaths across these countries in 2024. The number of suspected cases has also risen sharply to over 15,000, with more than 500 deaths reported. This is a significant increase compared to the previous year, which saw 1,145 cases and seven deaths.

Variant Concerns

A new variant of the virus, called clade 1b, has appeared, mainly affecting the Democratic Republic of Congo (DRC), where 90% of the cases have been recorded. This variant is particularly dangerous for children, with a 10% mortality rate. It is also harder to detect because of mutations that current tests may miss. The spread of this variant across borders has led to deaths in Burundi, South Africa, and the DRC.


MONKEYPOX: WHAT YOU NEED TO KNOW

An outbreak of monkeypox is occurring in many countries:

- WHO has declared a public health emergency of international concern.
- Monkeypox is preventable. Most people recover fully, but some people can get seriously ill.
- Symptoms can be uncomfortable and painful.
- While monkeypox can affect anyone, most cases in this outbreak are among men who have sex with men
- What we know about the outbreak is changing fast - we are learning more every day


Symptoms of monkeypox often include:

- Rash on face, hands, feet, body, perianal area or genitals
- Rash in mouth, throat, eyes, vagina and anus
- Fever
- Swollen lymph nodes
- Headaches
- Muscle and back aches
- Low energy
- Painful swelling inside your rectum (proctitis)
- Pain or difficulty when urinating



You can catch monkeypox through close contact with someone who has symptoms including:

- Skin-to-skin (e.g., touching, anal and vaginal sex)
- Face-to-face (e.g., talking, singing, breathing)
- Mouth-to-skin (e.g., oral sex)
- Mouth-to-mouth (e.g., kissing)
- From contaminated bedding, towels, clothing, surfaces or objects



Protect yourself from monkeypox:

- If someone you know is diagnosed with or has suspected monkeypox, avoid close contact with them
- Know the symptoms and check yourself regularly
- If you have symptoms, seek health advice and self-isolate while you wait to get tested
- Get vaccinated if it is available to you
- Follow advice to reduce the risk of infection if you live with someone who has monkeypox

Monkeypox can spread through sex :

- People who have sex with multiple or new partners are most at risk
- Check yourself regularly for symptoms and ask partners to do the same
- If monkeypox is impacting your community, you can reduce your risk by reducing your number of sexual partners, waiting for a while before having sex with any new partners or taking a break from sex
- Have open, non-judgmental conversations. Swap contact details with sexual partners and agree to let each other know if you develop symptoms
- Condoms will prevent some STIs. They may also reduce your risk of exposure to monkeypox, but they will not prevent you becoming infected through close physical contact

If you think you have monkeypox:

- Get advice from a health worker
- Get tested
- Isolate at home if your health worker recommends you do so
- Take care of your rash, physical and mental health
- Protect others by avoiding close contact with them
- If you are sharing a house with others while isolating, stay in separate rooms, frequently clean hands, clean/disinfect objects and surfaces often and open windows
- Avoid contact with your pets

What is Mpox?

Mpox, which used to be called monkeypox, is caused by the monkeypox virus, part of the Orthopoxvirus family.

It was first discovered in lab monkeys in 1958. The virus can spread through bites from infected animals, close contact with an infected person, or touching contaminated materials.

Symptoms include fever, a rash, and swollen lymph nodes.

Mpox is commonly found in Central and West Africa. Vaccination against smallpox can provide some protection against mpox.

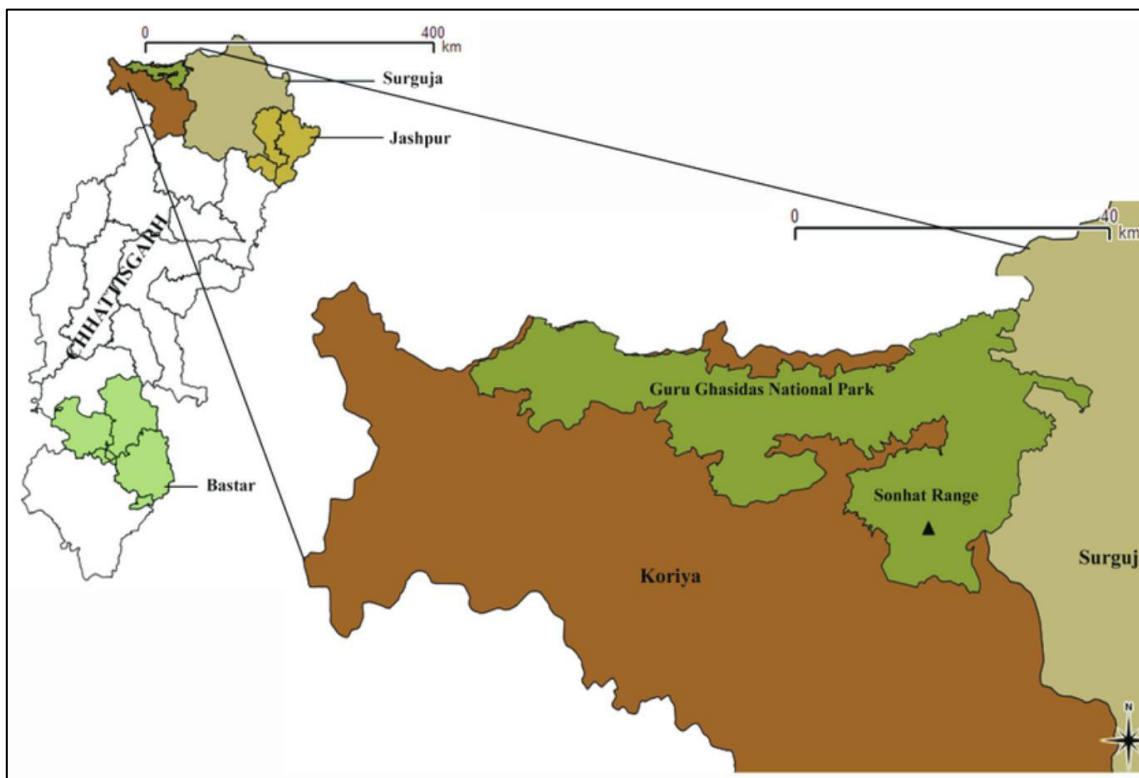
Despite its name, the primary hosts of the virus are rodents, not monkeys. In 2022, mpox was declared a public health emergency due to outbreaks occurring outside the regions where it is typically found.

Chhattisgarh new Tiger reserve

Chhattisgarh has recently approved the creation of the Guru Ghasidas-Tamor Pingla Tiger Reserve to address a sharp decline in the state's tiger population. The new reserve combines an existing national park and a wildlife sanctuary, to improve conservation efforts despite some legal and environmental challenges.

Background of the Tiger Population Decline

The number of tigers in Chhattisgarh has dropped significantly, from 46 in 2014 to just 17 by 2022, according to a report by the National Tiger Conservation Authority in July 2023. This worrying decrease has alarmed conservationists and led to legal action to speed up the creation of new reserves.



In July 2023, the Chhattisgarh High Court ordered the state government to decide on the proposed tiger reserve within four weeks. This order came after a public interest lawsuit was filed in 2019, criticizing the government's slow response to tiger conservation.

Formation of the New Reserve

Recently, the Chhattisgarh cabinet approved the merger of **Guru Ghasidas National Park and Tamor Pingla Sanctuary**, creating a new reserve that covers 2,829 square kilometers across four districts. This new reserve will be the fourth in Chhattisgarh and the third largest in India.

The establishment of this reserve is expected to boost eco-tourism, creating jobs for local people in roles like guides and resort managers. The National Project Tiger Authority will support the reserve with additional funding for projects that help improve local livelihoods.

Comparison with Other Tiger Reserves

The Guru Ghasidas-Tamor Pingla Tiger Reserve has now become the third largest in India, following the Nagarjunasagar Srisailam and Manas reserves. These two larger reserves have been successful in maintaining stable tiger populations, and Chhattisgarh hopes to achieve similar success by improving its conservation efforts in this new reserve.

Who Was Guru Ghasidas?

Guru Ghasidas was an influential spiritual leader who emerged during the early 19th century. He was closely associated with the Satnampanth sect, a spiritual movement that emphasized the importance of living a truthful and equal life.

Guru GhasiDas (1756-1836)

- **Ghasidas** was born in Girodpuri, District – Balodabazar, on December 18, 1756. **Mahngu Das and Amrotin Mata** have a son named **Guru Ghasidas**.
- Ghasidas preached **Satnam** to the people of **Chhattisgarh in particular**.
- He was a firm believer in **equality** and a critic of the repressive **caste system**. He was a monotheist who opposed **idol worship**.
- **Buddhism** is similar to Guru's teachings and worldview. He was hostile to all Hindu beliefs and cultures, especially the worship of idols (Murtis).
- Ghasidas was exposed to the **ills of the caste system** at a young age, which helped him **grasp social dynamics** in a caste-ridden culture and reject societal unfairness.
- Guru Ghasidas provides a symbol known as "**jaitkhamb**," which is a straight piece of white wood with a white flag on top.



- That represents a man who follows **truth or satnaam** and is always like that symbol which is firm and cannot be broken that signifies pillar of truth (**Satya ka stambh**) and the flag represents peace.
- The Chhattisgarh government renamed a section of the **Sanjay-Dubri Tiger Reserve to Guru Ghasidas National Park** in his honor.
- They also established a Central University known as "**Guru Ghasidas Vishwavidyalaya.**"

PM AWAS YOJANA

On August 9, 2024, the Union Cabinet approved a new version of the Pradhan Mantri Awas Yojana-Urban (PMAY-U) program. This program is designed to help one crore (10 million) urban poor and middle-class families find housing.

PMAY-U, also known as the Prime Minister's Housing Scheme, is a major government effort to provide strong, weather-resistant homes to eligible people living in cities, especially those with low incomes.

Overview of PMAY-U

The Pradhan Mantri Awas Yojana (PMAY) was first launched in 2015 to ensure affordable housing for everyone by 2022.

The scheme provides financial help to both urban and rural poor for building homes. It has two parts: PMAY-U for cities and PMAY-G for villages.

People who qualify can get interest subsidies on home loans of up to ₹2.67 lakh. The scheme aims to build more than 20 million homes and focuses on using sustainable and innovative construction methods.

Current Achievements

So far, PMAY-U has approved 1.18 crore houses, with over 85.5 lakh already built and given to those who need them. The new PMAY-U 2.0 will offer financial support for the next five years, backed by a ₹2.30 lakh crore government subsidy within a total investment of ₹10 lakh crore.

The amount available in the Credit Risk Guarantee Fund has increased from ₹1,000 crore to ₹3,000 crore, allowing for better loan guarantees for affordable housing aimed at economically weaker sections (EWS) and low-income groups (LIG).

Eligibility Criteria

To be eligible for PMAY-U 2.0, families must belong to EWS, LIG, or middle-income groups, and they should not own a solid, permanent house anywhere in the country.

The program covers all towns listed in the 2011 Census, as well as planning areas and regions under urban planning authorities.

What is the Credit Risk Guarantee Fund?

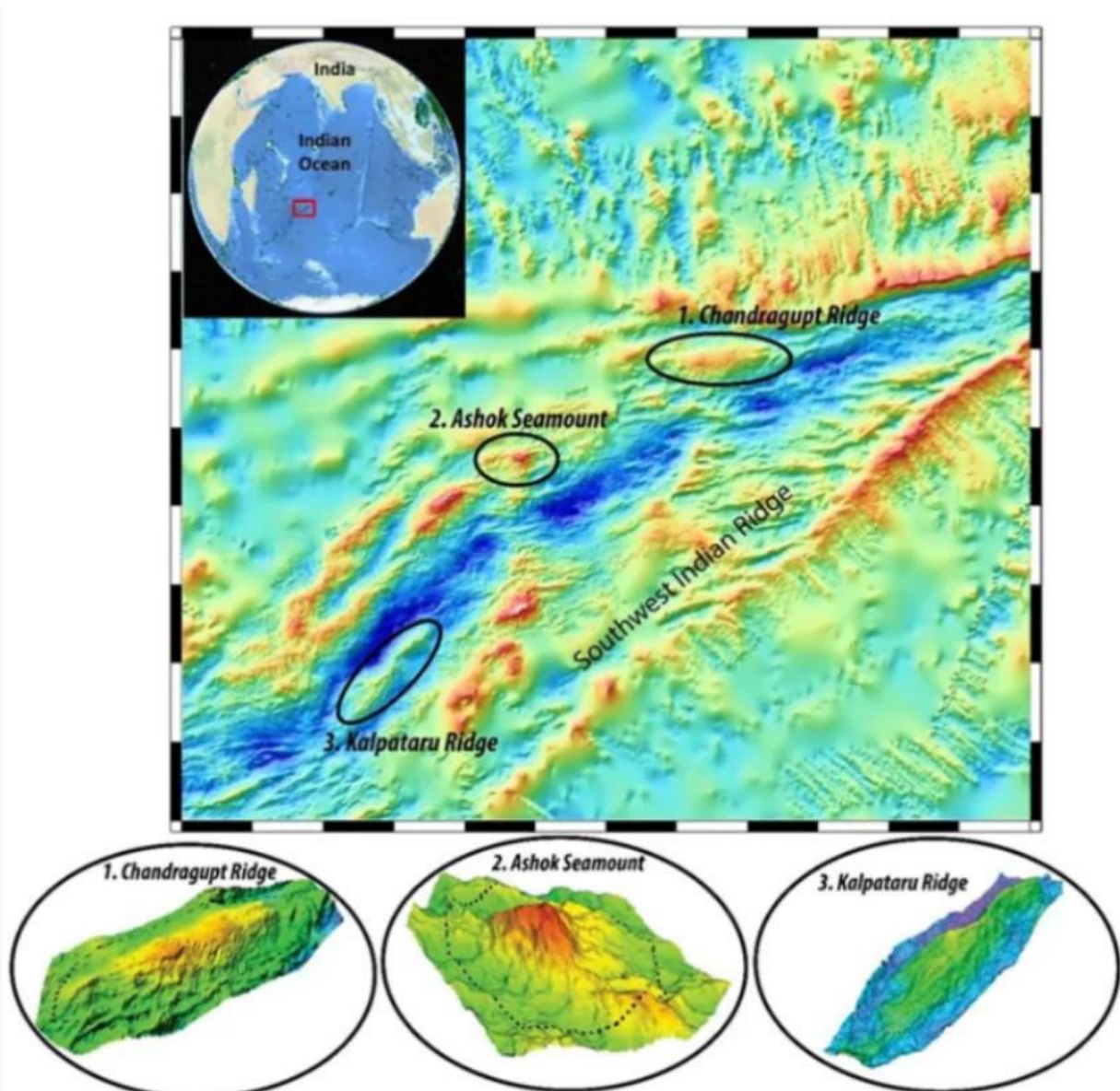
The Credit Risk Guarantee Fund (CRGF) is a tool to help small and medium-sized businesses get loans. It offers guarantees to lenders, which lowers their risk when providing loans.

This fund is meant to improve access to finance for businesses that might otherwise struggle to get loans. It often works with financial institutions and government agencies and can even cover loan defaults due to natural disasters. CRGF initiatives can operate at a national or regional level and aim to boost economic growth and job creation.

Ashoka Seamount, Chandragupt Ridge, and Kalpataru Ridge

Three underwater geographical features in the Indian Ocean have been officially named, following proposals from India.

These are the Ashoka Seamount, Chandragupt Ridge, and Kalpataru Ridge, recently recognized by the International Hydrographic Organization (IHO) and UNESCO's Intergovernmental Oceanographic Commission (IOC).



Details of the Structures

Ashoka Seamount: Discovered in 2012 by a Russian research ship called Akademik Nikolay Strakhov, this underwater mountain covers about 180 square kilometers.

Chandragupt Ridge: Found in 2020 by the Indian research ship MGS Sagar, this ridge is elongated and oval-shaped, stretching across 675 square kilometers.

Kalpataru Ridge: Also discovered in 2012 by the Akademik Nikolay Strakhov, this ridge covers 430 square kilometers and might serve as a habitat and food source for marine life.

Historical Context

In total, India has helped name seven underwater features in the Indian Ocean, mostly after Indian scientists. Some of these previously named features include:

- **Raman Ridge (1992):** Named after the famous physicist Sir CV Raman.
- **Panikkar Seamount (1993):** Honoring oceanographer NK Panikkar.
- **Sagar Kanya Seamount (1991):** Named after the Indian research ship.
- **Wadia Guyot (1993):** Recognizing geologist DN Wadia.

