



## **MAINS**

- GS-I D URBAN FLOODS IN CHENNAI
  - 75 YEARS OF UNIVERSAL DECLARATION OF HUMAN RIGHTS
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n Santiniketan

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- Reservation norms for Jute Packaging Materials
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- The first Indian Art, Architecture & Design Biennale
- India-Korea Electronic
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- Green Rising initiative
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- Google Gemini
- Dodo (Raphus cucullatus)
- Indian Bison (Bos gaurus)
- Ogasawara Island chain
- Golden Triangle of Opium

## **SPECIALS**

SC upholds abrogation of Article 370



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# - Disclaimer -

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.



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#### **URBAN FLOODS IN CHENNAI**

#### Context:

Cyclone Michaung lingered about 100 km off the coast of Chennai for about 16 hours. It caused torrential rains that pummelled the city, bringing life to an abrupt halt.

#### The Catastrophe Unfolds: Chennai Floodings

- Cyclone Michaung: The city of Chennai in Tamil Nadu faced a grim ordeal on December 3-4, 2023, as Cyclone Michaung unleashed torrential rains, causing widespread havoc.
- The aftermath revealed the city's vulnerability to such natural disasters.

#### City Under Siege: Chennai Submerged

- Water Levels Soar: Residents witnessed alarming rises in water levels, turning localities into virtual islands.
- Failed Drainage Systems: Blame was cast on faulty stormwater drains, amplifying the crisis, and residents expressed dissatisfaction with the State government's response.

# The Human Toll: Lives Lost and Struggles amid Chaos

- Fatalities and Stranded Residents: The cyclone claimed 17 lives, leaving thousands stranded in waterlogged areas.
- Disrupted Services: The deluge disrupted daily life, shutting down the airport, canceling trains, and closing educational institutions for days.

# Government Response: Seeking Relief and Rehabilitation

- ◆ Chief Minister's Plea: Tamil Nadu CM M.K. Stalin sought ₹5,060 crore as interim relief from the Prime Minister.
- Coordination Efforts: Relief operations were initiated, with the GCC setting up 162 relief centers and distributing food to over 3.7 million people.
- Central Assistance: The Union government released

₹450 crore to the State Disaster Relief Fund and an additional ₹500 crore for a Chennai flood mitigation project.

#### **Rescue Operations: Navigating Chaos**

- Military Intervention: The Indian Army and National Disaster Response Force deployed boats to rescue stranded residents.
- Aid from the Skies: The Indian Air Force air-dropped relief materials in severely affected areas.

#### Chennai's Memory Lane: Echoes of 2015

- Comparing Disasters: Drawing parallels with the catastrophic floods of 2015, residents questioned the city's preparedness.
- Meteorological Insights: Meteorologists noted a 45% increase in cumulative rainfall between December 1 and December 5 compared to 2015.

# Andhra Pradesh's Plight: Cyclone Michaung's Landfall

- Evacuation Efforts: Andhra Pradesh opened 9,000 shelters and evacuated thousands before the cyclone made landfall.
- Agricultural Devastation: Farmers faced extensive losses as cyclone-induced rains inundated crops in districts like Nellore, Tirupati, Guntur, Bapatla, East Godavari, and West Godavari.

#### **Climate Trends and Cyclone Intensity**

- Ocean Warming Impact: Experts noted increased cyclone frequency and intensity in the north Indian Ocean due to ocean warming.
- Call for Systematic Flood Control: Climate Trends advocated for a systematic flood control management strategy and an integrated drainage system.





#### Government **Responses** Citizens' and **Concerns**

- Government Accountability: Residents questioned the effectiveness of flood mitigation projects, highlighting areas neglected in the aftermath.
- ♦ Citizens' Appeals: As the city braces for more flood years, experts call for an integrated approach, retrieving encroached spaces, and rejuvenating water bodies.

#### **Way Forward:**

- Chennai faces the daunting task of rebuilding its infrastructure and preparedness in the aftermath of Cyclone Michaung.
- The disaster serves as a stark reminder of the urgent need for robust disaster management strategies and climate-resilient urban planning.



#### **75 YEARS OF UNIVERSAL DECLARATION OF HUMAN** RIGHTS

#### The year 2023 is going to mark the 75th Context: anniversary of Universal Declaration of Human Rights.

- Seventy-five years ago, the UN General Assembly approved the Universal Declaration of Human Rights, marking a pivotal moment in shaping the Post-World War II international order.
- While the declaration aimed to establish a common standard for all peoples and nations, its journey through the decades has been complex, reflecting the some historical moments of conflicts and crises.

#### **Key Elements of the Universal Declaration**

#### **Content and Purpose:**

- ♦ The declaration comprises a preamble and 30 articles outlining fundamental rights and freedoms.
  - **Article 1** emphasizes the inherent freedom and equality of all human beings.
  - Article 2 underscores entitlement to rights and freedoms without discrimination.
- Various articles address the right to life, liberty, and security, freedom from slavery, torture, and equality before the law.
- It enshrines rights to freedom of religion, opinion, expression, peaceful assembly, and education.

#### **Origins and Drafting:**

♦ Born out of a "never again" sentiment post-World

- War II, the declaration aimed to guarantee individual rights globally.
- Eleanor Roosevelt chaired the drafting committee, reflecting diverse geographical representation.
- ♦ Over 50 United Nations (UN) member countries participated in the final drafting in 1948, culminating in unanimous approval by the General Assembly.

#### **Legal Status and Impact:**

- ♦ While not a treaty, the declaration's principles influenced many countries' laws and became the foundation for international human rights law.
- Recognized as inspiring over 70 human rights treaties globally, it influenced movements like decolonization and anti-apartheid.

#### **Challenges:**

- Despite its influence, the declaration faces challenges in its implementation.
- Noted its misuse and abuse for political gain, and some governments chip away at its principles.
- Non-binding and isn't legally binding.
- ♦ Contemporary war landscape is the place for violation of human rights.

#### **Relevance Today:**

- Despite challenges, the declaration remains relevant, serving as a universal standard for human rights. IT places a public eye on errors and omissions.
- ♦ UN Human Rights Chief Volker Türk emphasizes its inspiration for various freedom movements worldwide.
- ♦ The declaration isn't a treaty and isn't legally binding in itself, but the principles it sets out have been incorporated into many countries' laws and it is viewed as the basis for international human rights law.

#### **Current Human Rights Landscape**

#### **Conflict and Crises:**

♦ The 75th anniversary coincides with challenges to human rights in conflicts like Israel-Hamas, Russia's war in Ukraine, and internal issues in Myanmar and Sudan.

#### **Reflection and Acknowledgment:**

- ♦ Amnesty International acknowledges the declaration as proof that a global vision for human rights is achievable.
- Türk emphasizes the declaration's relevance, acknowledging both its successes and the lessons learned from its failures.



#### **Conclusion**

As the world reflects on 75 years of the Universal Declaration of Human Rights, it stands as a testament to the possibility of a global vision for human rights. Despite challenges and misuse, its principles continue to guide the quest for a world where human rights are inherent and respected universally.



# EUROPE AGREES TO SIGN ITS LANDMARK 'AI REGULATION' DEAL

Context: Europe has reached a provisional deal on landmark European Union rules governing the use of Artificial intelligence.

#### **Background:**

- Data science and artificial intelligence legislation began with the General Data Protection Regulation (GDPR) in 2018.
  - ➤ GDPR act in the **European Union** is not only about Al, but it does have a clause that describes the '**Right to explanation**' for the impact of artificial intelligence.
- Later on, 2021's AI Act in Europe classifies AI systems into three categories:
  - Systems that create an unacceptable amount of risk must be banned
  - ➤ Systems that can be considered high-risk need to be regulated
  - > Safe applications, which can be left unregulated
- Other Similar regulations: Canada enacted the Artificial Intelligence and Data Act (AIDA) in 2022 to regulate companies using AI with a modified riskbased approach.
  - Unlike the AI Act, AIDA does ban the use of AI even in critical decision-making functions. However, the developers must create risk mitigation strategies as a backup plan.

#### **About the Deal:**

- With the recent deal, the EU moves toward becoming the First Developed Country to enact laws governing Al.
- The deal was held between EU countries and European Parliament members.
- The deal comprises of:
  - Drawing up technical documentation,
  - Complying with EU copyright law and

- ➤ Disseminating detailed summaries about the content used for training.
- Procedure for High-impact foundation models with systemic risk will have to;
  - ➤ Conduct model evaluations,
  - > Assess and mitigate systemic risks,

- Conduct adversarial testing,
- Report to the European Commission on serious incidents,
- Ensure cyber security and
- > Report on their energy efficiency.
- For Government's Use: Governments can only use real-time biometric surveillance in public spaces in cases of victims of certain crimes, prevention of genuine, present, or foreseeable threats, such as terrorist attacks, and searches for people suspected of the most serious crimes.
- Prohibited Activities:
  - ➤ The agreement bans cognitive behavioural manipulation,
  - ➤ The untargeted scrapping of facial images from the internet or CCTV footage,
  - ➤ Social scoring and biometric categorisation systems to infer political, religious, philosophical beliefs, sexual orientation and race.