Research Initiatives

These discoveries are part of the Indian Southern Ocean Research Programme, which started in 2004. The National Centre for Polar and Ocean Research (NCPOR) in Goa has been leading these ocean studies, focusing on various topics like the chemistry of the ocean and the diversity of marine life. Naming these underwater features not only helps us learn more about marine ecosystems but also boosts national pride by showcasing India's scientific achievements in global oceanography.

Exercise Parvat Prahar

The Indian Army recently conducted a military exercise called 'Parvat Prahaar' in the Ladakh region, which is located near the India-China border.

This exercise focuses on preparing soldiers for high-altitude warfare, which involves fighting in the difficult and mountainous terrains of Eastern Ladakh. (Depsang plains)

The exercise is a key part of India's military strategy, especially given the ongoing tensions with China.



Overview of 'Parvat Pahaar'

The name 'Parvat Pahaar' translates to "Mountain Strike." The exercise is designed to train soldiers to deal with the unique challenges they might face in mountainous areas.

During the exercise, which lasts for two weeks, soldiers practice real-world combat scenarios, helping them to be better prepared for any potential conflicts.

Parvat Pahaar' is an Indian military operation initiated in 1987 to combat militancy in the Himalayan regions. This operation focused on high-altitude warfare, which requires specialized training for soldiers.

It emphasized intelligence gathering and working with local communities to reduce the recruitment of locals into militant groups.

- Parvat Pahaar translates into **attack on the mountain.**
- The exercise used newly inducted all-terrain vehicles transported by **Chinook heavy lift helicopters and K9-Vajra howitzers.**
- The exercise is done on the Ladakh plateau at an altitude of 14,000 feet near **Patrolling Point-15.**

Exercise Gagan Strike:

- It is conducted on the **western front in Punjab.**
- It is jointly conducted by **Army's Kharga Corps and the Indian Air Force.**
- It is culminated with a **fire power display** of attack helicopters supporting deep operations by Strike Corps.

The Indian Army used both active measures (like direct military action) and passive measures (like building trust with the local population) in this region. This operation was part of a broader effort to counter terrorism in Jammu and Kashmir, to achieve long-term peace.

Indian Institute of Technology (IIT) Madras

India and Israel have launched a joint project to set up a Centre of Water Technology at the Indian Institute of Technology (IIT) Madras.

This initiative is designed to strengthen India's efforts in sustainable water management and improve water resource management practices.

Significance of the Partnership

The Embassy of Israel has called this collaboration a "significant milestone," underscoring the growing partnership between the two countries in addressing water-related challenges. The joint venture reflects a mutual commitment to tackling water scarcity issues in India.

Joint Statement of Intent

A formal agreement, known as the Joint Statement of Intent, was signed by the Embassy of Israel, IIT Madras, and the AMRUT mission (Atal Mission for Rejuvenation and Urban Transformation) from the Ministry of Housing and Urban Affairs. This agreement outlines the framework for establishing the new water technology centre.

Objectives of the Centre

The Centre of Water Technology is expected to be a hub for innovation and research, focusing on developing sustainable solutions for urban water supply and advancing water technology capabilities.

As part of the initiative, a capacity-building course titled '24/7 Water Supply in Urban Areas' was held at IIT Madras from August 5 to August 8. This training is crucial for providing stakeholders with essential skills in managing urban water systems.

Overall, this collaboration aims to offer innovative solutions that can significantly impact water management across India, demonstrating the commitment of both countries to work together on addressing water scarcity and improving water management practices.

Earth's oldest known Sun-Moon calendar

Archaeologists at **Göbekli Tepe in southern Turkey** have discovered what is thought to be the Earth's oldest known Sun-and-Moon calendar, carved into a large stone pillar. This discovery, reported in a study on July 24, offers new insights into the development of early timekeeping methods.



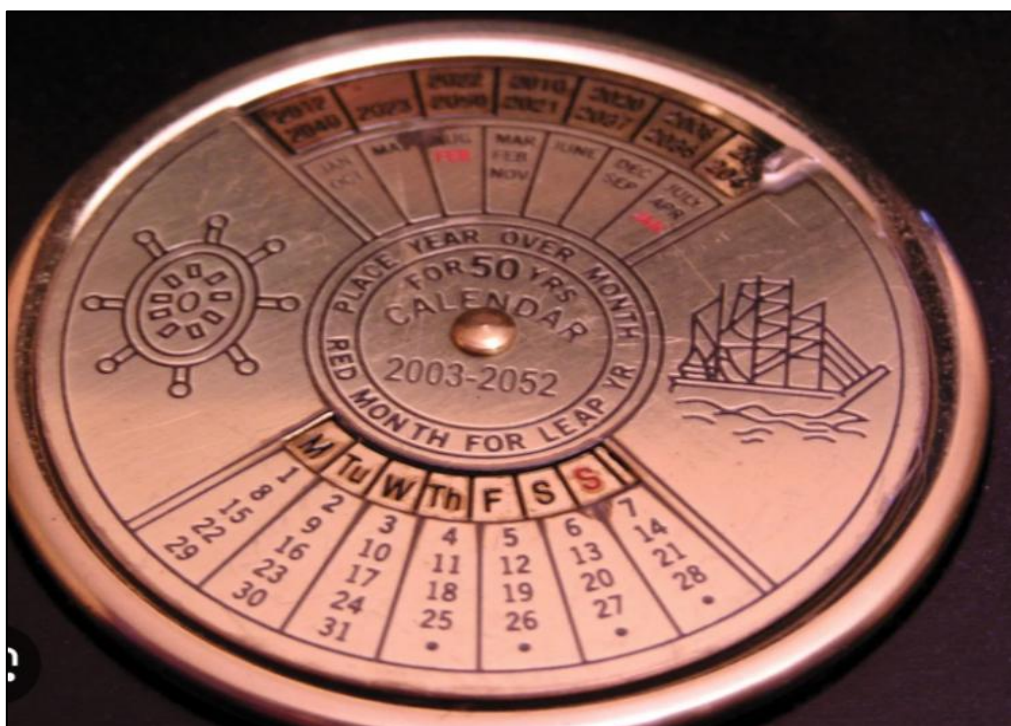
Key Discovery

The pillar, estimated to be nearly 13,000 years old, is adorned with 365 V-shaped symbols, each likely representing a single day. This design reflects an advanced understanding of both solar and lunar cycles.

The calendar includes 12 lunar months plus an additional 11 days, indicating that ancient societies had a sophisticated grasp of time.

Historical Implications

In addition to the calendar, the pillar features carvings of a bird-like figure, which may symbolize the summer solstice constellation. These carvings are believed to date back to around 10,850 B.C., a period marked by a major comet strike that possibly impacted the climate and culture of the region.



This comet event is thought to have triggered an ice age, leading to changes in societal structures and potentially fostering new religious and agricultural practices.

Facts About Göbekli Tepe

- **Göbekli Tepe, in Turkey, is the oldest known temple complex, built around 9600 BCE.**
- It has huge stone pillars set up in circles, which were likely used for ceremonies.
- Göbekli Tepe was built over 6,000 years before Stonehenge.
- It was likely constructed by people who didn't farm, which is surprising because it was thought that farming came before building complex structures.



- What exactly Göbekli Tepe was used for is still debated, with ideas like ancestor worship being possible reasons.
- The site has detailed carvings of animals, showing early forms of symbolic thinking.
- Excavations started in the 1990s, revealing the importance of the site.

New Wetlands in India

Environment, Forest and Climate Change Minister Bhupendra Yadav has said India has added three more Ramsar sites to the network, taking the tally to 85.

Nanjarayan Bird Sanctuary and Kazhuveli Bird Sanctuary in Tamil Nadu and Tawa Reservoir of Madhya Pradesh have been added to the list of India's Ramsar sites.

	Location	Geographical Features	Key Species	Ecosystem
Nanjarayan Bird Sanctuary	Tiruppur District, Tamil Nadu	Located on the banks of Nanjarayan Tank; ~125 hectares	Hérons, egrets, pelicans	Wetland habitats, surrounded by agricultural lands
Kazhuveli Bird Sanctuary	Villupuram District, Tamil Nadu	Brackish water wetland near Bay of Bengal; ~5,000 hectares	Flamingos, pelicans, storks, waterfowl	Mix of freshwater and saltwater habitats, includes mangroves
Tawa Reservoir	Hoshangabad District, Madhya Pradesh	Part of Narmada River Basin, foothills of Satpura Range; ~225 sq. km	Mahseer fish, surrounded by Satpura forests	Aquatic life, forested surroundings

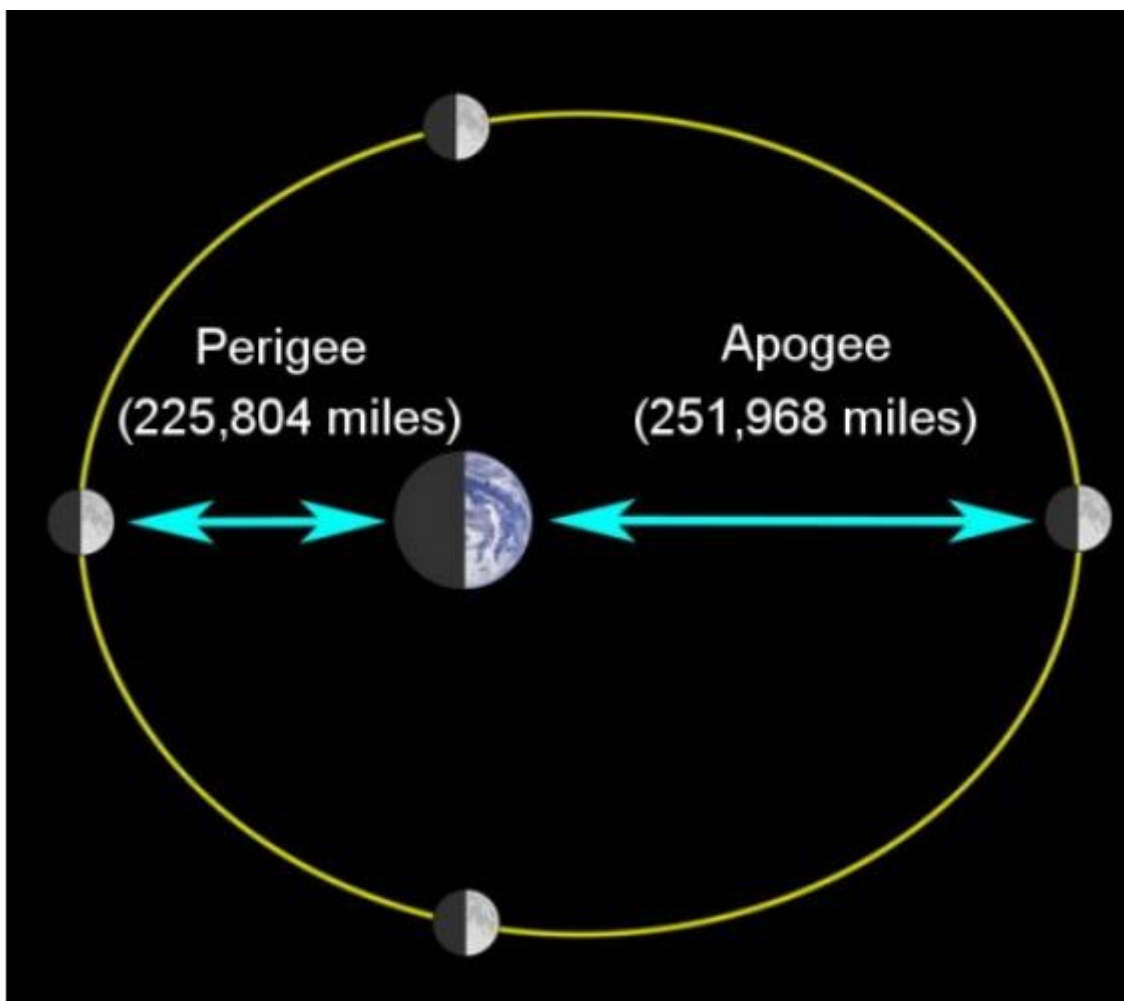
Prime Minister Modi called this a joyous occasion for India, saying that this indicates the priority government accords to sustainable development as well as living in harmony with nature. He gave compliments to the people of Madhya Pradesh and Tamil Nadu. He said his government will continue to be at the forefront of such efforts in the times to come.

Blue Moon

The rare Super blue moon, also known as the 'Sturgeon Moon' appeared on August 19, 2024.

What is a Super Blue Moon?

- A super blue moon combines a **supermoon** and a **blue moon**.
- A supermoon occurs when the **moon aligns closely with Earth during its orbit, making it appear larger and brighter**.
 - This alignment, called **perigee**, **contrasts with apogee**, when the moon is farthest in its elliptical orbit around earth. While the difference is subtle, near the horizon, an **optical illusion can make it seem larger**.
 - The term "supermoon" was coined in 1979 by astrologer Richard Nolle.



What is a Blue Moon?

A blue moon is a term used when there are two full moons in a single month, which happens every 2-3 years. Another definition also refers to the third full moon in a season with four full moons.

How Often Do Super Blue Moons Happen?

Super blue moons are quite rare, occurring roughly every 10 to 20 years. While about 25% of all full moons are super moons, only about 3% are blue moons. This makes the Super Blue Moon a special event.



Why Might the Moon Look Bigger or Smaller?

While a super moon is technically bigger and brighter, not everyone may notice the difference.

How large the moon appears can depend on where you are, how clear the sky is, and something called the "moon illusion," where the moon looks larger when it's near the horizon compared to when it's higher in the sky.

KRISHI-DSS 1

The Indian government introduced the Krishi-Decision Support System (Krishi-DSS), a digital platform designed to manage agricultural data across the country, on August 16 2024.

This tool provides a wide range of information, including satellite images, weather data, and soil health details, all accessible from anywhere at any time.

Platform Overview

Krishi-DSS was created through a collaboration between the Ministry of Agriculture and the Department of Space.

It collects detailed data about farming, from large-scale agricultural areas down to specific soil characteristics, helping farmers and policymakers make better decisions.

Key Features

Drought Monitoring: The platform tracks drought conditions by providing updates on soil moisture, water levels, and crop health, allowing the government to respond quickly

Crop Weather Watch: This feature continuously monitors how weather affects crops, including harvest progress and instances of crop residue burning.

Field-Parcel Segmentation: By identifying specific field units, the system helps understand the unique needs of each area, enabling more targeted farming interventions.

Soil Information System: Krishi-DSS gathers detailed soil data, such as soil type, pH levels, and overall health, which is essential for determining the best crops for specific lands.



Applications and Benefits

The data provided by Krishi-DSS supports informed decision-making for both farmers and the government. It helps develop solutions tailored to farmers' needs, including:

Personalized Advisories: Customized advice based on specific agricultural conditions.

Disaster Alerts: Early warnings for threats like pest outbreaks and extreme weather.

Krishi-DSS is a major step forward in using technology to innovate agriculture in India. By integrating extensive data, it aims to boost productivity, support research, and enhance the overall resilience of the agricultural sector.

Competition Commission of India (CCI)

The \$8.5 billion merger between Reliance and Disney is under the spotlight as India's antitrust body, the Competition Commission of India (CCI), examines its impact on competition in the media sector.

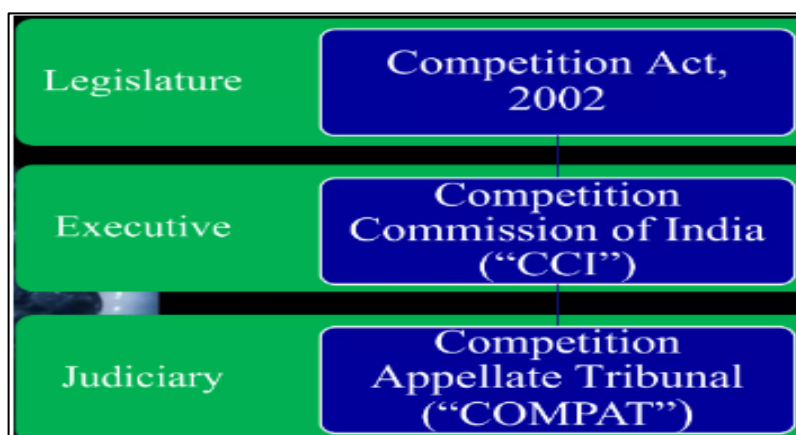
Market Dominance and Competition

This merger will create the largest entertainment company in India, bringing together 120 TV channels and two streaming services.

The CCI is worried that this might reduce competition, as it could limit the number of significant players in the market, potentially making it harder for smaller companies to compete.

Impact on Advertising Rates

One major concern is how this merger could affect advertising costs. With the new company controlling about 40% of the TV and streaming ad market, there is a fear that they could raise ad prices, especially during popular events like cricket matches, where advertising space is highly sought after.



Competition commission of India

- The CCI is a **statutory body** established under the *Competition Act, 2002* by the **Vajpayee** government.
- It aims to **promote and sustain competition**, protect consumer interests, and ensure freedom of trade.
- The commission operates as a **quasi-judicial body**, providing opinions to statutory authorities and adjudicating cases.

Evolution of CCI:

- Established in response to the need for promoting competition and private enterprise, especially after **India's economic liberalization in 1991**.
- **Replaced the Monopolies and Restrictive Trade Practices Act, 1969 (MRTP Act)** based on recommendations from the *Raghavan Committee*.

Key Features of the Competition Act:

- **Passed in 2002** and subsequently amended to align with modern competition laws.
- **Prohibits anti-competitive agreements**, abuse of dominant position, and regulates combinations causing adverse effects on competition.
- Established the **Competition Commission of India** and the Competition Appellate Tribunal.
- The **National Company Law Appellate Tribunal (NCLAT)** replaced the Competition Appellate Tribunal (COMPAT) in 2017.

Composition of CCI:

- CCI comprises a **Chairperson and 6 Members** appointed by the **Central Government**.
- Members must possess **significant expertise** in various domains such as law, economics, finance, and management or qualified to be a **judge of a High Court**.

Key Functions of CCI:

1. **Regulating Mergers and Acquisitions:**

- Ensuring mergers and acquisitions do not harm competition in the market.
- Preventing monopolistic practices and promoting fair competition.

2. **Investigating Anti-Competitive Practices:**

- Probing into cartels, collusive behavior, and abuse of dominant market positions.
- Taking action against entities engaging in anti-competitive practices.

3. **Market Studies and Research:**

- Conducting studies to assess market dynamics and competition levels.
- Identifying trends and issues affecting competition in various sectors.

4. **Handling Complaints:**

- Addressing complaints filed by individuals or businesses regarding anti-competitive behaviour.
- Initiating investigations based on credible complaints received.

5. **Adjudication and Penalty Imposition:**

- Adjudicating cases related to competition law violations.
- Imposing penalties on entities found guilty of breaching competition regulations.

Godda Project

Reuters reported that India amended its power export rules recently, allowing exporters to reroute electricity to Indian grids if partner countries delay payments.

The change is intended to mitigate risks especially in the context of Bangladesh.

Background:

- Adani Power's plant in Godda (Jharkhand) supplies its entire generated power to Bangladesh.

The Godda Project Overview:

- The Godda project, operated by Adani Power's Jharkhand subsidiary, supplies 1,496 MW of power to Bangladesh from an ultra super-critical thermal power plant. This is under a 25-year Power Purchase Agreement (PPA) signed with the Bangladesh Power Development Board (BPDB) in November 2017.
- This project is India's first transnational power project, where all generated power is exported to another country.
- The electricity from Godda is expected to positively impact Bangladesh by replacing expensive liquid fuel power, thereby lowering the average cost of electricity.
- The total installed generation capacity of Bangladesh was 24,911 MW in June 2023. Of this, 2,656 MW was imported from India (more than 10% of overall) with the Godda plant contributing 1,496 MW (about 6% of overall).

Criticisms:

- The project has faced criticism due to the use of imported coal from Australia's Carmichael mine, which raises costs.

- The Institute for Energy Economics and Financial Analysis (IEEFA) argued that the PPA allows Adani Power to pass on high cost of importing and transporting coal into India, plus the cost of transmitting the electricity across the border onto Bangladesh.
- Critics expressed concerns over the quoted coal price of \$400/MT, which they considers excessive compared to other thermal plants, where coal costs less than \$250/MT.
- Additional concerns include high capacity and maintenance charges, which apply even when no electricity is generated.

Bangladesh's Need for Power Imports:

- Bangladesh has expanded electricity access, especially in rural areas, but still faces fuel and gas supply constraints, leading to underutilization of its power plants.
- The country has experienced significant blackouts due to difficulties in sourcing sufficient diesel and gas, exacerbated by global energy price volatility following Russia's actions in Ukraine.

Regulatory Changes and Current Status:

- A recent regulatory change in India allows power exporters to reroute electricity to the domestic market if there are payment delays from partner countries. This provides greater flexibility and reduces dependency on external markets.
- Payment delays are common, as Bangladesh has a vetting process for bills, including evaluating coal prices and other expenditures before approval.

Antitrust law

Recently, a US judge ruled that Google violated antitrust law, spending billions of dollars to create an illegal monopoly and become the world's default search engine.

Background:-

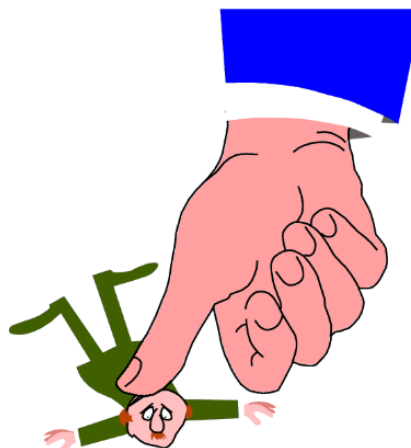
- Judgement noted that Google had paid \$26.3 billion in 2021 alone to ensure that its search engine is the default on smartphones and browsers, and to keep its dominant market share.

The Evolution and Current Challenges of Big Tech

- Apple vs. IBM in the 1980s:
 - 1984: Apple, a rising company, positioned itself against IBM, the industry giant, with an iconic advertisement highlighting the struggle between the upstart and the established player.
- Microsoft and Google in the Late 1990s:
 - 1999: A landmark antitrust ruling against Microsoft curtailed its dominance, paving the way for emerging companies like Google to grow, particularly in web search.
- Apple and Google Today:
 - Apple and Google have transitioned from upstarts to dominant forces in the tech industry, often referred to as "Big Tech."
 - These companies now face scrutiny over their market dominance, similar to the challenges IBM and Microsoft faced in the past.

- **US antitrust laws** - Sherman Antitrust Act of 1890 and Clayton Antitrust Act of 1914 prohibit unfair anti-competitive practices and monopolies.

- The goal of Antitrust law is to *restrict anticompetitive behavior*.
- Antitrust statutes require the *courts* to determine what really constitutes antitrust law - therefore “Antitrust law” refers to antitrust statutes **and** the interpretation of these statutes by the courts.



- S. Antitrust Ruling Against Google:
 - Recent Development: A U.S. federal judge ruled that Google acted illegally to maintain its monopoly in online search, a significant ruling that could reshape the digital business landscape.
 - Implications: This ruling may lead to proposals to break up Google’s business units, impacting the broader tech industry.
- Antitrust Concerns and Reforms in India:
 - Challenges in India: Google faces criticism in India over its app store billing policies and its dominance in online advertising, which are seen as stifling competition.
- Digital Competition Bill, 2024:
 - Proposed Law: India’s draft Digital Competition Bill aims to prevent anti-competitive practices by big tech companies, similar to the EU’s Digital Markets Act (DMA).
 - The law will stop tech giants like Google, Facebook, and Amazon from self-preferencing their own services, or using data gathered from one company to benefit another group company.
 - It also has provisions to set presumptive norms to curb anti-competitive practices before they actually take place, and promises to impose heavy penalties – which could amount to billions of dollars – for violations.
- Innovation and Market Barriers:
 - Government believe that Big Tech’s dominance has confined much of the recent innovation within a few large companies, creating high entry barriers for new competitors.
 - There is a growing push for a global consensus on regulations to protect consumers while encouraging innovation, preventing the concentration of power within a few dominant players.

- India's Regulatory Push:
 - India's Competition Commission (CCI) fined Google for anti-competitive practices in the Android ecosystem.
 - The Digital Competition Bill, if passed, could require major tech companies to make significant changes to their platforms, ensuring a more competitive digital landscape.

Miyawaki Method

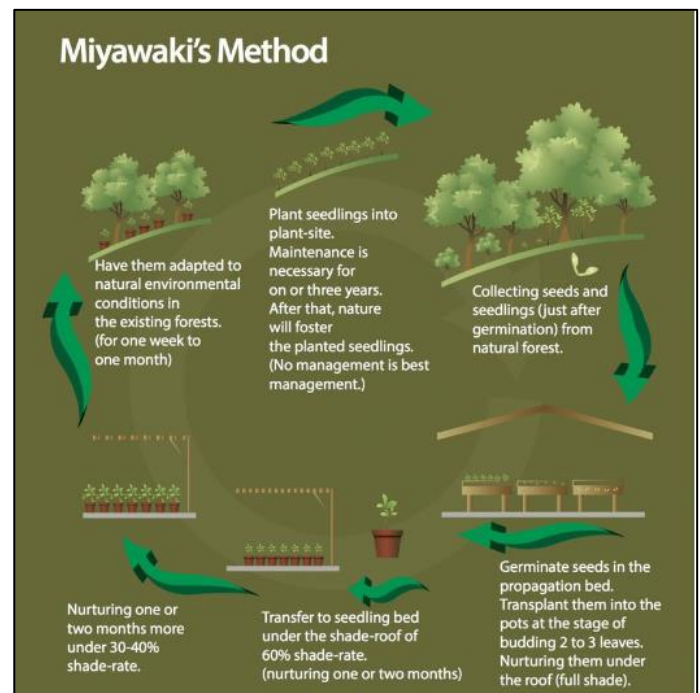
The Chhattisgarh Forest Department recently organised a Van Mahotsav programme in the Manendragarh-Chirmiri-Bharatpur (MCB) district by planting saplings using the Miyawaki method.

Background:

- Around 6,000 saplings were planted at five different sites, including the collectorate premises.

About Miyawaki method

- The Miyawaki method, developed by Japanese botanist Akira Miyawaki, is an innovative afforestation technique that involves planting native species densely to create fast-growing, self-sustaining forests.
- This method mimics natural forest ecosystems and can transform barren or degraded land into lush green spaces within a few years.
- This method is particularly beneficial in urban areas where space is limited but the need for green cover is high.
- It has revolutionised the concept of urban afforestation by turning backyards into mini-forests.



Features of the Miyawaki Method:

- **Dense Planting:** Trees are planted very close to each other, typically 2-4 trees per square meter.
- **Native Species:** Only native species are used, which are well-adapted to the local environment.
- **Rapid Growth:** Trees grow 10 times faster and the forest becomes 30 times denser than conventional methods.
- **Self-Sustaining:** After the initial 2-3 years of care, these forests become self-sustaining.

Benefits of the Miyawaki Method

- Biodiversity: Supports a variety of plant and animal species, enhancing local biodiversity.
- Climate Mitigation: Acts as carbon sinks, helping to sequester carbon dioxide and mitigate climate change.
- Urban Cooling: Reduces urban heat island effects by lowering temperatures in surrounding areas.
- Soil Improvement: Improves soil quality and prevents erosion.
- Air Quality: Significantly improves air quality by filtering pollutants.

Storm 2035

OpenAI recently said that it has banned ChatGPT accounts linked to an Iranian influence operation that used the chatbot to generate content to influence the U.S. presidential election.

Background:

- OpenAI downplayed the impact of operation, noting that the content did not engage much with audiences and was not widely shared.

About Storm-2035 :

- Storm-2035 is a covert Iranian influence operation identified by OpenAI, involving four websites posing as news organizations to target U.S. voters.
- The websites exploited issues like LGBTQ rights and Israel-Hamas conflict and also used AI tools to plagiarise stories and capture web traffic
- Operatives used ChatGPT to generate long-form articles and social media comments, which were then posted on various X and Instagram accounts.
- AI chatbots such as ChatGPT can potentially assist foreign operatives fool internet users by mimicking American users' language patterns, rehashing already existing comments or propaganda, and cutting down the time it takes to create and circulate plagiarised content meant to sway voters.
- Apart from the upcoming U.S. presidential election, the operation covered global issues like Venezuelan politics, Latin rights in the U.S., the situation in Palestine, Scottish independence, and Israel's participation in the Olympic Games. It also exploited popular topics such as fashion and beauty.

Previous Incidents:

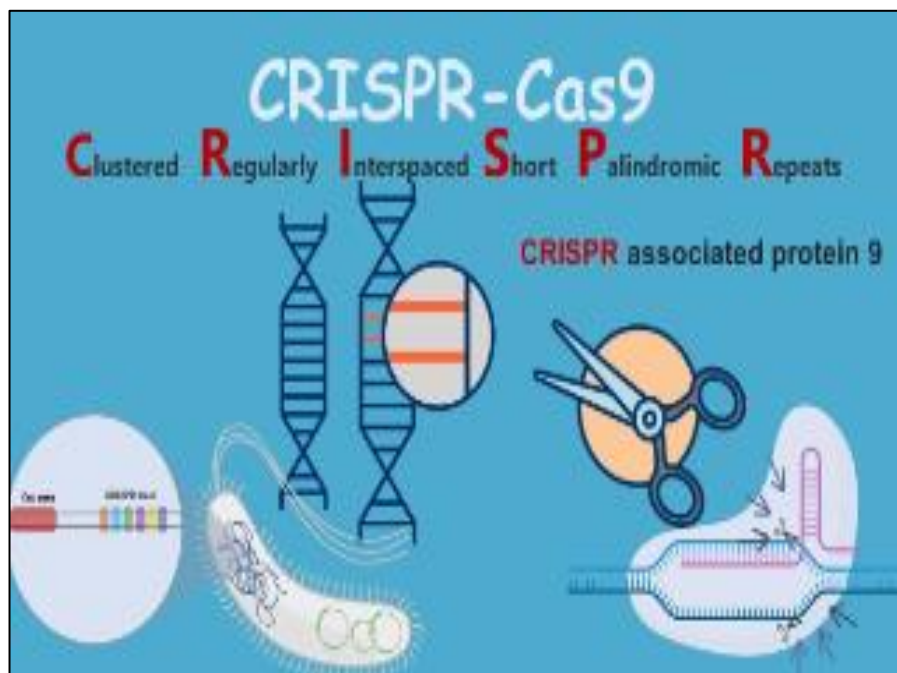
- In May, OpenAI posted a report revealing it had been working to dismantle covert influence operations that used its tools for generating comments on social media, articles in multiple languages, fake names and bios for social media accounts, and translating or proofreading text.
- A Russian outfit that OpenAI called 'Bad Grammar,' used the Telegram to target Ukraine, Moldova, the Baltic States and the U.S.
- Separately, another Russia-based operation titled 'Doppelganger,' an Israeli operation that OpenAI nicknamed 'Zeno Zeno,' a Chinese network called 'Spamouflage,' and an Iranian group called 'International Union of Virtual Media' or IUVM, used ChatGPT to write comments on social media platforms like X and 9GAG, and to post articles and news stories.
- Besides hunting down influence networks, OpenAI also found incidents of state-backed threat actors abusing AI to attack enemies.

CRISPR technology

Nature uses genetic instructions to create living things, called a genome. Recent advances in gene editing, especially with CRISPR technology, aim to improve agriculture and make crops more resilient by precisely changing their genetic makeup.

What is CRISPR?

CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) allows scientists to edit genetic codes. However, traditional CRISPR systems, like Cas9 and Cas12, are too large to be used efficiently in plant genomes.



The large size of the Cas9 and Cas12 proteins makes it difficult to use them effectively in plant cells, limiting their ability to improve crop traits through genome editing.

TnpB

What is TnpB?

A research team introduced a smaller gene-editing protein called ISDra2TnpB, from the bacterium *Deinococcus radiodurans*. TnpB is less than half the size of the major CRISPR proteins, making it a promising tool for editing plant genomes.

How TnpB Works?

TnpB works by attaching to specific DNA sequences and using RNA to guide the removal of unwanted sequences. This allows for precise changes to be made in plant genes, improving desirable traits.