#### **Need for such regulation:**

- Unlimited Access: Easy access to such power is risky.
- ♦ **Job Loss:** Al, like generative Al, might mess up jobs.
- Biased Results: Al can be unfair. It learns from biased data and makes unfair choices.
- Social Spying and Fakes: It can copy voices and faces perfectly and leads to generate fake videos and photos.
- Al in Wars: Stopping the race for Al weapons is crucial for peace.

#### **AI Regulation in India**

- India has taken a slightly different approach to the growth and proliferation of Al.
- While the government is keen to regulate generative Al platforms like ChatGPT and Bard, there is no plan for a codified law to curb the growth of Al.

IT Minister Ashwini Vaishnaw recently stated that the **NITI Aayog**, the planning commission of India, issued some guiding documents on Al.

• These include the **National Strategy for Artificial Intelligence** and the Responsible Al for All report.



While these documents list good practices and steer towards a vision for responsible AI, they are not legally binding.



# WOMEN QUOTA IN J&K, PUDUCHERRY

Context: The Lok Sabha passed legislation to extend women's reservation (33% reservation) to the assemblies Of Jammu & Kashmir, Puducherry.

#### More on the News:

- Government of Union Territories (Amendment) Bill 2023 seeks to introduce women's reservation in the legislative assembly of Puducherry; the Jammu and Kashmir Reorganisation (Second Amendment) Bill 2023 does the same with the assembly of J&K.
- Similar provisions for women quota in the legislative assembly of the Union Territory of Puducherry will be made by Parliament by amending the Government of Union Territories Act, 1963.
- The move is line with parliament enacting the Constitution (One Hundred and Sixth Amendment) Act, 2023 to pave way for reservation of one-third of the total number of seats for women in the Legislative Assembly of every State; and National Capital Territory of Delhi.
- One-third reservation of seats for women will also apply for Schedule Castes and Scheduled Tribes quotas in the legislative assembly of the Union territory of Jammu and Kashmir.

#### Commencement of Provisions:

- ➤ Reservation of seats for women in the assembly, per the Bill, becomes effective post the delimitation exercise.
- ➤ Delimitation is contingent on the figures from the first census post the initiation of the Jammu and Kashmir Reorganisation (Second Amendment) Act, 2023.

#### **♦ Temporal Limitation:**

➤ The provision for women's reservation ceases after fifteen years from the commencement of the Jammu and Kashmir Reorganisation (Second Amendment) Act, 2023.

#### **The Continuation and Determination:**

➤ The reservation for women in the assembly persists until Parliament, through legislation, decides otherwise.

#### **♦ Rotation Mechanism:**

➤ The rotation of assembly seats reserved for women

is contingent upon subsequent delimitation exercises as determined by Parliament.

#### **♦** Legislative Action:

- ➤ The Constitutional amendment, known as the Constitution (One Hundred and Sixth Amendment) Act, 2023, was enacted after a special session of Parliament in September.
- ➤ The legislation was hailed as the "Nari Shakti Vandan Adhiniyam," emphasizing its significance.
- ➤ The law's implementation is subject to the completion of the next census and the subsequent delimitation exercise for the redrawing of LokSabha and assembly constituencies.

#### **♦ Future Decision-Making:**

➤ Specific allotment of LokSabha and assembly seats for women will be determined by the government after the completion of the aforementioned census and delimitation processes.



# RBI TO OFFER CLOUD STORAGE SERVICES

Context: The Reserve Bank of India (RBI) is working on establishing a cloud facility for the financial sector in India as it looks to enhance the security, integrity and privacy of financial sector data.

#### **Central Bank's New Venture**

- The Reserve Bank of India (RBI) is set to enter the domain of cloud services, positioning itself in direct competition with global giants like Amazon, Google, and Microsoft.
- This ambitious move aims to leverage the growing volume of data held by banks and financial entities.

**Cloud services** refer to the **delivery of computing resources**, such as storage, processing power, and applications, over the internet. **Users** can **access and utilize these services remotely**, eliminating the need for physical infrastructure and on-site management.

#### **Strategic Rationale**

- The RBI's initiative aligns with the government's strategy of establishing 'digital public infrastructure' (DPI).
- Following this approach, the central bank subsidiary will develop the underlying technology, subsequently outsourcing its application development to the private sector.



This mirrors successful implementations like Aadhaar and United Payments Interface (UPI).

#### **Enhancing Financial Data Security**

- The proposed cloud facility for the financial sector seeks to address the escalating volume of data maintained by banks.
- The RBI emphasizes that this initiative will not only enhance data security but also uphold integrity and privacy standards crucial for the financial sector.

# Application of Cloud Services in Financial World-

Cloud services find **extensive applicability** in the finance sector due to several advantages:

- Cost Efficiency: Cloud services allow financial institutions to avoid heavy upfront investments in IT infrastructure, reducing capital expenses. They can scale resources up or down based on demand, optimizing costs.
- Flexibility and Scalability: Financial organizations often experience fluctuating workloads. Cloud services provide the flexibility to scale resources dynamically, ensuring optimal performance during peak times and efficiency during lulls.
- Data Security: Reputable cloud service providers implement robust security measures, often surpassing what individual firms can achieve. This enhances data protection, crucial for sensitive financial information.
- Collaboration and Remote Access: Cloud services facilitate seamless collaboration among teams, enabling remote work capabilities. This is especially important in the financial sector, where accessibility and collaboration are paramount.
- Innovation and Time-to-Market: Cloud services offer tools and platforms for innovation, allowing financial institutions to quickly deploy new services, products, and applications, reducing time-tomarket.
- Disaster Recovery and Business Continuity: Cloud providers typically have redundant data centers and robust disaster recovery mechanisms. This ensures that financial organizations can recover data swiftly and maintain operations even in the face of unexpected events.
- Regulatory Compliance: Many cloud service providers adhere to stringent security and compliance standards. Leveraging such services can assist financial institutions in meeting regulatory requirements effectively.

Analytics and Big Data: Cloud services provide powerful analytics tools and storage capabilities, enabling financial organizations to process and analyze large volumes of data efficiently. This is crucial for deriving valuable insights from financial data.

Customer Experience: Cloud-based applications contribute to a smoother customer experience by ensuring accessibility and responsiveness, enhancing customer satisfaction in the digital era.



#### **GST RATE RATIONALISATION**

Context:

The ministerial group on GST rate rationalisation suggested a renewed focus on simplifying the GST structure and revising its multiple rates.

#### **Reconstituted Ministerial Group**

- Former Karnataka CM Basavaraj Bommai led the original group, which had stalled post-election defeat.
- Karnataka's revenue minister Krishna Byre Gowda is included, with UP Finance Minister Suresh Kumar Khanna as the new convenor.

#### **Complex GST Structure**

- ♦ Despite four main slabs (5%, 12%, 18%, 28%), numerous rates exist, complicating compliance.
- Urgent need for simplification expressed by tax experts and industry leaders.

#### **Revenue Stability and Policy Shift**

- ♦ GST revenues at a robust ₹1.6 lakh crore.
- Resumption of rate rationalisation indicates a policy shift.
- Multiple rates lead to compliance issues, urging policymakers to simplify for industry, revenue department, and investor certainty.

# Terms of Reference and Future Considerations:

- GoM to review tax slab rates, recommend changes for required resources.
- Consideration of GST Compensation Cess's future after March 2026.

#### **Industry Calls for Reform:**

- Industry leaders advocate a three-slab GST structure for business ease.
- ST Compensation Cess under review, as suggested by CII president R Dinesh.



#### **Background**

- In India, the idea of adopting GST was first suggested by the Atal Bihari Vajpayee Government in 2000.
- ♦ The state finance ministers formed an Empowered Committee (EC) to create a structure for GST, based on their experience in designing State VAT.
- In 2002, the Vajpayee government formed a task force under Vijay Kelkar to recommend tax reforms.
- ♦ In 2005, the Kelkar committee recommended rolling out GST as suggested by the 12th Finance Commission.

#### What is GST?

- ♦ GST was introduced through the 101st Constitution Amendment Act, 2016.
- It is one of the biggest indirect tax reforms in the country.
- It was introduced with the slogan of 'One Nation One Tax'.

#### **Objectives:**

- To mitigate the double taxation, cascading effect of taxes, multiplicity of taxes, classification issues etc., and has led to a common national market.
- The GST that a merchant pays to procure goods or services (i.e. on inputs) can be set off later against the tax applicable on supply of final goods and services.
- ♦ The set off tax is called input tax credit.
- The GST avoids the cascading effect or tax on tax which increases the tax burden on the end consumer.
- Levied on:
  - ▶ The GST has subsumed indirect taxes like excise duty, Value Added Tax (VAT), service tax, luxury tax etc.
  - ▶ It is essentially a consumption tax and is levied at the final consumption point.

#### **Tax structure under GST:**

- Central GST to cover Excise duty, Service tax etc.
- State GST to cover VAT, luxury tax etc.
- ♦ Integrated GST (IGST) to cover inter-state trade.
- ♦ IGST per se is not a tax but a system to coordinate state and union taxes.
- ♦ It has a 4-tier tax structure for all goods and services under the slabs- 5%, 12%, 18% and 28%.

#### What is the Significance of GST?

- Create a Unified Common Market: Help to create a unified common national market for India. It will also give a boost to foreign investment and "Make in India" campaign.
- ♦ Streamline Taxation: It will harmonize the laws, procedures and rates of tax between Centre and States and
- Increase Tax Compliance: Provide improved environment for compliance as all returns are to be filed online, input credits to be verified online, encouraging more paper trail of transactions at each level of supply chain;

#### Role of GST Council

- The GST Council is a joint forum of the Centre and the states.
- ♦ It was set up by the President as per Article 279A (1) of the amended Constitution
- Members:
- ♦ The members of the Council include the Union Finance Minister (chairperson), the Union Minister of State (Finance) from the Centre.
- ♦ Each state can nominate a minister in-charge of finance or taxation or any other minister as a member.
- Functions:
  - ▶ The Council, is meant to "make recommendations to the Union and the states on important issues related to GST, like the goods and services that may be subjected or exempted from GST, model GST Laws".

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- ▶ It also decides on various rate slabs of GST.
- Discourage Tax evasion: Uniform SGST and IGST rates will reduce the incentive for evasion by eliminating rate arbitrage between neighbouring States and that between intra and inter-state sales.
- ♦ Reduce Corruption: Greater use of IT will reduce human interface between the taxpayer and the tax administration, which will go a long way in reducing corruption.
- ♦ Boost Secondary Sector: It will boost export and manufacturing activity, generate more employment and thus increase GDP (Gross Domestic Product) with gainful employment leading to substantive economic growth.
- What are the issues associated with GST?
- ♦ **Multiple Tax Rates**: Unlike many other economies which have implemented this tax regime, India has multiple tax rates. This hampers the progress of a single indirect tax rate for all the goods and services in the country.

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#### **Functions:**

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- ▶ It also decides on various rate slabs of GST.
- New Cesses crop up: While GST scrapped multiplicity of taxes and cesses, a new levy in the form of compensation cess was introduced for luxury and sin goods. This was later expanded to include automobiles.
- Trust Deficit: The Union government's authority to levy and appropriate cess revenues for it without sharing them with the states has lent credence to the wisdom of guaranteed compensation for states.
- It turned out to be prescient as GST failed to live up to its economic promises and states' revenues were protected through this guarantee.
- ♦ Economy outside GST purview: Nearly half the economy remains outside GST. E.g. petroleum, real estate, electricity duties remain outside GST purview.
- ♦ The complexity of tax filings: The GST legislation requires the filing of the GST annual returns by specified categories of taxpayers along with a GST audit. But, filing annual returns is a complex and confusing one for the taxpayers. Apart from that, the annual filing also includes many details that are waived in the monthly and quarterly filings.
- Higher Tax Rates: Though rates are rationalised, there is still 50 % of items are under the 18 % bracket.
- Apart from that, there are certain essential items to tackle the pandemic that was also taxed higher.
- For example, the 12% tax on oxygen concentrators, 5% on vaccines, and on relief supplies from abroad.



#### INDIA'S EVOLVING SPACE **ECONOMY**

Context: Space is becoming an important component of the India's economy with Space Startups attracting private investment amounting to more than Rs.1, 000 crore.

#### **India's Space Sector**

India's space sector is globally recognized for costeffective satellite building, and it advocates for peaceful and civilian use of outer space.

- ♦ ISRO has an exceptional success rate and is the 6th largest space agency globally.
- ♦ India has over 400 private space companies and ranks fifth globally in terms of the number of space companies.

#### Recent developments include;

- ➤ Setting up the Defence Space Agency (DSA).
- > Expanding satellite manufacturing capabilities, which are expected to reach USD 3.2 billion by 2025.
- ▶ ISRO launched SAMVAD, a student outreach program to encourage space research among young minds.



#### Challenges:

- However, the space sector faces major challenges as well including:
  - lack of regulations on commercialisation which could lead to monopolisation
  - rising space debris from increasing expeditions
  - ► China's rapid growth in the space industry and potential weaponization
  - Increasing global trust deficit creating an environment of suspicion and potential conflict

#### **About Space sector and Economy:**

- Private Investment Soars
  - ➤ Robust private interest is evident as space startups attract over Rs. 1,000 crore in FY.
- Exponential Growth Projection
  - ▶ India's current space economy at 8 billion dollars may reach 100 billion dollar by 2040, aligning with global projections.
- Strategic Reforms and Startups
  - > PM Modi's reforms lead to a surge in Space startups from 1 to 190 in four years, transforming India's space landscape.
- Cost-Effective Space Missions
  - India's cost-effective approach with Chandrayaan-3 at Rs. 600 crore versus Russia's Rs. 16,000 crore underscores leveraging intellectual resources.
- Global Recognition and Achievements
  - India's space missions gain global acclaim, showcasing advancements and affirming competence in space technology.
- Inclusive Approach
  - PM Modi's inclusive space policies unlock the potential of India's youth, validating Dr. Vikram Sarabhai's vision.
- Applications in Diverse Sectors
  - Space technology integrates into sectors like agriculture, disaster management, and healthcare, demonstrating pervasive impact.
- Women Leading Space Projects
  - ▶ Women take the forefront in leading significant space projects, marking a paradigm shift in space exploration.
- Upcoming Projects:
  - Gaganyaan's unmanned test with 'Vyommitra' human spaceflight anticipates capability, highlighting India's trajectory towards manned space missions. The Deep Sea Mission adds a unique dimension.

- Strategic Shift in Space Leadership
  - ► Recognition of India's evolving space leadership economic contribution positions it strategically in the global space arena.

#### **Indian Space Policy, 2023:**

- The Indian Space Policy 2023 is a comprehensive set of guidelines that outlines the roles and responsibilities of different entities in the Indian space sector.
- Research & Development: The policy aims to keep India at the cutting edge of space research and development. ISRO, the Indian Space Research Organisation, has been tasked with focusing on applied research, technology development, and human spaceflight capabilities.
- Efficient collaboration between public and private sector: The policy outlines a strong emphasis on sharing technologies, products, processes, and best practices with New Generation Entities (NGEs) and Government companies.
- Privatising: The policy permits non-government entities to undertake end-to-end activities in the space sector through the establishment and operation of space objects, ground based assets and related services such as communication, remote sensing and navigation.
- Democratizing Data for All: Data with a Ground Sample Distance (GSD) of 5 meters and higher will be made freely accessible on a timely basis.
- This initiative promises to empower researchers, industries, and the general public with valuable information for various applications. In contrast, data with a GSD of less than 5 meters will be available for free to Government entities and at fair pricing for NGEs.
- Focus on human spaceflight capabilities: ISRO will work on developing the necessary technologies, infrastructure, and ecosystem for sustained human presence in space. This ambitious goal promises to propel India into the ranks of spacefaring nations. Additionally, the policy emphasizes the development of a collaborative framework for scientific research in multidisciplinary domains related to human space activities.
- Celestial Prospecting and In-situ Resource Utilization: ISRO is set to undertake studies and missions focused on in-situ resource utilization, celestial prospecting, and other aspects of extraterrestrial habitability. This forward-looking approach will help India pave the way for future space exploration and utilization of resources beyond Earth.
- Applicability: This policy is applicable to any space activity to or from Indian Territory or within the jurisdiction of India, including the area to the limit of its exclusive economic zone.



#### MAINS WWW.





# FSB'S CONCERNS ABOUT CRYPTO ASSET INTERMEDIARIES

#### Context:

Financial Stability Board (FSB)'s latest report on crypto-asset intermediaries sought measures to enhance crossborder cooperation and information sharing among local authorities.

# Multi-function crypto-asset intermediaries (MCIs)

- MCIs as firms providing various crypto services, such as trading, posing risks due to a lack of controls, transparency, and potential conflicts of interest.
- In traditional finance, separate entities handle these functions, preventing conflicts and promoting integrity.

#### **Key Highlights-**

#### Revenue Sources:

- ➤ MCIs earn from transaction fees, blockchain infrastructure operations, proprietary trading, and diversified services.
- ► Limited publicly disclosed information makes assessing revenue sources challenging.

#### **♦** Transparency and Governance:

- ➤ MCIs lack transparency about their corporate structure and are privately held.
- ➤ Poorly separated business lines and limited disclosure raise concerns about their vulnerabilities and governance.



#### Risk Management:

The report notes that poor risk management may facilitate insider misconduct and inflate prices of self-issued crypto assets. ► Lack of transparency hides risks until negative shocks materialize.

#### **♦** Concentration Risk:

- Market dominance by one or more MCIs may distort crypto-asset prices and facilitate anticompetitive behaviour.
- ➤ Concentration risk raises barriers, increases costs for users, and amplifies vulnerabilities.

#### Spill over to the Financial System:

- ➤ The threat to global financial stability from MCI failure is presently limited but recent events highlight vulnerabilities.
- ➤ The failure of crypto-friendly banks post-FTX collapse led to significant losses and shook confidence in crypto markets.

#### **Conclusion:**

The FSB report underscores the need for improved regulation and transparency in the crypto space, emphasizing the potential risks associated with MCIs. It points to the challenges in assessing their revenue, managing concentration risks, and the spillover effects on the broader financial system.