The TnpB system achieved an editing success rate of 33.58% in average plant genomes, making it more effective than traditional CRISPR tools for certain targets, including both types of plants: monocots and dicots.

To make TnpB more effective in plants, researchers adjusted its genetic code to better match that of plants and improved the elements that control its expression.

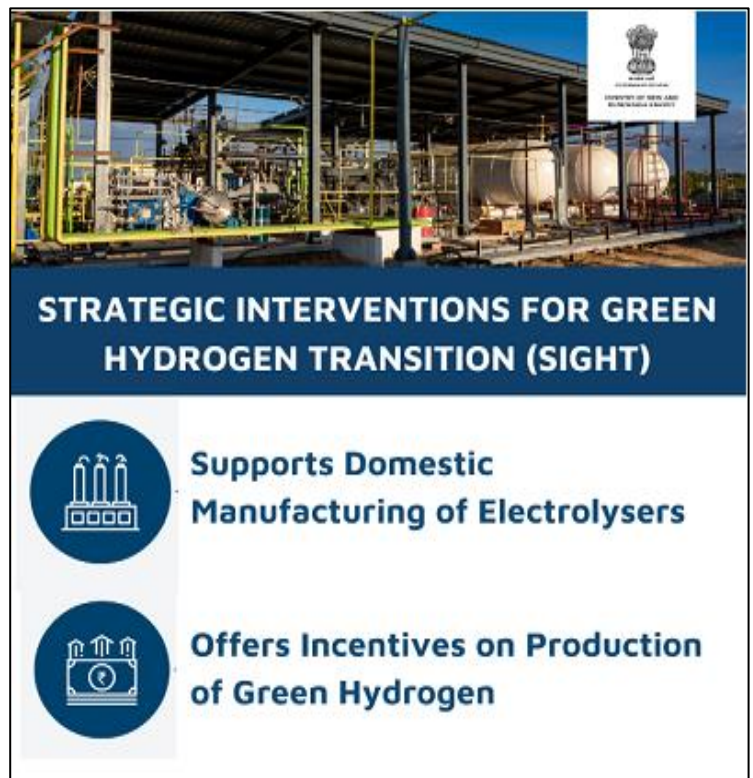
The TnpB system could have a big impact on farming by making crops stronger, more nutritious, and better able to adapt to climate change.

SIGHT scheme

The Indian government is starting a major auction process to encourage the production of green ammonia as part of its Strategic Interventions for Green Hydrogen Transition (SIGHT) Scheme. This effort is aimed at helping India move towards cleaner and more sustainable energy sources by supporting the creation of green hydrogen and its related products.

Ammonia (NH₃), primarily used in fertilizers and various industrial processes, has traditionally been produced through energy-intensive methods with substantial greenhouse gas emissions.

Green ammonia, produced using renewable energy sources, holds the promise of reducing carbon footprints and addressing climate change concerns.



What the SIGHT Scheme Is About

The SIGHT Scheme is a key part of India's National Green Hydrogen Mission and has a budget of Rs 17,490 crore.

It focuses on supporting the manufacturing of electrolysers (devices that split water into hydrogen and oxygen using electricity) and the production of green hydrogen. This scheme is designed to promote the use of renewable energy across India.

Role of SECI

SECI, the Solar Energy Corporation of India, will play a central role in managing the auction process. They will handle the purchase agreements between the companies bidding to produce green ammonia and the buyers who will purchase it, ensuring that the production and distribution processes are well-organized.

India- Japan 2+2 dialogue

The partnership between India and Japan is becoming increasingly important, especially when it comes to ensuring a free, open, and fair Indo-Pacific region. This was clearly seen during the recent "2+2" dialogue, where India's External Affairs Minister S. Jaishankar and Defence Minister Rajnath Singh met with their Japanese counterparts. The meeting took place at a time when there were rising tensions in the region due to China's growing military activities.

How the Partnership has evolved?

Over the past ten years, India and Japan have greatly strengthened their relationship, turning it into what is now called a "special strategic and global partnership." This stronger bond has been driven by shared interests and the need to work together to maintain peace and security in the region.

Regional Security and Cooperation

The partnership also supports India's "Act East" policy, which focuses on improving ties with East and Southeast Asia. Both India and Japan see their alliance as essential for maintaining a stable and secure Indo-Pacific region, which is important for everyone in the area.

Defence Ties Between India and Japan

In terms of defence, India and Japan are working on building their military capabilities in line with their shared democratic values and respect for international rules. Defence Minister Singh highlighted that this partnership will play a key role in helping India achieve its goal of becoming a developed nation by 2047, with a strong focus on improving its own defence industries.

The "2+2" dialogue aims to deepen security and defence cooperation between India and Japan, showing a strong commitment to working together. This type of dialogue, which India shares with only a few countries, highlights how important this partnership is, especially in today's challenging global environment.

The partnership between India and Japan is a critical alliance in the Indo-Pacific region, and it is expected to grow as the geopolitical landscape changes. As both countries continue to strengthen their cooperation, they aim to enhance regional security and uphold democratic values.

Solar Village Scheme

Maharashtra Chief Minister Eknath Shinde has launched the Solar Village Scheme. This program aims to power 100 villages with 100% solar energy. Manyachiwadi in Satara district is the first village to benefit from this scheme, making it the first fully solar-powered village in the state.

What is the Solar Village Scheme?

This is a government initiative to promote renewable energy, specifically solar power, in Maharashtra. The plan is to provide complete solar power to two villages in each district.

Main Goals:

No Electricity Bills: Households will not need to pay for their electricity under the PM Suryagarh Muft Bijali Yojana.

Free Power for Farmers: Farmers will receive free electricity.

Recent Progress:

First Success: Manyachiwadi has become the first village in Maharashtra to be entirely powered by solar energy.

PM Surya Ghar Muft Bijli Yojana:

- It is a government scheme launched on February 15, 2024, that aims to **provide free electricity to households in India**.
- Under the scheme, **households will be provided with a subsidy to install solar panels on their roofs**.
- The subsidy will cover **up to 40% of the cost of the solar panels**.
- The scheme is expected to **benefit 1 crore households** across India.
- It is estimated that the scheme will save the government Rs. 75,000 crore per year in electricity costs.

- The scheme has an outlay of Rs 75,021 crore and is to be **implemented till FY 2026-27**.
- **Eligibility:**
 - The household must be an **Indian citizen**.
 - The household **must own a house with a roof** that is **suitable for installing solar panels**.
 - The household **must have a valid electricity connection**.
 - The household **must not have availed any other subsidy** for solar panels.
- Under the scheme, **DISCOMs are designated as State Implementation Agencies (SIAs)** responsible for facilitating various measures, including net meter availability, timely inspection, and commissioning of installations.
- - **DISCOMs will receive incentives based on their achievement in the installation of additional grid-connected rooftop solar capacity** beyond a baseline level.
 - The total financial outlay for the 'Incentives to DISCOMs' component is Rs 4,950 crore.

Horseshoe Crabs

The Zoological Survey of India (ZSI) and the Odisha Forest Department have started a project to tag horseshoe crabs along the Odisha coast. This is the first time India has taken such an initiative to help protect these crabs, whose numbers are worryingly decreasing.



Why Horseshoe Crabs Are Important

Horseshoe crabs are some of the oldest creatures on Earth and are very important for medicine. Their blood is used to test the safety of medical products, making them essential for our health.

Types of Horseshoe Crabs in India

India has two species of horseshoe crabs: *Tachypleus gigas*, found on the Odisha coast, and *Carcinoscorpius rotundicauda*, found in the Sundarbans mangroves of West Bengal. Both species are protected under India's Wildlife Protection Act of 1972.

Threats to Horseshoe Crabs

Horseshoe crabs face many threats, especially from harmful fishing practices and illegal smuggling, which have caused their numbers to decline. It's important to have strong management strategies to protect them.

- Horseshoe crabs are more related to spiders than to crabs.
- They have blue blood because it contains a special substance called hemocyanin that helps carry oxygen.
- Horseshoe crabs have been around for over 450 million years and have survived five mass extinctions.
- They don't have jaws; they use special appendages to chew their food.
- Their eyes can see ultraviolet light.
- They can regenerate lost limbs.
- Horseshoe crab blood is very important for testing medical equipment for bacteria, so they are crucial for modern medicine.

Gastrodia indica

A newly discovered orchid species, *Gastrodia indica*, was found in Fambonglho Wildlife Sanctuary in Sikkim, India, by botanist Madhusudan Khanal. This orchid is notable because it does not open its flowers, a rare trait among orchids, making it the first known cleistogamous orchid in India.

Discovery Details

Gastrodia indica was found at an altitude of 1,950 to 2,100 meters. This discovery increases the number of *Gastrodia* species in India to ten. Khanal also prepared herbarium specimens to preserve samples of this new find.



Cleistogamy Explained

Cleistogamous plants, like *Gastrodia indica*, produce flowers that stay closed. This is different from chasmogamous flowers, which open up for pollination. Staying closed helps *Gastrodia indica* to self-pollinate, which is useful in its specific environment.

Fambonglho Wildlife Sanctuary is important for protecting a wide range of wildlife and plants, including rare species. It provides a safe haven for endangered animals and is a key habitat for orchids and other sensitive plants. The sanctuary also offers beautiful views of the Khangchendzonga mountain range.

India's first ready-to-drink fig juice, made from Purandar Figs

The Agricultural and Processed Food Products Export Development Authority (APEDA) facilitated the export of India's first ready-to-drink fig juice, made from Purandar Figs, to Poland.

About Purandar Figs

It was awarded the GI Tag in 2016.

The fig is cultivated in many villages of Purandar Taluka in Pune district.

Maharashtra has the highest area 2242 hectares under fig plantation.

It is bell-shaped, larger in size than other varieties, and has a distinctive violet skin colour that differentiates itself from other varieties.

Self-Regulatory Organisations (SROs) framework

The Framework acknowledges that as Regulated Entities grow in number and size, there's a lack of adequate industry standards for self-regulation.

To address this, **instead of increasing the burden on regulators like RBI and SEBI, the framework promotes self-regulation among industry members.**

SROs can **develop, promote, and enforce industry standards and best practices**, enhancing self-regulation in financial markets.

About Self-Regulatory Organisations (SROs) framework

Eligibility:

Set up as a not-for-profit company registered under Section 8 of the Companies Act, 2013.

The applicant must have a minimum net-worth of INR 10 crore.

Responsibilities: Inform the RBI about the developments in the sector on a regular basis; Carry out any work assigned to it by RBI, Submit an Annual Report to the RBI, etc.

About Regulated Entities (REs)

REs refers to **financial institutions and organizations** that operate within the **framework of specific regulations set by regulatory authorities**.

Role of REs: Maintaining Financial Stability; ensure compliance with regulations, conduct due diligence, and implement measures to prevent financial crimes, such as money laundering and fraud.

Examples: Insurance Repositories under Insurance Regulatory and Development Authority (IRDA), Scheduled commercial banks under RBI, etc.

Court of Arbitration for Sports (CAS)

Recently, Court of Arbitration for Sports (CAS) dismissed Indian Wrestler Vinesh Phogat's appeal for a silver medal after she was disqualified for being overweight.

About Court of Arbitration for Sport:

- It was created in 1984 and is placed under the administrative and financial authority of the **International Council of Arbitration for Sport (ICAS)**.
- It is an institution independent of any sports organization which provides for services in order to facilitate the settlement of sports-related disputes through arbitration or mediation by means of procedural rules adapted to the specific needs of the sports world.
- **Functions**
 - It has the task of resolving legal disputes in the field of sport through arbitration.
 - It does this by pronouncing **arbitral awards** that have the same enforceability as judgements of ordinary courts.
 - It can also help parties solve their disputes on an amicable **basis through mediation**, when this procedure is allowed.
 - It sets up **non-permanent tribunals**, which it does for the Olympic Games, the Commonwealth Games or other similar major events.
 - To take into account the circumstances of such events, special procedural rules are established on each occasion.

What kinds of disputes can be submitted to the CAS?

- Any disputes directly or indirectly linked to sport may be submitted to the CAS.
- These may be **disputes of a commercial nature** (e.g. a sponsorship contract), or of a disciplinary nature following a decision by a sports organisation (e.g. a doping case).

Who can refer a case to the CAS?

- Any **individual or legal entity** with capacity to act may have recourse to the services of the CAS.
- These include athletes, clubs, sports federations, organisers of sports events, sponsors or television companies.

Lepidosiren paradoxa

The South American lungfish, *Lepidosiren paradoxa* is a unique species found in the stagnant waters of South America. It has gained attention for being a living fossil and possessing the largest known genome of any animal, approximately 30 times the size of the human genome.



Evolutionary Significance

As the closest living relative of the first land vertebrates, lungfish provide valuable insights into vertebrate evolution. Their genetic structure can help decipher how limbs evolved from fins, marking a critical transition from aquatic to terrestrial life.

Recent genomic research shows that the lungfish's genome is approximately 30 times larger than that of humans, with 18 of its 19 chromosomes larger than the entire human genome. This extraordinary size results largely from repetitive DNA elements, constituting about 90% of its genetic material.

Comparison with Other Species

While the South American lungfish holds the record for the largest animal genome, some plants, such as *Tmesipteris oblancoolata*, surpass it by over 50 times. The previous largest animal genome belonged to the Australian lungfish.

Breathing Adaptations

Lungfish possess both gills and lung-like organs, enabling them to breathe air in oxygen-poor environments. This dual respiratory capability illustrates their adaptation to swampy habitats. The massive expansion of lungfish genomes appears to be linked to a reduced suppression of genomic repetition. Understanding these mechanisms may enhance our comprehension of genome biology and chromosome stability.

Implications for Tetrapod Evolution

Studying lungfish can aid in uncovering the genetic and developmental pathways that facilitated the evolution of limbs and lungs in tetrapods, showcasing the significance of these fish in the broader narrative of vertebrate evolution.

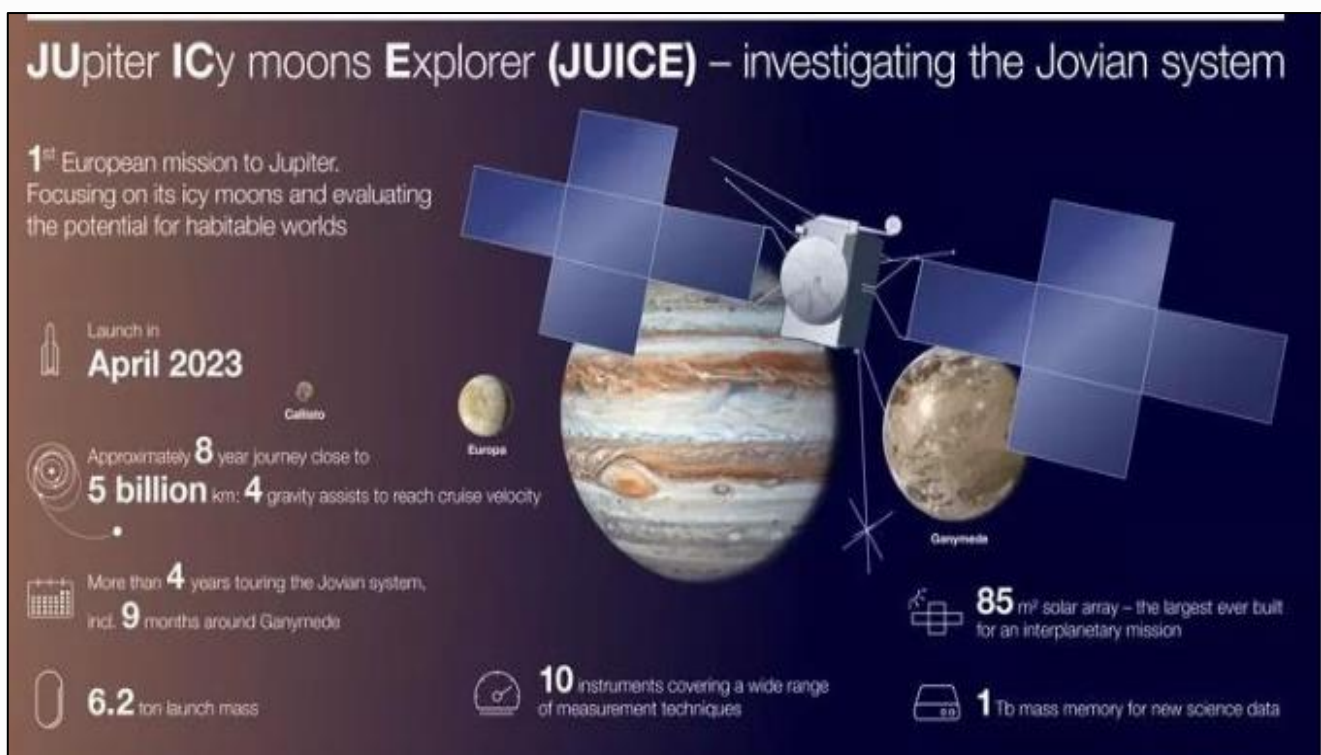
Facts About *Lepidosiren paradoxa*

- *Lepidosiren paradoxa*, or the South American lungfish, is an ancient species capable of breathing air due to a modified swim bladder.
- It can survive prolonged droughts by burrowing in mud and entering a state of aestivation.
- This fish has a unique, elongated body with four limb-like fins, resembling amphibians.
- It is native to the Amazon and Congo basins.
- Notably, *Lepidosiren* possesses both gills and lungs, showcasing an evolutionary link between fish and terrestrial vertebrates.
- Its diet mainly consists of invertebrates and detritus.