# HOW REFRIGERATORS AND ACS CONTRIBUTE TO GLOBAL WARMING

Context:

Sixty-three countries, including the US, Canada, and Kenya, signed up to the world's first-ever pledge to drastically cut cooling emissions at the on-going COP28 climate summit.

#### The Urgency of Cooling Emission Reduction:

- As climate change intensifies, the world faces a new challenge in the form of cooling emissions.
- The recently signed Global Cooling Pledge, with 63 participating countries including the US, Canada, and Kenya, marks a historic commitment to reduce cooling emissions by at least 68% by 2050.

#### **Cooling Emissions and Their Origins:**

#### Refrigerants and Greenhouse Gases

- ➤ Refrigerants in appliances: Cooling emissions primarily arise from refrigerants used in appliances like air conditioners and refrigerators.
- ➤ CFCs: Historically, chlorofluorocarbons (CFCs) were widely used but were phased out due to their harmful impact on the ozone layer.



HFCs and HCFCs: Hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs) replaced CFCs but pose a new problem as potent greenhouse gases.

➤ HFC-134a, commonly used in fridges, has a global warming potential 3,400 times that of CO2.

#### Leakage and Improper Disposal

- ► HFCs and HCFCs are released from **damaged appliances** or car air conditioning systems.
- Ninety percent of refrigerant emissions occur at the end of the equipment's life, often due to improper disposal.
- ➤ Electricity used to power cooling appliances, largely sourced from fossil fuels, also contributes to cooling emissions.

# The Impact of Cooling Emissions on Global Warming

- Escalating Demand and Vicious Cycle
  - ➤ Cooling emissions currently account for **7% of global greenhouse gas emissions**.
  - ➤ **Expected to triple by 2050** due to rising global temperatures leading to increased demand for cooling appliances.
  - ➤ A **destructive feedback loop**: as global warming worsens, the demand for cooling rises, further contributing to warming.

#### Alarming Consumption Trends

- ➤ Energy consumption for space cooling has tripled since 1990.
- Consumption increased by over 5% from 2021 to last year.
- Consumption rates set to skyrocket, especially in developing countries reliant on fossil fuels.

# Solutions: Addressing Cooling Emissions and Phasing Out HFCs

- **♦ The Kigali Amendment** 
  - ➤ Over 150 countries signed the **Kigali Amendment** to the **Montreal Protocol in 2016**.
  - A commitment to reducing HFC consumption by 80% by 2047, potentially avoiding 0.4 degrees Celsius of global warming by 2100.

#### Phasing Out HFCs

- ➤ **Promotion of climate-friendly chemicals**, known as natural refrigerants, such as ammonia, hydrocarbons, and CO2.
- ➤ These alternatives have lower or zero global warming potential.

#### Proper Management and Disposal

- Critical need for proper disposal of appliances at the end of their life.
- ➤ The management and reuse of refrigerant gases could significantly reduce global CO2 emissions.
- Beyond Air Conditioning: Sustainable Cooling Solutions
  - Emphasis on cooling buildings without relying solely on air conditioners.
  - Improved insulation materials and better ventilation in building designs to reduce the need for energy-intensive cooling.

# Way Forward: A Collective Effort for a Cooler Planet

- The Global Cooling Pledge signifies a critical step in addressing the escalating threat of cooling emissions.
- As the world grapples with the impacts of climate change, concerted efforts to reduce cooling emissions and phase out potent greenhouse gases are essential.
- ♦ The pledge reflects a **shared responsibility** to create a sustainable and cooler future for the planet.



# A QUARTER OF FRESHWATER FISH SPECIES RISK EXTINCTION BY CLIMATE CHANGE: IUCN

Context: IUCN Assessment: Climate change driving multiple species towards extinction at all stages of its lifecycle.

#### **Climate Change and Biodiversity Loss:**

- IUCN Assessment: Climate change is emerging as a significant driver of biodiversity loss, according to the latest update from the International Union for Conservation of Nature (IUCN) Red List.
- Freshwater Ecosystem: The assessment reveals alarming trends, especially in freshwater ecosystems, and highlights the interconnectedness of climate change, habitat degradation, and other anthropogenic factors affecting diverse species.

#### Freshwater Fish Under Threat:

- ♦ **Statistics:** About 25% of the world's freshwater fish species face extinction risks due to climate change.
- Factors: Decreasing water levels, shifting seasons, and rising sea levels impact 17% of threatened freshwater fish species.



Compound Threats: Climate change compounds threats from pollution (57%), dams and water extraction (45%), overfishing (25%), disease, and invasive species (33%).

#### **Species-Specific Impacts:**

- Lake Turkana Robber: Large-toothed Lake Turkana robber (Brycinus ferox) in Kenya moves from least concern to vulnerable due to overfishing, habitat degradation, and dams.
- Atlantic Salmon: Global population drops by 23%, moving the species from least concern to near threatened due to multiple threats during migration, climate influence, and invasive species.

#### **Green Turtle Populations Decline:**

- Threats: Central South Pacific and East Pacific green turtle populations move from endangered and vulnerable to extinction.
- Climate Influences: High temperatures affect hatching success, rising sea levels threaten nests, and warming oceans impact seagrass growth, a crucial part of the turtle's diet.
- Human Impact: Industrial and artisanal fishing contribute to incidental bycatch, while harvesting for consumption and trade further depletes numbers.

#### **Commercial Timber Tree Facing Extinction:**

- Big Leaf Mahogany: The commercially popular big leaf mahogany (Swietenia macrophylla) moves from vulnerable to endangered.
- Reasons: Unsustainable harvesting, urban encroachment, and agriculture lead to a 60% reduction in numbers over the past 180 years.
- Ongoing Threats: Despite legal protection, illegal logging and trade persist, compounded by climate change impacts on habitat.

#### **Positive Conservation Outcomes:**

- Scimitar-Horned Oryx: Upgraded from extinct in the wild to endangered due to successful reintroduction efforts in Chad.
- Saiga Antelope: Moved from critically endangered to near threatened, with population increase in Kazakhstan attributed to anti-poaching measures.

#### **IUCN Red List Updated:**

- The IUCN Red List update underscores the vulnerability of global biodiversity to the complex interplay of climate change and various anthropogenic pressures.
- Freshwater ecosystems, in particular, face compounded threats, with a quarter of freshwater fish species at risk of extinction.

The report sheds light on how decreasing water levels, shifting seasons, and rising sea levels intensify risks, affecting not only fish but entire ecosystems.

#### Impact on specific species:

- Lake Turkana robber and Atlantic salmon: Notable case studies highlight the impact on specific species, such as the Lake Turkana robber and Atlantic salmon, where overfishing, habitat degradation, and changing climates contribute to their vulnerability.
- Green turtle: The decline of green turtle populations exemplifies the intricate relationship between climate factors, human activities, and the survival of iconic species.

#### **Commercial Sector Impact:**

- Big leaf mahogany: The assessment also points to the commercial sector, with the big leaf mahogany facing extinction due to unsustainable practices and climate-induced habitat threats.
- Illegal logging persists: Despite legal safeguards, illegal logging persists, underscoring the challenges in enforcing conservation measures.

#### **Positive conservation efforts:**

- Scimitar-horned oryx: On a positive note, successful conservation efforts are evident in the case of the scimitar-horned oryx, showcasing the potential for species recovery through strategic initiatives.
- Saiga antelope's: The Saiga antelope's shift from critically endangered to near threatened reflects the positive impact of anti-poaching measures, although ongoing threats persist.

#### **Way Forward:**

- The IUCN Red List update emphasizes the urgency of addressing climate change as a primary driver of biodiversity decline.
- Conservation efforts must integrate climate resilience strategies, legal protection, and community involvement to ensure the survival of vulnerable species.



# WHAT'S HAPPENING WITH ETHANOL BLENDING SCHEME

#### **Context:**

Low stocks of sugar and uncertainties over production this year has forced the government to go slow on its successful ethanol blending programme.

#### **Background:**

In a significant policy shift, the Indian government has taken a series of measures aimed at **bolstering** domestic sugar availability.



- After banning sugar exports earlier, the Ministry of Consumer Affairs, Food and Public Distribution, on December 7 2023, directed mills and distilleries to cease using sugarcane juice/syrup for ethanol production "with immediate effect."
- This move marks a crucial step in the government's strategy to address concerns over diminishing sugar stocks and prioritize consumer needs over fuel production.

#### **Ethanol Blending Program Success:**

- Ethanol Blended Petrol (EBP): Under the leadership of Prime Minister Narendra Modi, the Ethanol Blended Petrol (EBP) program has achieved remarkable success.
- ♦ Blending Surge: The average blending of ethanol with petrol has surged from 1.6% in 2013-14 to an impressive 11.8% in 2022-23.
- ♦ Key to this success: Key to this success has been the diversification of feedstocks, with ethanol production extending beyond traditional C-heavy molasses.

#### **Feedstock Diversification and Pricing Policy:**

- Alternative feedstocks: Ethanol production has shifted towards alternative feedstocks, including B-heavy molasses, sugarcane juice/syrup, surplus rice from the Food Corporation of India's stocks, broken/damaged foodgrains, and maize.
- Differential pricing policy: The government's differential pricing policy has played a pivotal role in incentivizing mills to produce ethanol from feedstocks other than C-heavy molasses.
- ♦ **Higher ex-distillery prices:** The policy has resulted in higher ex-distillery prices for ethanol produced from various sources, providing a significant boost to the EBP program.

#### **Setback for Industry:**

- Restrict use of sugarcane juice/syrup: However, the recent directive to restrict the use of sugarcane juice/syrup for ethanol production is a setback for companies that have invested in capacities to produce ethanol directly from cane juice/syrup.
- This move, affecting companies like Balrampur Chini Mills, Shree Renuka Sugars, Ugar Sugar Works, and Nirani Sugars, could impact the bulk of ethanol supplies and lead to stranded capacities.

#### **Impact on Ethanol Supply and Sugar Production:**

- ♦ Concerns over sugar supply: The order comes as the government faces concerns over sugar supply, with stocks at a six-year low and uncertainties over production for the current year.
- Decline in sugar output: Estimates suggest a decline in sugar output for the 2023-24 year, with Maharashtra and Karnataka expected to record sharp

- declines due to subpar rains and low reservoir water levels.
- ➤ The directive could result in approximately 15 lakh tonnes of additional sugar entering the market, addressing supply concerns and potentially stabilizing prices.

#### Way Forward:

- Prioritization of domestic supply: The government's recent decisions, including the ban on sugar exports and the directive to restrict sugarcane juice/syrup for ethanol production, underscore a clear prioritization of domestic supply over exports and consumer needs over fuel production.
- ♦ Sugar supply challenges: As the nation grapples with **sugar supply challenges**, these policy measures signal a commitment to ensuring food security and addressing market dynamics.
- ♦ Success of the EBP program: The success of the EBP program, coupled with ongoing policy adjustments, will continue to shape India's approach to balancing the demands of consumers, producers, and the evolving energy landscape.



#### **ECOLOGICAL IMPACT OF BIOFORTIFIED SEEDS**

Context:

India has made remarkable progress in agricultural innovation, with the 142 biofortified development of varieties since 2014.

Spearheaded by the Indian Council of Agricultural Research (ICAR), these varieties are designed to enhance the nutritional content of crops without adverse effects on the environment.

#### Scope of Biofortification: Varied Crops and **Categorized Impact**

- Diverse Crop Portfolio: The biofortification initiative covers 124 field crops and 18 horticultural crops, ranging from staple grains like rice, wheat, and maize to nutrient-rich vegetables and fruits.
- Biofortified Crop Breakdown:
  - Field Crops: Rice (10), Wheat (43), Maize (20), Pearl Millet (11), Small Millets (13), and more.
  - ► Horticultural Crops: Sweet Potato (5), Amaranthus (3), Greater Yam (2), and more.

#### **Environmental Impact: Sustainably Engineered Varieties**

♦ Ecological Neutrality: Biofortified varieties exhibit no discernible impact on soil and water conditions. These varieties are developed through traditional

- breeding methods, minimizing concerns about environmental repercussions.
- Equivalent Nutrient and Water Requirements: Biofortified crops share similar water and nutrient requirements with traditional varieties, ensuring sustainable cultivation practices.

#### **Yield and Affordability: The Economic Landscape**

- Yield Parity: All biofortified varieties match or surpass the yield of conventional counterparts. This ensures that farmers don't face a productivity penalty when opting for these nutritionally enhanced crops.
- Affordable Production: Despite their enhanced nutritional value, biofortified crops are not more expensive than existing varieties in the market. The cultivation costs remain comparable, making them economically viable for farmers.

# **Seed Production and Distribution: Scaling Impact**

- Breeder Seed Production: A substantial 37,425.7 quintals of breeder seed for biofortified varieties have been produced since 2019-20.
- Multiplication and Supply Chain: Public and private seed production agencies receive breeder seeds for downstream multiplication, ultimately leading to the distribution of certified seeds to farmers.
- Coverage and Impact: Over 10 million hectares of agricultural land, spanning wheat, rice, pearl millet, mustard, and lentils, have been cultivated with biofortified varieties in the past six years.

# National Food Security Mission (NFSM): A Catalyst

- NFSM Interventions: The National Food Security Mission plays a pivotal role by supporting interventions like cluster demonstrations, cropping system enhancements, and distribution of High Yielding Varieties (HYVs)/ hybrids.
- Technology Transfer: ICAR, State Agricultural Universities, and Krishi Vigyan Kendras receive support for technology transfer, ensuring that advancements reach farmers through demonstrations and frontline initiatives.
- Encouraging Biofortification: NFSM actively promotes the production and distribution of biofortified seeds, aligning with its goal of enhancing food security and nutritional outcomes.

# Way Forward: Nourishing the Nation, Sustainably

• India's journey in **biofortification** stands as a beacon of progress in agricultural research and development.

By prioritizing nutritional enhancement without compromising on yield and affordability, the nation is paving the way for a sustainable and resilient future in agriculture.

The biofortification revolution is not only transforming crops but also nourishing the lives of millions across the country.



# THE LIMITATIONS OF CCS AND CDR AND THEIR GRIP ON OUR FUTURE CLIMATE

Context: Scientists have questions about the scale at which CCS and CDR are expected to succeed.

# Unraveling the Complexities of Carbon Abatement Technologies at COP28

New Technologies: The ongoing COP28 climate talks in Dubai have brought to the forefront the discussions around carbon capture and storage (CCS) and carbon-dioxide removal (CDR) technologies, with a particular emphasis on the contentious term "abatement."

#### **Understanding CCS and CDR Technologies**

- ♦ Deciphering CCS: CCS, or carbon capture and storage, encompasses technologies designed to capture carbon dioxide (CO₂) emissions at their source, preventing their release into the atmosphere.
- Unveiling the Forms of CDR: CDR, or carbon-dioxide removal, takes various forms, ranging from natural methods such as afforestation and reforestation to advanced technologies like direct air capture.
  - Enhanced rock weathering and bioenergy with carbon capture and storage (BECCS) are among the more intricate CDR technologies, each playing a unique role in mitigating carbon emissions.

# Unraveling the Controversy of "Unabated Fossil Fuels" at COP28

- Unabated fossil fuels: The term "unabated fossil fuels" has become a contentious point of discussion at COP28, specifically in the context of combustion without utilizing CCS technologies to capture emissions.
  - ➤ **Phase out:** Draft decisions at the conference emphasize the need to "**phase out**" such unabated fossil fuels, revealing the complexities of aligning diverse perspectives.



#### The Scale and Challenges of CCS and CDR

- ♦ Technical details of CCS and CDR: While the technical details of CCS and CDR are clear, questions arise regarding their scalability and effectiveness.
- ♦ The Sixth Assessment Report (AR6) by the IPCC underscores the reliance on CDR for achieving the goal of limiting global temperature rise to 1.5 degrees Celsius. However, concerns about the scale of implementation and the necessity of these technologies persist.

#### **Navigating the IPCC's Emission Scenarios**

- ♦ The IPCC's emission scenarios for limiting warming to 1.5 degrees Celsius highlight the need to sequester 5 billion tonnes of CO<sub>2</sub> by 2040.
  - This **ambitious goal** raises questions about the feasibility and implementation challenges, especially considering it surpasses the annual emissions of a major emitter like India.

#### The Crucial Role of CDR in Mitigation **Strategies**

- **♦ CDR in mitigating climate change:** Scientists emphasize the indispensable role of CDR in mitigating climate change, particularly in scenarios where direct mitigation through renewable energy sources may prove insufficient.
- ♦ The **strategic use of CDR** becomes crucial to counterbalance hard-to-abate residual emissions, as outlined in the IPCC AR6 report.

#### **Analyzing the Effectiveness of CCS**

- Challenges of CCS: Despite being recognized as a key technology, CCS faces challenges related to its effectiveness, feasibility at a large scale, high costs, and potential environmental impact.
- ♦ Highly effective CCS: The distinction between "abated" and "unabated" fossil fuels hinges on the application of highly effective CCS, emphasizing the need for a capture rate of 90-95% or more.

#### **Scrutinizing CDR Technologies**

- **♦ Limitations:** While CDR technologies afforestation, reforestation, and BECCS offer potential solutions, they are not without limitations.
- Land Issues: Concerns about land use, equity issues, and potential conflicts with other land-dependent activities, such as agriculture, underscore the complexities of deploying large-scale CDR methods.

#### Pitfalls and Dilemmas of CCS and CDR

- Creating more emissions: The deployment of CCS and CDR raises concerns about creating more room for emissions, potentially offsetting their intended benefits.
- Increased Emissions: The paper explores the pitfalls of these technologies, including their potential use to extract more oil, the role of land in CDR methods, and the overarching question of who will bear the financial burden of implementing CDR at scale.

#### **Way Forward:**

- ♦ The article concludes by highlighting the pivotal role of the next decade in determining the viability and scalability of CDR methods.
- It underscores the need for addressing questions related to land use, equity, and financial responsibilities, while also recognizing the broader global perspectives on climate adaptation versus extensive investment in CDR technologies.



#### THE FUTURE OF HEALTHCARE IS IN OUR GENES

Context:

Gene and cell therapy are the cuttingedge medical advancements poised to revolutionise our approach to and treatment of various health conditions, from sickle cell disease and dengue to cancer and HIV/AIDS.