Jupiter Icy Moons Explorer

The European Space Agency's Jupiter Icy Moons Explorer (JUICE) probe is set to perform a ground-breaking double slingshot manoeuvre.

- The probe will first use the moon's gravity to redirect its trajectory toward Earth, followed by using Earth's gravity to slow down, setting it on course for its journey to Jupiter.
- This complex manoeuvre, a first in space exploration, is risky due to the potential for errors that could derail the mission.
- If successful, JUICE will reach Jupiter and its moons—Callisto, Europa, and Ganymede—by 2031, using additional gravity assists from Venus and Earth along the way.



The mission aims to:

1. **Map Moons' Surfaces:** Create detailed maps of Jupiter's moons, particularly Ganymede, Callisto, and Europa, and investigate their subsurface water bodies for potential habitability.
2. **Study Jupiter:** Develop a comprehensive understanding of Jupiter's origin, history, and evolution.
3. **Focus on Ganymede:** Examine Ganymede, the largest moon in the Solar System with its own magnetic field.
4. **Assess Habitability:** While the mission cannot detect life, it will assess whether conditions such as water, essential biological elements, energy, and stability exist around Jupiter, which could support life.

Grok-2 and Grok-2 Mini

Elon Musk's xAI has unveiled two new AI chatbot models, Grok-2 and Grok-2 Mini, which include advanced features such as image generation and improved coding and reasoning capabilities.

- The most discussed feature is Grok-2's ability to create photo-realistic images, which has raised concerns about the potential misuse of AI-generated content, especially with the upcoming US presidential election.

Zoopharmacognosy

Zoopharmacognosy is the study of how animals self-medicate using natural substances.

- This behaviour has been observed across various species, including primates, lemurs, elephants, and dogs, who use plants, soil, and insects to treat infections, aid in reproductive processes, and maintain general health.
- The term was coined by ecologist D.H. Janzen, and it highlights how animals instinctively use medicinal plants, a knowledge that has influenced traditional medicine in human civilizations for thousands of years.

For example, a Sumatran orangutan was observed treating a facial wound with the plant *Fibraurea tinctoria*, which contains anti-inflammatory properties.

Sumatran Orangutan

Orangutans ('Man of the forest' in Malay) are one of the extant species of great apes.

The others are the Common Chimpanzee, Gorilla and the Gracile Chimpanzee or Bonobo.

The International Union for Conservation of Nature (IUCN) has classified the Bornean and Sumatran orangutans as critically endangered species.



The flame-coloured orangutans are found on the islands of Sumatra in Indonesia and Borneo, which is divided between Malayasia, Indonesia and Brunei.

There are three types of orangutans taxonomically – the Sumatran, the Bornean and the Tapanuli. Orangutans possess cognitive abilities comparable to those of the gorilla and the chimpanzee, which are the only primates more closely related to humans.

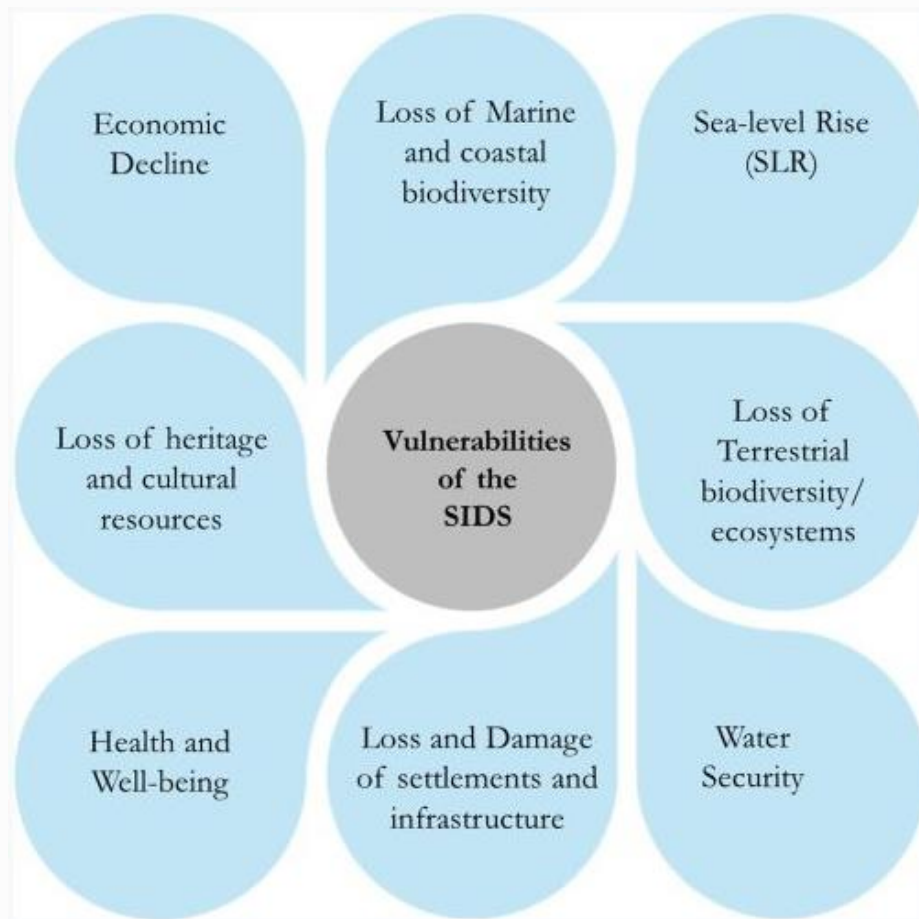
Female orangutans have the longest breeding interval of any mammal, giving birth on average once every eight years.

Which one of the following makes a tool with a stick to scrape insects from a hole in a tree or a log of wood? (UPSC 2023)

- Fishing cat
- Orangutan
- Otter
- Sloth bear

“Multidimensional Vulnerability Index” (MVI)

The UN General Assembly has launched the **“Multidimensional Vulnerability Index” (MVI)**, a new tool to help **small island and developing nations access low-interest financing**. Though use is **voluntary**, the UN urges its adoption



What is Vulnerability?

Vulnerability refers to the susceptibility of individuals or groups to harm due to various factors, such as social, economic, environmental, or health-related circumstances. It highlights the condition of being at risk and unable to adequately protect oneself from adverse situations.

About Multidimensional Vulnerability Index (MVI):

The MVI is a **new global benchmark measuring structural vulnerability and resilience** across various **sustainable development dimensions**. It **complements GDP** and other metrics, **aiming to capture vulnerabilities and resilience** in all developing countries. Initially advocated by **small island states**, it includes factors like import dependency, climate risks, and social resilience.

Aspects	Description
About	The Multidimensional Vulnerability Index (MVI) measures structural vulnerability and lack of resilience across various dimensions of sustainable development at the national level.
Purpose	It addresses the needs of small island developing states (SIDS) and other developing nations that face unique vulnerabilities but don't qualify for low-interest financing.

Key Indicators in the MVI	The MVI includes indicators such as:
	i) Import dependency
	ii) Exposure to extreme weather events and pandemics
	iii) Impacts of regional violence and refugee crises
	iv) Demographic pressure
	v) Water and arable land resources
	vi) Child mortality under five.
Limitations of Traditional Measures	Traditional metrics like Gross National Income (GNI) often miss the vulnerabilities of developing countries. These measures hinder them from accessing necessary development financing.
Applications of the MVI	The MVI will guide:
	i) Programmatic support for SIDS and other developing countries
	ii) Debt service strategies
	iii) Financing sustainable development initiatives tailored to the challenges of SIDS.

Singificance: The MVI is crucial for helping these nations access concessional financing, improve planning, manage debt, and prepare for climate impacts.

Malabar Tree Toad (MTT)

A recent study indicates that the **population of the endemic Malabar Tree Toad (MTT) in India's Western Ghats may decline by 68.7% by 2080 due to climate change, particularly in protected areas (PAs).**

- The Malabar Tree Toad, a unique arboreal species rediscovered in 1980 after being first discovered in 1876, faces **severe threats from climate change, habitat fragmentation, pollution, and disease.**



The study found that climate change is likely to shift Malabar Tree Toad habitats from central to southern Western Ghats, with some wildlife sanctuaries potentially becoming more suitable, while others might lose suitable habitats.

The Malabar Tree Toad lives **mainly in trees, especially in the dense canopy of tropical rainforests.** It is **active at night, feeding on insects and other small creatures,** while during the day, it **hides under leaves or in tree crevices to stay safe from predators and avoid drying out.** The Malabar Tree Toad is listed as **"Endangered"** on the IUCN Red List.

Arogya Maitri Disaster Management Cube

The Arogya Maitri Disaster Management Cube is a cutting-edge, mobile hospital developed by the Indian Air Force (IAF) as part of the Army's broader BHISHM initiative (Bharat Health Initiative for Sahyog, Hita, and Maitri).

- This state-of-the-art cube, is designed to treat up to 200 casualties, making it a rapid response solution for disaster management.
- The cube is equipped with advanced medical equipment and integrates AI and data analytics for effective coordination and real-time monitoring.



It includes 72 lightweight, transportable components that can be easily moved by hand, cycle, or drone, offering unmatched flexibility in disaster-struck areas.

- The system also features the BHISHM software for efficient inventory management, ensuring readiness for repeated use.

The cube's ability to be quickly deployed and its robust, waterproof design make it ideal for emergency situations, potentially saving lives during the critical "golden hour" following mass casualty incidents.

Eri Silk

The North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC) has achieved the Oeko-Tex certification for Eri Silk, the world's only vegan silk.

- This certification, awarded directly from Germany, highlights Eri Silk's ethical and eco-friendly production process, where the moth naturally exits the cocoon, unlike other silk types where the moth is killed.
- The Oeko-Tex certification confirms that Eri Silk is free from harmful substances and produced under environmentally friendly conditions.



- This accomplishment enhances the global recognition of Eri Silk, a Geographical Indication (GI) product of Assam, and paves the way for its expansion into international markets.

India is unique in producing all five major types of commercially important silk, which are derived from different species of silkworms. These types include **Mulberry, Oak Tasar, Tropical Tasar, Muga, and Eri.**

Among these, Mulberry silk is cultivated, while the others, known as **vanya silks**, are wild silks.

Bio-economy

Union Minister Dr Jitendra Singh emphasized that the next Industrial Revolution will be driven by the bio-economy, with India's biotech sector growing rapidly.

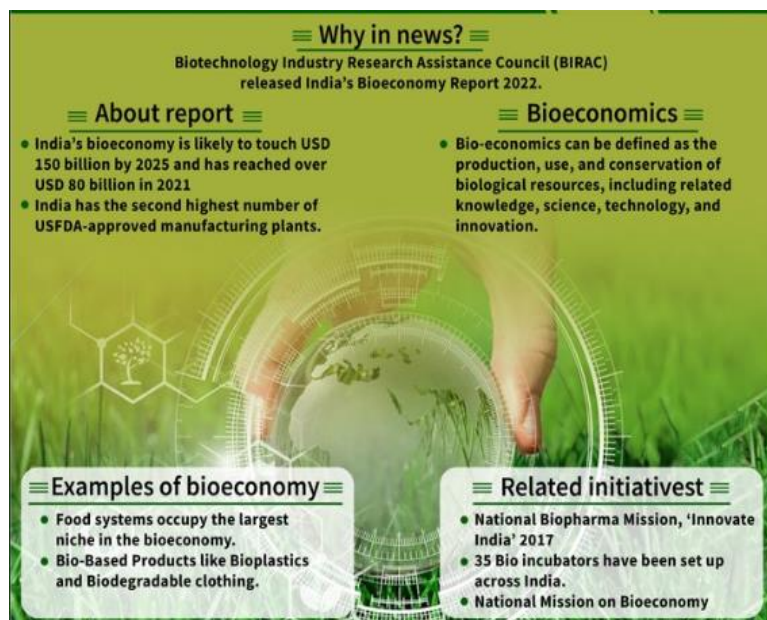
The sector has expanded 13-fold over the last decade, reaching over \$130 billion in 2024, and is projected to hit \$300 billion by 2030.

What is Bio-Economy?

The **bio-economy** refers to an economic system that focuses on the sustainable production, utilization, and transformation of biological resources, including renewable biological materials, products, and processes. India's bio-economy signifies a promising pathway to holistic development.

Status of India's Bio-economy:

1. **Value:** India's bio-economy jumped from \$8 billion in 2014 to \$100 billion (2.6 per cent share of India's GDP in 2023) and the country now targets \$150 billion by 2025.
2. **Market share:** India has a 3-5% market share in the global biotechnology industry and it ranks 12th in the world in biotech and 3rd in Asia-Pacific.
3. **Approved plants:** India has the second highest number of USFDA-approved manufacturing plants outside the US.
4. **Startups:** On average, at least three biotech startups were incorporated every day in 2021 (a total of 1,128 biotech startups set up in 2021) and the industry crossed USD 1 billion in research and development spending.
5. **The Indian Diagnostics and medical devices market** is likely to see a huge jump both in terms of consumption and exports. Covid-19 helped the nation to create the right ecosystem to manufacture, source, and export as well.



Potential contribution of bio-economy:

1. **Growth and Employment:** The bio-economy has the potential to create numerous jobs across sectors, from agriculture and manufacturing to research and development.
 1. Eg. Bt cotton adoption led to a significant increase in cotton production, benefiting farmers' income.
2. **Exports and Trade:** Bio-based products, pharmaceuticals, and agricultural exports contribute significantly to India's export earnings.
 1. India is the world's largest provider of generic drugs, accounting for **20% of global generic drug exports.**
3. **Innovation and Research:** Investments in biotechnology research and innovation bolster economic competitiveness and contribute to cutting-edge technologies.
 1. E.g. New segments like smart proteins, protein and peptide-based materials, contact lenses, etc.
4. **BioServices sector:** which includes Contract Research Organizations (CROs) and Contract Development and Manufacturing Organizations (CDMOs), along with the **BioIT segment**, is projected to experience substantial growth from **\$4 billion to \$26.6 billion.**

Eg :This remarkable expansion represents a **near quadrupling of the segment's value.**
5. **BioPharma segment:** India can leapfrog in the Vaccines and Therapeutics segment. These two together account for nearly **50 per cent share of the BioPharma** and the Diagnostics labs, medical devices, and services segment estimated to reach **\$60 billion.**
6. **Awaiting potential:** India has a huge wealth of bio-resources, an unsaturated resource waiting to be harnessed and an advantage in biotechnology especially due to the vast biodiversity and the unique **bio-resources in the Himalayas.**

Positive impacts of bio-economy on citizen lives in India:

- **Healthcare Access:** The bio-economy improves healthcare accessibility through affordable generic drugs, diagnostic tools, and medical technologies. E.g. PM Janausadhi Kendra.
- **Nutritional Security:** Innovations in agriculture and food processing enhance nutritional quality and address food security challenges. **E.g. fortification of rice with vitamin A.**
- **Environmental Sustainability:** The adoption of bio-based products, sustainable agriculture practices, and biofuels reduces environmental degradation and fosters a greener economy. E.g. **20 % Ethanol blending in petrol.**
- **Inclusive Growth:** The bio-economy's multi-sectoral nature can support the growth of micro, small, and medium-sized enterprises, promoting inclusive economic development.

Challenges in the Bio-Economy Sector:

- **Regulatory Issues:** Uncertain regulations and lack of uniform standards.
- **Research Limitations:** Limited advanced research centres and inadequate R&D funding.

- **Ethical Concerns:** Ethical issues like genetic modification under Responsible Research and Innovation principles.

Initiatives and Policies to Boost Bio-Economy:

- **BIRAC's Role:** The Biotechnology Industry Research Assistance Council (BIRAC) fosters biotech innovation in India through schemes like the Biotechnology Ignition Grant Scheme and BioNEST incubators.
- **Policy Measures:**
 - **National Biofuel Policy (2018):** Promotes sustainable biofuel production.
 - **National Biopharma Mission:** Aims to accelerate biopharma growth.
 - **National Mission on Bioeconomy:** Focuses on enhancing the bio-economy sector.
- **BioRRAP:** The Biological Research Regulatory Approval Portal (BioRRAP) serves as a single gateway for regulatory approvals in biological research, streamlining processes and boosting innovation.

Conclusion

Biotechnology is hailed as India's sunshine sector, with a ripple effect on the economy. It has ushered the country into a new growth phase, globally recognizing its immense potential to impact and revolutionize lives.

Arctic permafrost

Scientists have found new evidence that melting Arctic permafrost could unleash large sums of mercury, a dangerous toxin.

Background:

- Though the mercury released from melting permafrost doesn't pose a toxic threat today, its impact will grow over time. It gradually accumulates in the food chain with fish and wild animals consumed by humans posing a future threat as it builds.



About permafrost

- Permafrost is a layer of soil or sediment that remains frozen for at least two consecutive years. It is primarily found in polar regions and high mountain areas where temperatures are consistently low.
- Permafrost covers approximately 22.8 million square kilometers (about 8.8 million square miles) in the Northern Hemisphere. It is found in regions like Alaska, Canada, Greenland, Russia, and parts of China and Eastern Europe.

Composition and Structure

- **Components:** Permafrost consists of soil, gravel, and sand, bound together by ice. It also contains organic material like dead plants and animals.
- **Thickness:** The thickness of permafrost can vary significantly, ranging from a few meters to over 1,500 meters (about 4,900 feet) in some areas.

Why is there mercury in the Arctic?

- Earth's natural atmospheric circulation tends to transport pollutants to higher latitude. This results in mercury accumulating in the Arctic where it is absorbed by plants which then die and become part of the soil.
- This freezes in the permafrost – where the ground stays frozen all year round – and over thousands of years, mercury concentrations have built up in the soil. In this form, it isn't particularly dangerous.
- The toxic metal is released when the soil thaws – something climate change is making increasingly common. The Arctic is warming four times faster than the global average.
- Previously sequestered by permafrost in the sediment for millennia, this mercury is now being eroded and released into the environment.
- It could pose a major environmental and health threat to the 5 million people living in the Arctic and more than 3 million people who live in areas where the permafrost is expected to disappear completely by 2050.

POSH Act- Protection of Women from Sexual Harassment Act (POSH Act)

Sexual Harassment at the workplace is one of the major issues faced by women in the modern world. Protection of Women from Sexual Harassment Act (POSH Act) was enacted to effectively counter the sexual harassment cases in India. While there has been a rise in the cases registered under this act, SC has also raised concerns regarding some serious lapses and uncertainties surrounding the Act.

About the Act- The POSH Act is a legislation enacted by the Government of India in 2013 to address the issue of sexual harassment faced by women in the workplace. The Act aims to create a safe and conducive work environment for women and provide protection against sexual harassment.

Background of Enaction- The Supreme Court in the landmark judgment in the Vishakha and others v State of Rajasthan 1997 case gave the 'Vishakha guidelines' for prevention of sexual harassment at workplace.

India has also signed the CEDAW (Convention on the Elimination of all Forms of Discrimination against Women) 1980. India has also ratified the convention later.

The POSH Act was enacted to give a statutory and a legal backing to these guidelines and Conventions.

Important Provisions of the POSH Act

1. Definition of Sexual Harassment- The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act) defines sexual harassment as one or more of the following unwelcome acts or behavior.

Such as

- (i) physical contact and advances; or
- (ii) a demand or request for sexual favours; or
- (iii) making sexually colored remarks; or
- (iv) showing pornography; or
- (v) any other unwelcome physical, verbal or non-verbal conduct of sexual nature;

2. Prevention and Prohibition- The Act places a legal obligation on employers to prevent and prohibit sexual harassment in the workplace.

3. Internal Complaints Committee (ICC)- The employers are required to constitute an Internal Complaints Committee (ICC) at each workplace with 10 or more employees to receive and address complaints of sexual harassment. The Complaints Committees have the powers of civil courts for gathering evidence.

4. Duties of Employers- According to the Act, the employers must undertake awareness programs, provide a safe working environment, and display information about the POSH Act at the workplace.

5. Complaint Mechanism- The POSH Act lays down a procedure for filing complaints, conducting inquiries, and providing a fair opportunity to the parties involved.

6. Penalties- Non-compliance with the Act's provisions can result in penalties, including fines and cancellation of business licenses.

What is the Significance of the Prevention of Sexual Harassment at Workplace Act in India?

1. Ensures Emotional Well-Being of women- Sexual harassment can endanger the victim's emotional and mental health. It can lead to the loss of self-esteem, and it may even compromise personal relationships. Hence, the Act aims to ensure the emotional well-being of women in India.

2. Improved Physical Health- Weak emotional health often leads to physical health issues, such as loss of appetite, headaches, weight fluctuations, and sleep disturbances. Hence, the Act aims at improving the physical health of women in India.

3. Ensures protection of women against Financial hardships- Sexual harassment frequently leads to financial hardship and challenges due to loss of job references and hostile work environment. **For ex-** According to a study led by the ILO, lewd behaviour and threatening at workplaces were the most well-known reasons due to which women left the workforce in Uttar Pradesh.

4. Protection against economic losses- Low productivity, low employee turnover, low morale, and high legal costs arising from sexual harassment costs millions of Dollars. The economy also suffers due to premature retirement and higher insurance costs (paid if women left the job).

What are the challenges with the POSH Act cases in India?

The Supreme Court of India has recently raised several serious lapses and uncertainties in the implementation of the POSH Act. These are mentioned as followed-

1. Non-compliance of Companies and organisations- There are many private companies and organisations which have not constituted an Internal Complaints Committee (ICC) to look into the complaints of sexual harassment at the workplace. **For ex-** Only 16 out of 30 national sports federations had constituted Internal Complaints Committees (ICCs) as mandated.

2. Improper constitution of ICCs- The majority of the ICCs either have an inadequate number of members or lack mandatory external member. Most of the committees lack people who have knowledge about legal technicalities involved in conducting the inquiry, cross-examinations, and its importance.

3. Lack of Gender Neutrality- The law does not take into account sexual harassment faced by men, transgender, and transsexual individuals.

4. Exclusion of certain categories of women- The Act does not cover women working as agricultural workers and in the armed forces. These are largely male-dominated sectors.

5. Fear of Victimization- Victimization in sexual harassment often occurs, when a woman lodges a complaint against a superior. The POSH Act is silent on victimisation and has neither any preventive provisions nor any remedies. **For ex-** A survey revealed that nearly 70% of women did not complain due to fear, embarrassment, lack of confidence in complaint mechanism etc.

Justice JS Verma committee has recommended several changes to the POSH Act. The important recommendations are as follows-

- 1. Wider definition of rape-** The committee has recommended to view rape and sexual assault as not merely a crime but also as an expression of power. So, any non-consensual penetration of a sexual nature has to be included in the definition of rape.
- 2. Replacement of ICC with tribunal-** The committee has recommended the establishment of a tribunal, instead of an ICC. Because dealing with such complaints internally could discourage women from complaining.
- 3. Inclusion of excluded women-** POSH Act should be amended to include women in armed forces, agriculture to get their grievances redressed. The Act should focus on gender-neutral.
- 4. Punishment of companies for non-compliance-** The government must form a committee to identify the companies not formed the ICC, companies victimizing the women. These companies must be financially penalized or name and shamed to make them compliant to the provisions of the Act.
- 5. Creation of Gender equity company index-** The government should aim to create a Gender equity company index like LGBT+ workplace equality index. This will create a healthy gender-sensitive competition among companies to hire more women, and provide them with enough respect.
- 6. Raising awareness-** Government needs to raise the awareness about gender-sensitive child-rearing practice. The government can also introduce a gender-equity syllabus at school level. Further, the Act must be enforced diligently to ensure the dignity and respect that women deserve at the workplace.

One Stop Centre Scheme	It is a centrally sponsored scheme for addressing the problem of violence against women . It was launched in April 2015.
UJJAWALA	It is a comprehensive scheme for Prevention of trafficking and Rescue, Rehabilitation and Re-integration of Victims of Trafficking and Commercial Sexual Exploitation .
SWADHAR Greh	The scheme through the provisions of shelter, food, clothing, counseling, training, clinical and legal aid , aims to rehabilitate women in difficult circumstances.
Nari Shakti Puruskar	The Ministry of Women and Child Development announces these national level awards for individuals/ groups/ Non-governmental Organisations (NGOs)/ institutions for encouraging women to participate in decision making roles .

Unified Pension Scheme (UPS)

The Indian government recently introduced the Unified Pension Scheme (UPS), which marks a significant shift from the National Pension System (NPS) that was implemented in 2004.

Background: -

- This new scheme aims to balance fiscal responsibility with the need to provide adequate retirement benefits to government employees.

Unified Pension Scheme (UPS)

- The Unified Pension Scheme (UPS) is a new pension policy introduced by the Ministry of Finance.
- It aims to provide enhanced financial security for central government employees.
- The UPS is set to come into effect from April 1, 2025.
- This scheme aims to provide a more secure and predictable retirement for government employees, ensuring they have financial stability in their post-retirement years.

Key Features:

- **Assured Pension:** Employees with at least 25 years of service will receive a pension equivalent to 50% of their average basic pay over the last 12 months before retirement.
- **Family Pension:** In the event of an employee's death, their family will receive a pension worth 60% of the employee's last drawn pension.
- **Minimum Pension:** There is a guaranteed minimum pension of ₹10,000 per month.
- **Lump-Sum Payment:** Employees will receive a lump-sum payment at retirement, calculated as 1/10th of their last drawn monthly pay (including DA) for every six months of service completed.
- **Inflation Protection:** Both the assured pension and the family pension will be indexed to inflation, ensuring they rise with the cost of living.

Eligibility:

- **Minimum Service:** Employees must have completed at least 10 years of service to be eligible for the pension.
- **Full Benefits:** To receive the full benefits, employees need to have at least 25 years of service.

Benefits:

- **Financial Security:** Provides a predictable and stable income post-retirement.
- **Family Support:** Ensures financial support for the family in case of the employee's demise.
- **Inflation Adjustment:** Keeps pace with the cost of living, protecting the purchasing power of retirees.

Difference from National Pension System (NPS):

- **Pension Amount:** UPS guarantees a fixed pension amount (50% of the average basic pay for 25 years of service), whereas NPS is market-linked and does not guarantee a fixed pension.
- **Contributions:** In NPS, contributions are invested in market-linked securities like equities, making the final pension amount dependent on market performance. UPS offers a defined benefit similar to the Old Pension Scheme (OPS) but with contributions from both employees and the government.
- **Choice:** Employees can choose between continuing with NPS or switching to UPS, but the choice, once made, is final.

“Vigyan Dhara”

The Union Cabinet recently approved the continuation of three umbrella schemes merged into a unified central sector scheme called “Vigyan Dhara” under the Department of Science and Technology (DST).

Background: -

- The merger of schemes is expected to improve fund utilization and synchronization among sub-schemes.

About Vigyan Dhara Scheme

- The Vigyan Dhara Scheme is a unified central sector scheme under the Department of Science and Technology (DST).
- This scheme aims to bolster India’s scientific and technological capabilities with a significant outlay of ₹10,579.84 crore for the period from 2021 to 2026.
- It merges three umbrella schemes to streamline and enhance the efficiency of science and technology initiatives in India.

VIGYAN DHARA SCHEME

The Union Cabinet, chaired by the Prime Minister Shri Narendra Modi, approved continuation of the three umbrella schemes, merged into a unified central sector scheme namely ‘Vigyan Dhara’ of Department of Science and Technology (DST).

The scheme has three broad components:

1. Science and Technology (S&T) Institutional and Human Capacity Building,
2. Research and Development and
3. Innovation, Technology Development and Deployment.



Sub schemes:

- **Science and Technology (S&T) Institutional and Human Capacity Building:** Focuses on strengthening institutions and building a critical human resource pool in the field of science and technology.
- **Research and Development (R&D):** Promotes research activities across various scientific domains, including basic research and translational research in areas like sustainable energy and water.
- Research and development component of the scheme will be aligned with the Anusandhan National Research Foundation (ANRF).
- ANRF has been established under ANRF Act, 2023 to seed, grow and promote R&D and foster a culture of research and innovation throughout India’s universities, colleges, research institutions, and R&D laboratories.

- **Innovation, Technology Development, and Deployment:** Encourages innovation and the practical application of new technologies, supporting industries and startups through targeted interventions.

Benefits:

- **Efficiency:** Improved fund utilization and synchronization among sub-schemes.
- **Capacity Building:** Enhanced institutional and human capacities in S&T.
- **Research Enhancement:** Promotion of research and innovation to strengthen the S&T ecosystem.
- **Gender Parity:** Focused interventions to increase women's participation in S&T.
- **Collaboration:** Increased collaboration between academia, government, and industries.
- **Vision 2047:** Aligns with the vision of Viksit Bharat 2047, aiming for a developed India by 2047.

RHUMI-1

India has successfully launched its first reusable hybrid rocket, RHUMI-1.

Background: The launch took place from Thiruvidadandai in Chennai.

About RHUMI-1

- RHUMI-1 is India's first reusable hybrid rocket, launched by a Tamil Nadu-based startup called Space Zone India.
- The mission is led by Anand Megalingam from Space Zone India under the guidance of Dr. Mylswamy Annadurai, former Director of ISRO Satellite Centre (ISAC).
- It is capable of reaching altitudes between 1km and 500km.



Mission Objectives:

- The rocket carried three CUBE satellites, designed to monitor atmospheric conditions such as cosmic radiation intensity, UV radiation, and air quality.

- Additionally, it deployed 50 Pico satellites to investigate various atmospheric factors, including accelerometer readings, altitude, and ozone levels, contributing to our understanding of environmental dynamics.

Hybrid Propulsion System:

- RHUMI-1 stands out for its innovative hybrid propulsion system, which combines the advantages of both liquid and solid fuels.
- This technology promises improved efficiency and reduced operational costs, making space exploration more accessible.

Ecofriendly feature:

- RHUMI-1 is equipped with a CO₂-triggered parachute system. This is an eco-friendly and cost-effective method that ensures the safe recovery of rocket components post-launch.
- Beyond space exploration, the applications of RHUMI-1 extend to sectors like agriculture, disaster management, and environmental monitoring.

Environmental Impact:

- RHUMI-1's reusability reduces the financial burden of space exploration and minimizes its environmental impact.

Acute Encephalitis Syndrome (AES)

Recently, there has been a sharp increase in Acute Encephalitis Syndrome (AES) cases in Gujarat.

Background: Ahmedabad city alone has reported 12 AES cases, with half of them resulting in fatalities. Health officials are closely monitoring the situation, and measures are being taken to manage and investigate the outbreak.

About Acute Encephalitis Syndrome (AES)

- Acute Encephalitis Syndrome (AES) is a severe form of encephalitis caused primarily by mosquito-borne viruses, characterized by high fever and brain inflammation.
- Acute Encephalitis Syndrome is an umbrella term used for infections that cause inflammation, irritation, or swelling in the brain.
- It is characterized by an acute onset of fever and clinical neurological manifestations such as mental confusion, disorientation, delirium, convulsions, or coma.
- AES can be caused by Japanese encephalitis virus (JEV) or other infectious and non-infectious factors.
- Encephalitis can sometimes lead to death.
- Getting diagnosed and treated right away is important because it's hard to predict how encephalitis may affect each person.

Causes of encephalitis:

- When inflammation is caused by an infection in the brain, it is known as infectious encephalitis. And when it is caused by the immune system attacking the brain, it is known as autoimmune encephalitis. Sometimes there is no known cause.
- World Health Organisation (WHO) introduced the term AES to denote a group of similar diseases.