#### **India's Health Sector:**

- ♦ **Gene and cell therapy:** India's healthcare landscape is undergoing a paradigm shift, with gene and cell therapy emerging as imperative tools for addressing diverse health challenges.
- ♦ **Transformative therapies:** From genetic disorders to cancer and infectious diseases, these transformative therapies offer the promise of not just treatment



but cures, ushering in a new era of precision and personalized medicine.

#### **Genetic Disorders:**

- Burden of genetic disorders: India grapples with a substantial burden of genetic disorders, notably Thalassemia and Sickle Cell Anaemia, affecting over 40 million individuals.
- Rewriting the genetic code: Gene therapy, by rewriting the genetic code, provides a beacon of hope by addressing the root cause.

#### **Cancer Treatment:**

- New cancer cases: With over 1.16 million new cancer cases reported annually, gene and cell therapy become crucial in combating this formidable adversary.
- Precision medicine: It, exemplified by CAR-T therapy, tailors treatments to an individual's unique genetic makeup, potentially enhancing effectiveness and reducing side effects. India's genetic diversity adds complexity to cancer treatment, making gene/cell therapy a customizable solution.

#### Infectious Diseases:

- Infectious Disease Challenges: Infectious diseases, from viral pathogens to pandemics like Covid-19, pose significant challenges to public health in India.
- mRNA vaccines: Groundbreaking mRNA vaccines and gene therapies like CAR-T cell therapy offer hope in treating conditions such as Severe Combined Immunodeficiency and combating various viral threats.
- Gene and cell therapy: Gene and cell therapy become powerful weapons in the fight against infectious diseases.

#### **Future Vision for Healthcare:**

- New health challenges: As demographic and lifestyle changes present new health challenges, gene and cell therapies offer a vision for the future of healthcare in India.
- Precise and personalized treatments: Beyond treatment, these therapies anticipate a future where precise and personalized treatments become the norm, reducing economic burdens associated with chronic genetic conditions.

#### **Challenges and Opportunities:**

Infrastructure limitations and ethical considerations: Integration of gene and cell therapy into mainstream healthcare in India faces challenges such as infrastructure limitations and ethical considerations.

- Collaborative efforts: However, these challenges present opportunities for collaborative efforts involving scientific communities, industries, policymakers, and healthcare providers.
- Research and Development: Investment in research, regulatory frameworks, and awareness among healthcare professionals and the public are crucial for successful integration.

#### **Way Forward: The Health Revolution**

- Revolutionizing healthcare: Gene and cell therapy hold the promise of revolutionizing healthcare in India by offering cures for genetic disorders, precision cancer treatments, and innovative solutions for infectious diseases.
- Opportunities for India: India has the opportunity to position itself at the forefront of medical innovation, paving the way for a healthier and more resilient nation.
- The revolution is underway, and gene and cell therapy are leading the way.



#### **WEB BROWSERS**

Context: Web browsers translate code into the dynamic web pages that form the backbone of our online experiences.

#### **Web Browsers and Internet:**

Web browsers, our digital gateways to the internet, appear deceptively simple. Yet, beneath their userfriendly interfaces lies a complex world of processes that shape our online experiences.



#### 1. Understanding Web Browsers:

- Definition: A browser is an application facilitating internet communication, fetching information in various formats and displaying it on devices.
- Functionality: It sends and receives messages, translates user input, and interacts with servers across the internet.



#### 2. Evolution of Web Browsers:

Birth of Web Browsing: Tim Berners-Lee introduced the World Wide Web in 1990, leading to the creation of the first web browser, 'WorldWideWeb.'

- Visual Revolution: Mosaic (1993) introduced image display, and Netscape Navigator (1994) popularized bookmarks and a user-friendly URL bar during the 'Browser Wars.'
- Firefox and Chrome: Mozilla Firefox (2004) brought tabbed browsing and add-ons, and Google Chrome (2008) emphasized speed and minimalist design, reshaping the browser landscape.

#### 3. Components of a Web Browser:

- Request and Response: Initiates digital communication between the browser and servers to fetch web page data.
- Deconstructing the Response: Involves decoding HTML, CSS, and JavaScript files to construct the visual layout of a webpage.
- Rendering: Assembles and presents the final webpage by interpreting HTML, applying CSS for styling, and executing JavaScript for interactivity.
- Data Management: Implements tools like cookies and cache to enhance user experience and manage digital footprints.
- Security Measures: Uses encryption protocols like HTTPS and warning systems to ensure data security during transmission and storage.

#### 4. Technological Advancements:

WebAssembly: Enables near-native performance within browsers.

- VR and AR Support: Embracing virtual reality (VR) and augmented reality (AR) for immersive online experiences.
- Privacy Features: Strengthening privacy measures to provide users greater control over their digital footprint.

#### 5. Conclusion: The Symphony of Browsing:

- Appreciating the Unsung Heroes: Web browsers, often overlooked, play a crucial role in translating code into dynamic web pages.
- Digital Choreography: Every click initiates a symphony of digital choreography behind the scenes, bringing the online world to our fingertips.

#### **Way Forward:**

- Evolution of web browsers: The evolution of web browsers from simple text-based interfaces to sophisticated, feature-rich applications has transformed our online experiences.
- Intricate processes: As we navigate the internet, it's essential to appreciate the intricate processes that occur behind the scenes, orchestrated by web browsers.
- Future Possibilities: The future holds exciting possibilities with advancements in technology, promising even more immersive and secure browsing experiences.





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PETISION PROGRAM

# Section B [SPECIALS]

# **Topic**

SC upholds abrogation of Article 370

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#### SC UPHOLDS ABROGATION OF ARTICLE 370

Context:

Recently, a five-member Constitution bench of the Supreme Court, headed by Chief Justice D.Y. Chandrachud, unanimously upheld the abrogation of Articles 370 and 35A, noting that Article 370 was a temporary provision and that the erstwhile State of Jammu and Kashmir had no internal sovereignty.

#### **Background:**

- Over the years, there were debates about the special status; with some arguing it impeded the state's integration with the rest of India.
- ♦ The **Pulwama terror attack** in February 2019, which resulted in the death of Indian security personnel, heightened security concerns in the region.
- ♦ There were calls for a stronger response to address security challenges.
- As an action taken in favour to this, On August 5, 2019, the Indian government, through a Presidential order, abrogated Article 370, effectively revoking the special status of Jammu and Kashmir.
- ♦ The state was also reorganized into two separate Union Territories - "Jammu & Kashmir and Ladakh."

#### What was all Article 370 about?

- Article 370 of the Indian Constitution granted special autonomy to the region of Jammu and Kashmir.
- The article allowed the state to have its constitution, and its residents enjoyed certain privileges, including exclusive rights over land and property.
- ◆ Article 35A: Article 35A, inserted through a Presidential order in 1954, granted special rights and privileges to the residents of Jammu and Kashmir.
  - It allowed the state's legislature to define permanent residents and provided them with exclusive rights over jobs and property.

#### Why there was a need for such an Action?

♦ The government argued that the move aimed at integrating Jammu and Kashmir fully into the Indian Union and promoting development in the region.

#### **Arguments** and **Ouestionnaire** around **Abrogation of Article 370:**

- Legality and Constitutional Validity:
  - ▶ Was the revocation of Article 370 constitutional?

- ▶ Did the government have the authority to make such a significant change through Presidential orders?
- Democratic Process:
  - ▶ Was the decision in line with democratic norms, considering the absence of an elected government in Jammu and Kashmir?
  - Should such a major decision be made without the consent of the people or their elected representatives?

#### Federalism and State Autonomy:

- Did the revocation undermine the principles of federalism?
- How did the move impact the autonomy of Jammu and Kashmir in legislative matters?
- Historical Context:
  - ▶ Was there sufficient consideration of the historical context and the special status granted to Jammu and Kashmir?
  - ▶ Did the decision respect the agreements made during the state's accession to India?

#### **About the Recent Verdict:**

On federalism and Sovereignty: In the apex court's view, following the Instrument of Accession and the issuance of the Proclamation dated November 25, 1949, by which the Constitution of India was adopted, the State of Jammu and Kashmir did not retain any element of sovereignty.





- Article 370 was a feature of **asymmetric federalism** and not sovereignty.
- ➤ The Supreme Court has reserved its verdict on upholding Article 370 by the President and mentioned that, the President has power to abrogate Article 370 if "special circumstances warrant a special solution".
- ♦ The Supreme Court also proclaimed that the concurrence of the State government was not required to apply the Indian Constitution to the **State** of Jammu and Kashmir.
- On President's decision to abrogate Article 370, using the Article itself: It is pertinent to mention that when Jammu and Kashmir's special status was revoked by a Presidential Order in August 2019, the erstwhile State was under **President's rule**, and it has since been a source of debate whether irreversible decisions could be made in the absence of an elected Legislative Assembly.
  - The President in exercise of power under **Article 370(3**) can unilaterally issue a notification that Article 370 ceases to exist.
- So, concluding thoughts have highlighted that," Every decision taken by the Centre on behalf of the state during Presidential rule can't be challenged."