How can AES be prevented?

- Vaccination
- Proper sanitation facilities
- Increasing access to safe drinking water.
- Improve the nutritional status of children who are at risk of AES
- Preventive measures should be directed at reducing the overall mosquito density. Personal protection against mosquito bites by using mosquito nets that are treated with insecticide is

recommended. Other methods like wearing fully covered, loose-fitting clothes or use of repellents, etc. need to be adopted to avoid mosquito bites.

- The transmission risk increases when animal sheds (especially piggeries) and human dwellings are situated very close to each other.

Vaccination:

- As per the guidelines of the Government of India, two doses of the JE/AES vaccine have been approved to be given. One with the measles vaccine at 9 months of age and the second with the DPT booster at 16-24 months of age.

Atacama salt flat

The Atacama salt flat in Chile is experiencing subsidence due to lithium mining.

Background: According to a study by the University of Chile, the salt flat is sinking at a rate of 1 to 2 centimeters (0.4 to 0.8 inches) annually because of lithium brine extraction.

About Lithium

- Lithium (symbol: Li) is a chemical element with atomic number 3.
- It belongs to the alkali metal group and is highly reactive.
- Lithium Triangle held approximately 54% of the world's lithium reserves.
- The Lithium Triangle spans the southwestern corner of South America. It encompasses parts of Argentina, Bolivia, and Chile.
- Lithium is found in various forms, including minerals, brines, and ores.
- The Atacama salt flat in Chile is a significant source of lithium due to its high lithium content in brine. Brine extraction involves pumping salt-rich water to the surface, where it evaporates in ponds, leaving behind concentrated lithium salts.



Environmental impact of lithium mining in the Atacama region:

Water Scarcity:

- Brine Evaporation Method: In the Atacama Desert, miners extract lithium from brines found beneath salt flats. This method is highly water-intensive.
- Massive Ponds: Miners pump salty lithium-containing water (brine) into massive ponds, where it takes years for the evaporation process to separate the lithium.
- Scarce Water Resources: Unfortunately, this technique drains already scarce water resources, exacerbating the region's water crisis.

Community Hardships:

- Privatization of Minerals and Water: A legacy of the Pinochet era in Chile is the privatization of minerals and water. Companies have ownership rights over these resources.
- Access to Potable Water: As mining operations intensify, communities lose access to potable water. They now rely on water tankers for survival.

Ecological Impacts:

- Native Species: Around 80% of the salt flats' animal species are native. The region is critical for migratory birds. Reduced water levels affect species like flamingos.
- Wetlands Damage: The mining process harms wetlands, affecting ecosystems and wildlife.
- Chemical Contamination: Sulfuric acid and sodium hydroxide used in extraction can contaminate soil and water.

BioE3 Policy

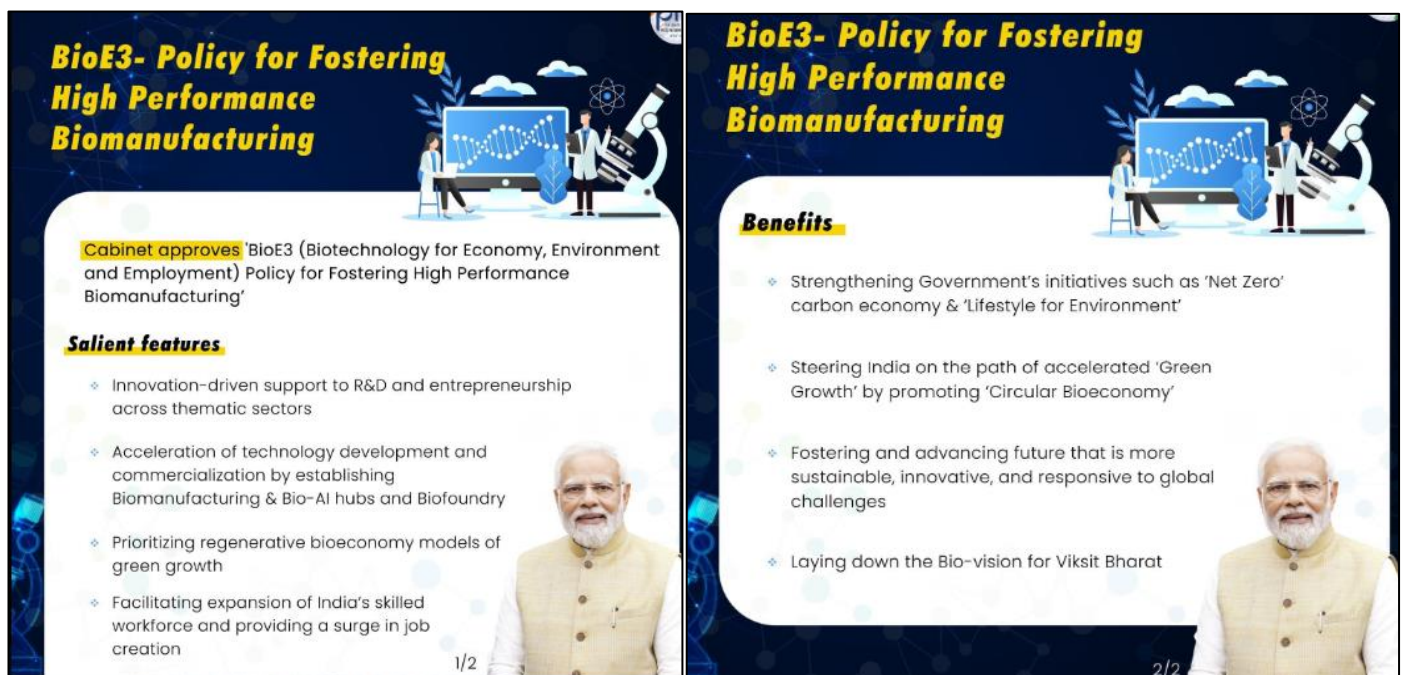
The Union Cabinet has recently approved the BioE3 Policy (Biotechnology for Economy, Environment, and Employment) to boost biotechnology manufacturing in India.

Background: -

- The BioE3 Policy aims to address critical societal challenges and seize opportunities in the biotechnology sector. This initiative aims to revolutionize the biotech sector, similar to the IT boom of the 1990s.

BioE3 Policy (Biotechnology for Economy, Environment, and Employment)

- The BioE3 Policy (Biotechnology for Economy, Environment, and Employment) is a transformative initiative by the Indian government aimed at leveraging biotechnology to drive economic growth, environmental sustainability, and job creation.



BioE3- Policy for Fostering High Performance Biomanufacturing



Cabinet approves 'BioE3 (Biotechnology for Economy, Environment and Employment) Policy for Fostering High Performance Biomanufacturing'

Salient features

- ❖ Innovation-driven support to R&D and entrepreneurship across thematic sectors
- ❖ Acceleration of technology development and commercialization by establishing Biomanufacturing & Bio-AI hubs and Biofoundry
- ❖ Prioritizing regenerative bioeconomy models of green growth
- ❖ Facilitating expansion of India's skilled workforce and providing a surge in job creation

Benefits

- ❖ Strengthening Government's initiatives such as 'Net Zero' carbon economy & 'Lifestyle for Environment'
- ❖ Steering India on the path of accelerated 'Green Growth' by promoting 'Circular Bioeconomy'
- ❖ Fostering and advancing future that is more sustainable, innovative, and responsive to global challenges
- ❖ Laying down the Bio-vision for Viksit Bharat

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Key Features:

- **High-Performance Biomanufacturing:** Focuses on producing products through advanced biotechnological processes, including medicines, materials, and bio-based products for agriculture and industry.
- **Strategic Thematic Sectors:** The policy covers six thematic areas:
 - Bio-based chemicals, biopolymers, and enzymes
 - Smart proteins and functional foods
 - Precision biotherapeutics
 - Climate-resilient agriculture
 - Carbon capture and utilization
 - Marine and space research
- **Innovation and R&D:** Promotes innovation-driven research and development (R&D) and entrepreneurship across these sectors.
- **Capacity Building:** Supports the creation of internships for students and fellowships for graduate and post-graduate research.
- **Sustainable Growth:** Prioritizes regenerative bioeconomy models of green growth, promoting a circular bioeconomy to address climate change and environmental sustainability.

Expected Impacts:

- **Economic Growth:** By fostering innovation in biotechnology, the policy aims to drive economic growth through the development of new products, technologies, and processes that can be commercialized.
- **Job Creation:** Establishing biomanufacturing and bio-AI hubs is expected to create substantial employment opportunities.
- **Environmental Benefits:** The focus on sustainable practices and the circular bioeconomy will help mitigate climate change and promote environmental conservation.
- **Global Competitiveness:** The policy aims to position India as a global leader in biotechnology, enhancing its competitiveness in the international market.
- **Health and Agriculture:** Advancements in precision biotherapeutics and climate-resilient agriculture will improve healthcare outcomes and agricultural productivity.

Conclusion:

- BioE3 Policy will further strengthen Government’s initiatives such as ‘Net Zero’ carbon economy & ‘Lifestyle for Environment’ and will steer India on the path of accelerated ‘Green Growth’ by promoting ‘Circular Bioeconomy’.

Shiveluch volcano

Recently, Russia’s Shiveluch volcano, one of the most active in the country, erupted, sending massive plumes of ash into the sky over the Kamchatka Peninsula in the far east.



- The Shiveluch volcano began sputtering shortly after a powerful 7.0 magnitude earthquake struck off Kamchatka's east coast.

Kamchatka Peninsula

- The Kamchatka Peninsula is located in the Russian Far East.

Geography

- **Location:** The peninsula is situated between the Sea of Okhotsk to the west and the Pacific Ocean and Bering Sea to the east.
- **Size:** It stretches about 1,250 kilometers in length and covers an area of approximately 270,000 square kilometers.
- **Topography:** The peninsula is characterized by two major mountain ranges, the Sredinny (Central) Range and the Vostochny (Eastern) Range, with the Kamchatka River running through the central valley.

Natural Features

- **Volcanoes:** Kamchatka is home to 127 volcanoes, 22 of which are still active. The most notable is **Klyuchevskaya Sopka**, which is the highest at 4,750 meters.
- **Geysers and Hot Springs:** The peninsula features numerous geysers and hot springs, particularly in the Valley of Geysers, which is part of the Kronotsky Nature Reserve.
- The climate is severe, with long, cold, and snowy winters and cool, wet summers. The region supports tundra vegetation, with mosses, lichens, and thickets of Kamchatka alder.

Additional Information

- **Population:** The population is around 289,033 as of 2023, with the majority being ethnic Russians. The main urban center is Petropavlovsk-Kamchatsky.
- **UNESCO World Heritage Site:** The volcanoes of Kamchatka are recognized as a UNESCO World Heritage Site due to their outstanding natural beauty and geological significance.

National Green Tribunal (NGT)

The National Green Tribunal (NGT) has fined the Punjab government a huge amount – Rs 1,000 crore. This fine was imposed because the state has repeatedly failed to manage its solid and liquid waste properly, despite many warnings and legal obligations.

The NGT has also ordered that this money be sent immediately to the Central Pollution Control Board (CPCB) and has held top government officials responsible for the ongoing failures.

Why Did the NGT Impose This Fine?

The NGT's decision is based on two main legal frameworks: the Solid Waste Management Rules of 2016 and the Environment (Protection) Act of 1986. These laws require strict management of waste, which Punjab has failed to do.

Facts About National Green Tribunal (NGT)

- The National Green Tribunal (NGT) was set up in India in 2010 under the National Green Tribunal Act.
- It is a special court that deals with environmental issues in India, aiming to provide quick justice in environmental matters.
- The NGT's headquarters are in New Delhi, with regional branches nationwide.
- Its decisions are binding and can only be appealed in the Supreme Court.
- The tribunal plays a key role in enforcing environmental laws and policies in India.

The National Green Tribunal has jurisdiction over all civil cases where a substantial question relating to environment (including enforcement of any legal right relating to environment), is involved and such question arises out of the implementation of the enactments specified in Schedule I of the National Green Tribunal Act 2010. The acts listed in Schedule 1 are:

- The Water (Prevention and Control of Pollution) Act, 1974;
- The Water (Prevention and Control of Pollution) Cess Act, 1977;
- The Forest (Conservation) Act,
- The Air (Prevention and Control of Pollution) Act, 1981;
- The Environment (Protection) Act, 1986;
- The Public Liability Insurance Act, 1991;
- The Biological Diversity Act, 2002.

It would deal with all environmental laws on air and water pollution, the Environment Protection Act, the Forest Conservation Act and the Biodiversity Act.

Microplastics

A study led by Riya K. Alex at Cochin University has brought attention to the presence of microplastics, especially polyethylene (PE), in personal care products (PCPs).

The study highlights concerns about the effects of these tiny plastic particles on the environment and human health, particularly in a fast-growing market like India.

What Are Microplastics?

Microplastics are tiny plastic particles that are smaller than 5 millimeters, which is about the size of a sesame seed.

These microplastics include microbeads, which are even smaller, ranging from 1 to 1,000 micrometers (about the thickness of a human hair). Microbeads are often found in personal care products like face washes and scrubs.

Environmental Impact of Microbeads

Microbeads are a significant environmental concern because they can enter the food chain and cause pollution. Their irregular shapes make them more likely to absorb harmful pollutants, increasing the risks they pose to aquatic life and ecosystems.

The study also raised concerns about “greenwashing” –when products are marketed as “eco-friendly,” “organic,” or “natural,” but still contain significant amounts of plastic. In India, many consumers may not fully understand the ingredient lists on products, allowing companies to benefit from this lack of awareness.

The Regulatory Landscape

While some countries have banned the use of microbeads, India’s regulations on microbeads are still unclear. As consumer purchasing power grows, the study predicts that India could see a significant increase in microbead pollution by 2030.

Microplastics are not just in personal care products—they are found in many everyday items, including food like salt and sugar, and even in human tissues. This widespread presence of microplastics raises serious public health concerns.

Microplastics are tiny pieces of plastic, smaller than 5 millimeters across. They come from the breakdown of larger plastic items, like bottles and bags, and can easily spread through the environment. Unfortunately, these tiny plastics can also get into the human body.

Microplastics Found in Human Organs

Recent studies have discovered microplastics in several human organs, which is concerning for our health. Here's where they have been found:

- **Brain:** The brain has shown the highest levels of microplastics, with 10-20 times more than other organs.
- **Lungs:** Significant amounts of microplastics have been found here, too.
- **Placenta and Reproductive Organs:** The presence of microplastics in these areas raises concerns about risks to pregnancy and reproductive health.
- **Bone Marrow:** Microplastics were found in all the bone marrow samples tested.

Forest fires

The southern part of Madeira, a beautiful island, has been hit hard by big forest fires. These fires have burned more than 5,000 hectares (which is a huge area) of wild forest.

This is especially worrying because the fires are threatening one of the world's biggest laurel forests, which is so special that it's been named a UNESCO World Heritage Site. The fires have also made it difficult for tourists to visit the island, which is a big part of the local economy.



Madeira is a group of islands in the Atlantic Ocean and is part of Portugal. It was first discovered in 1419 by Portuguese explorers. The island is famous for Madeira wine, which is made using a special heating process. Madeira also has a laurel forest, which is so unique that it's protected as a UNESCO World Heritage site.

The region is known for its stunning "levadas," which are irrigation channels that also serve as hiking trails. The capital of Madeira is Funchal, which is well-known for its annual flower festival. People living on the island also have a special tradition of making beautiful embroidered linen, showing off their rich cultural heritage.

CVD amongst unemployed

A recent study by the Indian Council of Medical Research (ICMR) has examined the risk factors for heart disease among adults in India, focusing on unemployment and high blood sugar levels. The study involved nearly 4,500 adults aged 40-69 and revealed important trends in heart disease risk across different groups.

Study Overview

The ICMR study used surveys and questionnaires from the World Health Organization (WHO) to assess physical activity and measure the risk of developing cardiovascular diseases (CVD) over the next ten years.

Participants were divided into risk categories:

- **Very Low to Low Risk:** Less than a 10% chance
- **Moderate Risk:** 10-20% chance
- **High to Very High Risk:** Over a 20% chance

About 85% of participants were in the very low-to-low risk category. In contrast, 14.5% were at moderate risk, and 1% were at high-to-very high risk.