#### **Arguments/Answers given for 'Abrogation** of Article 370':

- President's sole authority:
  - The President did not have to secure the concurrence of the Government of the State or **Union Government** acting on behalf of the State Government under the second proviso to **Article 370(1)(d)** while applying all the provisions of the Constitution to Jammu and Kashmir because such an exercise of power has the same effect as an exercise of power under Article 370(3) for which the concurrence or collaboration with the State Government was not required.
- Declared as a 'Temporary Provision':
  - ▶ The court held that Article 370 was only a

- "temporary provision" to ease the accession of the then princely State to the Union at a time of internal strife and war.
- The power of the Parliament or the President to abrogate Article 370 did not cease to exist with the dissolution of the Constituent Assembly of Jammu and Kashmir in 1957.
- Power to abrogate Article 370 is not present for J & K Assembly:
  - ➤ Only the power of the J&K Constituent Assembly to recommend abrogation of Article 370 ceased to exist with its dissolution.
  - > Also, the power of the President under Article 370 (3) to abrogate Article 370 had continued to prevail. As, when the Constituent Assembly dissolved, only the transitional power recognised in the proviso of Article 370(3), which empowered the Constituent Assembly to make its recommendations, ceased to exist. It did not affect the power held by the President under Article 370 (3).

#### **Arguments in favour of Article 370:**

- **♦ Geographical Differences**: Views may differ between regions such as Jammu, Kashmir, and Ladakh, with each having distinct demographic and cultural characteristics.
- ♦ Ethnic and Religious Diversity: The opinions of different ethnic and religious communities, including Hindus, Muslims, and Buddhists, may vary based on their historical experiences and perceptions.
- Political Affiliations: People's political affiliations, whether aligned with mainstream political parties or separatist groups, strongly influence their stance on the abrogation.
- ♦ It's important to recognize that opinions within Jammu and Kashmir are diverse, and there is no single, unified solution for the issue in the region. The region has a long history of complex geopolitical and socio-cultural dynamics, contributing to a multiplicity of viewpoints.

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# Section C [PRELIMS]

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- **Santiniketan**
- Central Tribal varsity in Telangana
- Advocates Amendment Bill 2023 passed
- **9** PM-JANMAN for PVTGs
- RBI to bring digital loan aggregators under regulation
- Global River Cities Alliance (GCRA) launched
- Al summit adopts 'New Delhi declaration'
- S First Gene Therapies to Treat Patients with Sickle Cell Disease

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#### SANTINIKETAN

Context:

Centre-approved board/plaque identifying Santiniketan as UNESCOapproved world heritage site has been erected by Visva-Bharati at the location.

#### **About Santiniketan:**

♦ Founded by Debendranath Tagore and home to Visva-Bharati, the university set up by his son Rabindranath - was accorded world heritage status by UNESCO.



- Established in rural West Bengal in 1901 by poet and philosopher Rabindranath Tagore, it was a residential school and centre for art based on ancient Indian traditions and a vision of the unity of humanity transcending religious and cultural boundaries.
- ♦ A 'world university' was established at Santiniketan in 1921, recognizing the unity of humanity or "Visva Bharati".
- Distinct from the prevailing British colonial architectural orientations of the early 20th century and of European modernism, Santiniketan represents approaches toward a pan-Asian modernity, drawing on ancient, medieval and folk traditions from across the region.

#### **Debendranath Tagore:**

Maharishi Debendranath Tagore was a scholar and a social reformer. He joined the Brahmo Samaj in 1842, which was founded by Raja Rammohan Roy in 1828.

- Earlier, he headed the Tattvabodhini Sabha, which was founded in 1839. The sabha started a monthly theological journal named Tattvabodhini Patrika in Bengali.
- ♦ Tattvabodhini Sabha and Tattvabodhini Patrika, both focused on the systematic study of India's past with a rational outlook and propagated the ideas of Raja Rammohan Roy.

- In later years, Tattvabodhini Sabha was incorporated into the Bahmo Samaj.
- ♦ Debendranath Tagore's Samaj came to be known as the Adi Brahmo Samaj.

#### Rabindranath Tagore:

- ♦ Born in Kolkata on May 7, 1861, emerged as a globally acclaimed poet, author, philosopher, and the first Nobel laureate from Asia.
- Revolutionized Bengali literature by introducing innovative prose and verse forms, liberating it from classical Sanskrit conventions. He was highly influential in bridging Indian and Western cultures.
- ♦ Composed around 2230 songs known as Rabindra Sangeet and painted 3000 artworks. Notably, he penned India's national anthem, Jana Gana Mana, and Amar Sonar Bangla, the national anthem for Bangladesh, leaving an indelible mark on Sri Lanka's anthem as well.
- Received a knighthood in 1915, he renounced it in 1919 as a protest against the Amritsar (Jallianwalla Bagh) Massacre.
- Founded Viswa Bharti University, initially named Shantiniketan.
- Among his major literary contributions, Gitanjali: Song Offerings, which earned him the Nobel Prize, stands out. Other notable poetic works include Sonar Tari and Manasi.
- Tagore delved into novels, plays, and short stories in both Bengali and English, with outstanding pieces like Chitra and The Post Office.
- Credited with pioneering the Bengali short story, his exceptional narratives are collected in The Hungry Stones and Other Stories and The Glimpses of Bengal



#### CENTRAL TRIBAL VARSITY IN **TELANGANA**

**Context:** 

Recently, the Bill for central Tribal varsity in Telangana has been passed in the Lok Sabha.

#### **About the update:**

- ♦ The Central Universities (Amendment) Bill, 2023amends the Central Universities Act, 2009 to set up the Sammakka Sarakka Central Tribal University in Telangana's Mulugu district. It was previously cleared by the Union Cabinet.
- Establishing a Central Tribal University in Telangana was obligatory under the Andhra Pradesh Reorganisation Act, 2014, which carved out Telangana from the erstwhile Andhra Pradesh state.



#### **Benefits:**

- University will cater to the regional aspirations for years to come and promote higher education and research among tribal communities, including in subjects such as tribal art, culture and customs, and technology.
- Will strive to remove regional imbalances.

#### Sammakka-Sarakka-The legend

- Sammakka-Sarakka, a mother-daughter duo, holds a special place in the local tribal folklore.
- Sammakka, married to Pagididda Raju, a Kakatiya dynasty chief, played a pivotal role in protesting against oppressive taxes imposed by local rulers.
- Sarakka, one of her daughters, lost her life in the battle, and Sammakka disappeared into the hills, believed to have transformed into a vermillion casket.
- A biennial festival called the **Sammakka Saralamma Jatara**, one of the largest gatherings of tribal people globally.
- The event commemorates the bravery of the 13thcentury mother-daughter duo in their struggle against tax imposition on the Koya people.
- The Jatara begins at **Medaram** and involves rituals conducted by Koya priests.



#### ADVOCATES AMENDMENT BILL 2023 PASSED

The Advocates Amendment Bill, 2023, Context: was recently approved by the Lok Sabha during the Winter Session of Parliament.

#### Aims of the Bill:

- ♦ This legislative move aims to eradicate the presence of 'touts' in the legal system.
- The Bill involves the repeal of the colonial-era Legal Practitioners Act, 1879, and amendments to the Advocates Act, 1961.

#### **Repeal of Outdated Legislation:**

- ♦ The Bill marks the end of the Legal Practitioners Act, 1879, a colonial-era law deemed obsolete.
- The repeal is part of the government's broader strategy to eliminate outdated laws and streamline the legal framework.

#### **Reduction of Superfluous Enactments:**

- The primary objective of the Advocates Amendment Bill is to reduce the number of redundant laws in the statute book.
- ♦ By amending the Advocates Act, 1961, the government aims to create a more contemporary and efficient legal framework.

#### **Response to Societal Asymmetry:**

- ♦ MPs acknowledged the importance of the Bill in addressing societal imbalances.
- ♦ The complexity of the legal **system** often leaves individuals without proper guidance, leading to the exploitation of people by 'touts.'
- ♦ The Bill seeks to rectify this issue by eliminating such exploitation.

#### Repealed 1879 Act:

**Definition of 'Tout'**: The now-repealed **Legal** Practitioners Act, 1879, defined a 'tout' as someone who, in exchange for remuneration, procures the employment of a legal practitioner in any legal business. This definition included individuals frequenting legal institutions for such purposes.

#### **Advocates Act of 1961:**

The Advocates Act of 1961 was enacted postindependence to regulate the legal profession effectively. While repealing a majority of the 1879 Act, certain provisions related to the extent, definitions, and powers to frame lists of 'touts' were retained.

#### **Advocates Amendment Bill, 2023**

#### **Introduction of Section 45A**

♦ The Bill introduces a new provision, Section 45A, in the Advocates Act, 1961.





High Courts and district judges to frame and publish lists of 'touts' after providing them with an opportunity to contest their inclusion.

#### **Legal Safeguards**

- The new provision ensures that no individual's name is included in the 'touts' list without affording them an opportunity to present their case.
- Authorities can send suspected 'touts' to subordinate courts for inquiry, and only proven cases will be included in the published list.

#### **Penalties for Acting as a Tout**

- Section 45A imposes penalties, including imprisonment and fines, for individuals acting as 'touts' while their names are on the published list.
- ♦ This provision mirrors Section 36 of the now-repealed 1879 Act.