Men were twice as likely as women to have more than a 10% chance of heart disease.

- High blood sugar increased the risk of heart disease significantly: women faced an 85% higher risk, while men had a 77% higher risk.
- Obesity also played a key role: obese women had a 71% higher risk, and obese men had a 55% higher risk of CVD.

Urban vs Rural Risks

The study showed that people in urban areas had a higher risk of heart disease. 17.5% of urban participants were at risk, compared to 13.8% in rural areas. Urban women had an 86% higher chance of elevated CVD risk compared to rural women.

Impact of Employment Status

Unemployed individuals had a much higher risk of heart disease. Only 54% of the unemployed had a low risk of CVD, compared to 87-88% of employed people and homemakers.

This study is important because it provides a national view of heart disease risk in India, filling gaps left by earlier research that was more localized. It identifies key factors affecting heart health, such as lifestyle and demographics, and offers valuable insights for improving public health strategies.

Ulchi freedom shield

The 51st Fighter Wing (FW) at Osan Air Base in South Korea is conducting a major military training exercise by integrating its readiness drills with Ulchi Freedom Shield 24, an annual joint exercise between the U.S. and South Korea.

Lantana Camara

Lantana camara, commonly known as common lantana, has become a major environmental problem in Delhi and the surrounding areas. This invasive shrub, which wasn't found in places like Mangar Bani just ten years ago, has spread quickly, taking over green spaces and threatening the local plant life.

Invasive Nature of Lantana

Originally introduced as a decorative plant, Lantana camara has now become one of the most dominant shrubs in Delhi's forests. It grows so quickly that it easily outcompetes native plants. Lantana thrives especially in untouched areas, where it forms thick clusters that prevent native plants from growing.



Flora Disruption

The spread of *Lantana camara* is harmful to native species like Jungli kharonda and Heens, which struggle to get the resources they need to survive. The problem worsens because birds eat the lantana's berries and spread its seeds, helping the shrub take over more areas and making it even harder for local plants to survive.

Current Distribution

Studies show that *Lantana camara* covers a vast area in India, with serious infestations in national parks and diverse ecosystems. In the Aravalli mountain range, for example, more than 70% of the area is affected by lantana. This has serious consequences for herbivores (plant-eating animals) that depend on native grasses, raising concerns about biodiversity and the balance of the ecosystem.

To effectively control *Lantana camara*, it's important to remove it by the roots because simply cutting it down allows it to grow back quickly. Several biodiversity parks are working hard to manage its spread by regularly checking for lantana and taking immediate action when they find it.

The unchecked spread of *Lantana camara* is a serious ecological challenge for the plants of Delhi. To restore balance and protect native species, it's crucial to continue researching and implementing proactive management strategies against this invasive plant.

India-Denmark Clean River initiative

The Environmental Strategic Partnership between India and Denmark has launched the Smart Laboratory on Clean Rivers (SLCR) project to help restore the Varuna River. This project has received ₹16.8 crore from India's Jal Shakti Ministry and an additional ₹5 crore from Denmark.

Objectives of the SLCR

The main goal of the SLCR is to improve the health of the river and boost the local economy and social conditions. This will be achieved using advanced technology and a detailed river management plan over the next 2 to 3 years. The SLCR will use special models to study how the river's water moves and behaves.



india denmark

Building Bridges, Cleaning Rivers

SLCR features a robust institutional and appraisal mechanism, including the Indo-Danish Joint Steering Committee (JSC) for strategic guidance, Project Review Committee (PRC) for quality control, and a Multi-Stakeholder Working Group (MSWG) for coordination



It will also use real-time monitoring tools and data visualization to help make better decisions about managing the river. Certain parts of the Varuna River will get specific treatments to enhance the river's health and benefit the local communities economically and socially.

Hydrogeological Model for Recharge Sites

In the final phase of the project, a Hydrogeological Model will be developed for the Varuna Basin. This model will help find the best places for managed aquifer recharge using advanced techniques and mathematical models to figure out the best ways to recharge the groundwater.

The SLCR is a great example of teamwork between India and Denmark. It highlights how important it is for government agencies, universities, and local communities to work together to find effective solutions for improving river water quality.

Facts About Varuna River

- The Varuna River flows through Varanasi in India and is a tributary of the Ganges.
- It is considered sacred in Hinduism and named after Varuna, the Vedic god of water.
- The river is about 45 kilometers long, making it shorter than many other Indian rivers.
- It is linked to the myth of the Ganges coming down to Earth.
- The river supported ancient trade routes and farming.
- The banks of the Varuna are home to many unique and native species.
- Pollution is a major threat to the river's ecosystem.

Cross-Border Terrorism

India and Indonesia recently criticized the use of terrorist groups to carry out attacks across borders, focusing on Pakistan's support for terror groups targeting Jammu and Kashmir.

This issue was discussed during the sixth meeting of the India-Indonesia joint working group on counter-terrorism in Jakarta.

What is Cross-Border Terrorism?

Cross-border terrorism happens when terrorist groups based in one country carry out attacks in another. This type of terrorism affects regional security and requires countries to work together internationally to tackle the problem.

Joint Working Group Meeting

At the sixth meeting of the India-Indonesia joint working group on counter-terrorism, held in Jakarta, the focus was on finding ways to work together to fight terrorism.

The discussions included how terrorists are using new technologies to further their activities. Both India and Indonesia strongly condemned terrorism in all its forms and called for better international cooperation to tackle these threats effectively and thoroughly.

Focus Areas

Key topics included:

- The use of terrorist proxies for cross-border terrorism.
- Emerging technologies and their misuse by terrorists.
- Terror financing and its links to organized crime.

Use of Technology by Terrorists

The meeting also addressed concerns about how terrorists are using new technologies. This includes the misuse of the internet for carrying out terrorist activities and funding their operations.

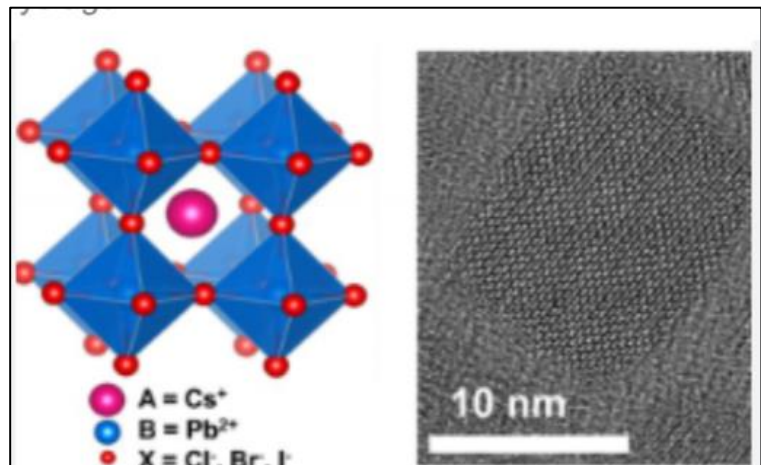
India and Indonesia agreed on the importance of sharing information about terrorism threats and working together more closely in regional and global forums like the United Nations and the ASEAN Regional Forum to improve counter-terrorism efforts.

CsPbBr₃ nanoplatelets

Dr. Atikur Rahman's research group at the Indian Institute of Science Education and Research (IISER) in Pune has created a new method for growing tiny crystals called CsPbBr₃ nanoplatelets.

These crystals are important because they can be used in devices that detect light and are used in electronic devices like solar panels and LEDs.

The results of their research were published in a well-known journal, *Advanced Materials*, and have gained attention because of the potential benefits of technology.



Significance of CsPbBr₃

CsPbBr₃ is a special material that interacts well with light, which makes it very useful for technologies like solar cells, LEDs, and other light-sensitive devices. One of its key strengths is its ability to remain stable even at high temperatures, which means it can be used in many different applications without breaking down or losing its effectiveness.

About CsPbBr₃ nanoplatelets

- **Material Overview:** CsPbBr₃ nanoplatelets are a type of halide perovskite material, known for their strong ability to emit light (photoluminescence) and their usefulness in devices that work with light, like LEDs and solar cells.
- **Structure:** These nanoplatelets are thin, flat structures that are two-dimensional. Because of their small size, they show special behaviors known as quantum confinement effects, which allow their light-emitting properties to be adjusted by changing their size.
- **Stability:** They are highly stable due to their strong internal structure, making them more reliable compared to other perovskite materials.
- **Synthesis:** CsPbBr₃ nanoplatelets can be made using simple solution-based methods, which usually result in uniform size and shape.
- **Applications:** These materials are especially interesting for use in light-emitting devices and solar cells, where they can improve efficiency.
- **Doping Potential:** The chemical makeup of CsPbBr₃ nanoplatelets allows for easy addition of other elements (doping), which can enhance or modify their properties for different applications.

Atal Innovation Mission (AIM)

The Atal Innovation Mission (AIM) has opened applications for Indian and Australian startups and small businesses to join the climate-smart Agritech group of the India Australia Rapid Innovation and Startup Expansion (RISE) accelerator.

This program is designed to help businesses grow internationally and collaborate between India and Australia, especially in the Agritech field.

Program Overview

The RISE Accelerator supports startups and small businesses in testing and adapting their technologies for international markets.

The focus is on improving farming methods and resilience in the face of climate change, limited resources, and food shortages. The goal of this group is to support businesses that create technologies to help farmers and improve farming practices. The aim is to strengthen farming operations in both India and Australia.

Program Structure

The program lasts for nine months and includes both online learning and in-person activities in India and Australia. Participants will get deep insights into the market, personalized coaching, and mentorship from industry experts to help them grow and fit better into the market.

Participants will have the chance to conduct field trials and test their technologies in real-world situations. They will also have opportunities to network with potential partners and customers, which is crucial for business success.



What is Atal Innovation Mission?

- AIM is Government of India's **flagship initiative to promote a culture of innovation and entrepreneurship** in the country.
- Its **objective is to develop new programmes and policies for fostering innovation in different sectors of the economy**, provide platform and collaboration opportunities for different stakeholders, **create awareness and create an umbrella structure** to oversee the innovation ecosystem of the country.
- **Major Initiatives:**
 - **Atal Tinkering Labs:** These are creating problem solving mindset across schools in India.
 - **Atal Incubation Centers:** Fostering world class startups and adding a new dimension to the incubator model.
 - **Atal New India Challenges:** Fostering product innovations and aligning them to the needs of various sectors/ministries.

- **Mentor India Campaign:** A national mentor network in collaboration with the public sector, corporates and institutions, to support all the initiatives of the mission.
- **Atal Community Innovation Center:** To stimulate community centric innovation and ideas in the unserved/underserved regions of the country including Tier 2 and Tier 3 cities.
- **Atal Research and Innovation for Small Enterprises (ARISE):** To stimulate innovation and research in the MSME industry.
- **ANIC 1.0:**
 - ANIC 1.0 followed an open innovation challenge format where challenge statements were put out in the public domain and a call for application was made.
 - The winning start-ups / individual innovators **are supported through a tranche-based grant-in-aid of up to Rs.1 crore and through AIM's innovation network.**
- **ANIC 2.0:**
 - The 1st phase of ANIC 2.0 will see **18 challenges** being thrown open from **7 sectors**, which are, **E-mobility, Road Transportation, Space Technology and Application, Sanitation Technology, Medical Devices and Equipment, Waste Management, Agriculture.**

Jan Poshan Kendra'

The government has launched a pilot project to rename 60 Fair Price Shops (FPS), or ration shops, as '**Jan Poshan Kendra'** across Gujarat, Rajasthan, Telangana, and Uttar Pradesh.

- The initiative is designed to address the demands of ration dealers by offering them new income opportunities through these renamed shops.
- **Objective:** To modernize the shops and ensure affordable, quality nutrition for all, supporting the broader goal of community empowerment.
- These FPS will now provide food products to consumers while also helping FPS dealers earn more income.
- These Kendras will stock 50% nutrition-rich food items and keep some space reserved for other household essentials.
- It will help in offering customers more diverse product options.



Benefits of the Jan Poshan Kendra Initiative

- **Enhanced Income for Ration Dealers:**
 - **More Products:** Jan Poshan Kendras will offer a wider variety of products, including nutritious foods and household items, boosting dealer sales and income.
 - **New Income Opportunities:** The Kendras will help dealers explore new business options and earn extra income.
 - **Financial and Training Support:** Dealers will get financial help and training to run their businesses better.
- **Improved Nutrition for Consumers:**

- **Better Food Access:** The Kendras will provide more nutritious food options for consumers.
- **Affordable Prices:** Ration shops will continue offering healthy food at low prices.
- Stronger Food Security System:
- **Efficient Operations:** Digitization will make the system more efficient, transparent, and reduce wastage.
- **Quality Control:** Strict quality measures will ensure high-quality products for consumers.
- **Addressing Malnutrition:** Increased access to nutritious food will help fight malnutrition.
- **Empowerment of Local Businesses:**
- **Economic Growth:** The initiative will create new business opportunities and support local economic development.
- **Community Development:** Jan Poshan Kendras will act as centers for community growth.
- **Support for Dealers:** SIDBI will offer easy credit, and the Ministry of Skill Development will provide entrepreneurship training to improve dealer skills.

Challenges of the Jan Poshan Kendra Initiative

- **Implementation Challenges:**
- **Infrastructure:** Building storage, transportation, and supply chain systems for more products, especially in rural areas, can be tough.
- **Training:** Dealers need extensive training on product knowledge, inventory, and customer service, which requires significant resources.
- **Quality Control:** Keeping product quality consistent across a wide range of items and suppliers is challenging.
- **Regulatory Challenges:**
- **Compliance:** Adhering to regulatory requirements for stocking and selling a wider range of products can be complex and time-consuming for dealers.
- **Corruption:** Ensuring transparency and preventing corruption in distribution and pricing is crucial for public trust.
- **Financial Sustainability:**
- **Profitability:** Ensuring that dealers can generate sufficient profits from selling additional products to cover the costs of storage, transportation, and other expenses is crucial for the sustainability of the initiative.
- **Government Support:** Financial help or subsidies from the government might be needed to help dealers manage expenses and stay profitable.

Global flooding

A recent study predicts a big increase in global flooding by the year 2100, mainly due to the continued release of greenhouse gases into the atmosphere.

If these emissions stay high, flooding events could increase by 49% compared to 2020 levels, particularly affecting vulnerable areas like tropical coastlines and dry regions.

Key Findings

Flood Risk by 2050: By 2050, the risk of flooding could be 7% higher if emissions are low and 15% higher if emissions are high.

Regional Differences: The risk of flooding won't be the same everywhere. Some regions might see a big increase in floods, while others could see fewer.

Global Flood Map (GFM)

To understand these risks better, researchers created a Global Flood Map. This map uses advanced techniques to accurately predict how floods might behave, considering factors like rainfall, river levels, and rising sea levels. This tool is valuable for industries, insurance companies, and those responsible for following climate regulations.

Projected Changes in Flooding

Coastal Flooding: Flooding along coastlines is expected to nearly double, increasing by 99% by 2100, even if we manage to keep emissions low.

Sea-Level Rise: As the oceans warm, they expand, causing sea levels to rise. This will add to the flooding risk, especially in coastal areas.

Types of Flooding and Their Impacts

River Flooding: Flooding caused by rivers is expected to get worse in regions like sub-Saharan Africa, Asia, and South America.

Rainfall-Induced Flooding: Flooding caused by heavy rain could increase by 6% if emissions are low and by 44% if emissions are high. This type of flooding is especially sensitive to changes in climate.

This study highlights the urgent need to assess flood risks accurately and take proactive steps to reduce the impact of future floods, especially in most vulnerable regions. Understanding these predictions is essential for planning infrastructure and preparing for potential disasters.

Waterspout

Recently a tragic incident where a **luxury yacht off the coast of Sicily, Italy, sank during a violent storm, is possibly caused by a waterspout.**

A waterspout is a **rotating column of air and mist over water, similar to a tornado but generally weaker. (Cumulus clouds)**

Waterspouts can be either tornadic, associated with severe thunderstorms, or fair-weather, forming during calm conditions.

The **waterspout that likely caused the sinking is believed to be a tornadic type, which can cause significant destruction.**





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Ernakulam	8281098873
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Malappuram	8281098868
Kozhikode	8281098870
Kannur	8281098875

OTHER CENTRES

Pathanamthitta	8281098872
Alappuzha	8281098871
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