#### **PM-JANMAN FOR PVTGS**

#### Context:

The Tribal Affairs Ministry has mentioned to the Rajya Sabha that the population of Particularly Vulnerable Tribal Groups (PVTGs) was not in decline, citing information provided by the Office of the Registrar General and Census Commissioner of India (ORGI).

This has questioned the scheme being launched for PVTGs named as 'PM-JANMAN' and its implementation.

#### **About PVTGs in India:**

- The PVTGs are defined by the government as tribal communities that show either a declining or stagnant population, use of pre-agrarian technology, economic backwardness, low literacy etc.
- There are 75 such communities which are spread over 18 States and Union Territories, according to government figures.
- State-Wise data:
  - ➤ **Major distribution**: The highest number of PVTGs are found in Odisha (15), followed by Andhra Pradesh (12), Bihar and Jharkhand (9), Madhya Pradesh and Chhattisgarh (7), Tamil Nadu (6) and Kerala and Gujarat (5 each).
  - ➤ Some of PVTGs are also exists in Maharashtra and West Bengal (3 each), Karnataka and Uttarakhand (2 each), and one each in Rajasthan, Tripura and Manipur.
  - ➤ All the four tribal groups in the **Andaman**, **and one in Nicobar Islands**, are recognised as PVTGs.

#### **About PM-JANMAN:**

#### **♦** Background:

- ➤ The Cabinet recently approved the Rs. 24,000 crore **Pradhan Mantri-Janjati Adivasi Nyaya Maha Abhiyan.**
- The scheme is in line with the Prime Minister's Particularly Vulnerable Tribal Groups Development Mission that would take basic facilities likes roads, power, homes, mobile connectivity, etc. to the most backward among the Scheduled Tribes, the PVTGs.

#### **♦** Key Points of the scheme:

- ➤ **Objective**: The scheme aims to provide crucial interventions such as permanent housing, road connectivity, piped water supply, mobile medical units, hostel construction, 'Anganwadi' facilities, skill development centres,
- ➤ The Government was planning a Rs.15, 000 crore expenditure, to be spent over a period of **three years** under the scheme.
- The implementation of the programme will be done through nine ministries, which will ensure that existing schemes are taken to these PVTGinhabited villages.
- ➤ The government has set to build;
  - 4.9 lakh pucca homes,
  - Lay 8,000 km of connecting roads,
  - Link all households with piped water,
  - Set up 1,000 mobile medical units,
  - Construct 2,500 anganwadi centres, 1,000 multipurpose centres and 500 hostels,
  - Install mobile towers in 3,000 villages.
- ➤ The plan also intends to set up **vocational and skill training centres** in 60 aspirational PVTG blocks and build **500 Van Dhan Vikas Kendras** to help people trade in forest produce.
- ► In addition to connecting 1 lakh of these households to an off-grid solar power system and bringing in solar street lights.
- Fund allocation: The money for will go into the Scheduled Tribe Component (STC) of the respective ministries from where it will be allocated for the development of these groups.

#### **Steps for PVTG Welfare:**

In 2013, a National Advisory Council (NAC) report on the state of PVTGs had recommended that as a first, the Ministry of Tribal Affairs should design and conduct a Census specifically for the PVTG communities to not just enumerate but also find out the status of education, health, and housing.





#### RBI TO BRING DIGITAL LOAN AGGREGATORS UNDER REGULATION

Context:

The Reserve Bank of India (RBI) has decided to bring digital loan aggregators under a comprehensive regulatory framework to increase transparency in their operations.

#### Who are Web Aggregators?

• Web aggregators bring together loan offers from multiple lenders on an electronic platform; borrowers can then pick and choose the best available loan option.

#### **Need for Regulation-**

- Digital lenders have been accused of charging high interest rates and using illegal recovery measures.
- There are hundreds of unauthorised digital lenders which are outside the RBI's purview.



#### Comprehensive Regulatory Framework -

- Present Classification-
  - ▶ The digital lending universe is classified into three groups: Entities regulated by the RBI and permitted to carry out lending business; entities authorised to carry out lending as per other statutory/regulatory provisions but not regulated by RBI; and entities lending outside the purview of any statutory/ regulatory provision.
- ♦ The central bank's regulatory framework is focused on the digital lending ecosystem of RBI's regulated entities and the lending service providers engaged by them to extend various permissible credit facilitation services.
- ♦ Entities falling in the second category, the respective regulator or controlling authority may consider formulating or enacting appropriate rules and regulations on digital lending based on the

- recommendations of WGDL (working group on digital lending).
- ♦ For the entities in the third category, the WGDL has suggested specific legislative and institutional interventions for consideration by the Central Government to curb the illegitimate lending activity being carried out by such entities.

#### Prospects of Regulating Digital Lenders by a **Central Bank**

- **Consumer Protection:** Regulation ensures that digital lenders adhere to guidelines that protect consumers from predatory lending practices, ensuring fair treatment and transparency.
- ♦ Financial Stability: Oversight by a central bank contributes to the overall stability of the financial system by preventing excessive risk-taking and promoting responsible lending practices.
- Risk Mitigation: Regulations help mitigate risks associated with digital lending, reducing the likelihood of financial crises and protecting both borrowers and lenders.
- ♦ Data Privacy and Security: Regulatory frameworks can include measures to safeguard borrower data, ensuring privacy and security in the digital lending process.
- Market Integrity: Regulations contribute to maintaining the integrity of the digital lending market, preventing fraudulent activities and ensuring fair competition among lenders.

#### Cons of Regulating Digital Lenders by a **Central Bank**

- Innovation Impact: Overregulation may stifle innovation in the digital lending sector, hindering the development of new and efficient financial technologies.
- ♦ **Compliance Costs:** Stringent regulations can impose high compliance costs on digital lenders, especially smaller players, potentially limiting their ability to operate or compete.
- ♦ Market Entry Barriers: Excessive regulations might create barriers to entry for new digital lenders, reducing competition and limiting choices for consumers.
- Adaptability Challenges: Traditional regulatory frameworks may struggle to keep pace with rapidly evolving digital lending technologies, leading to challenges in effective oversight.
- One-Size-Fits-All Approach: Regulatory frameworks may not cater to the diverse business models and risk profiles within the digital lending ecosystem, resulting in a one-size-fits-all approach that may not be optimal.





# GLOBAL RIVER CITIES ALLIANCE (GCRA) LAUNCHED

**Context:** 

The GRCA was launched at the United Nations Climate Change Conference COP28 in Dubai.

#### **Background:**

- National Mission for Clean Ganga (NMCG): It is responsible for implementing India's Namami Gange program, has taken a significant stride in river conservation and sustainable water management.
- Global River Cities Alliance (GRCA): This was achieved through the launch of the Global River Cities Alliance (GRCA) at the United Nations Climate Change Conference COP28 in Dubai.

#### **Expanding Reach of River Cities Alliance:**

- River Cities Alliance: The GRCA builds upon the existing River Cities Alliance formed by NMCG in collaboration with the National Institute of Urban Affairs (NIUA), which includes 142 Indian River cities as members.
- Inclusion of river cities: The global expansion of this alliance saw the inclusion of river cities such as Den Haag from the Netherlands, Adelaide from Australia, and Szolnok from Hungary.

#### **International Collaboration:**

- Memorandum of Common Purpose (MoCP): In a groundbreaking move, the River Cities Alliance (RCA) had previously signed a Memorandum of Common Purpose (MoCP) with 124 member cities of the Mississippi River Towns and Cities Initiative in the United States.
  - ➤ This collaboration marks the first-of-its-kind alliance in the world, underlining the shared commitment to global river conservation.

#### **NMCG's Statement:**

Significance of the GRCA: The NMCG, in a statement, highlighted the significance of the GRCA launch as a momentous step in global efforts towards river conservation and sustainable water management.

#### **Quoting PM Narendra Modi's Vision:**

- New river planning: G Asok Kumar, Director General of NMCG, quoted Prime Minister Narendra Modi's call for new river planning.
- Rivers in urban planning: Stressing the importance of mainstreaming rivers in urban planning without

a regulatory mindset, Kumar emphasized the need for a holistic approach to ensure the sustainability of river ecosystems.

#### **Global River Cities Alliance's Role:**

- Global commitment: The launch of GRCA signifies a global commitment to coordinate efforts for the conservation and sustainable management of rivers.
- Crucial Roles: As an alliance with international representation, it will play a crucial role in developing strategies, sharing best practices, and fostering collaboration among cities facing similar challenges related to river ecosystems.

#### **First-of-its-Kind Initiative:**

- Varied Continents: The inclusion of cities from different continents in the GRCA, coupled with the MoCP signed with the Mississippi River Towns and Cities Initiative, underscores the uniqueness of this initiative.
- Bringing together cities across the globe: By bringing together cities across the globe, the GRCA aims to create a platform for collective action and knowledge exchange in the pursuit of common goals related to river conservation.



# AI SUMMIT ADOPTS 'NEW DELHI DECLARATION'

Context:

During Global Partnership on Artificial Intelligence Summit hosted by India, the New Delhi Declaration has been signed by 29 nation countries including the European Union.

GPAI is a grouping of countries in **North and South America, Europe, and East Asia,** that strives to work towards "trustworthy development, deployment, and use of AI."

#### The New Delhi Declaration:

- The Delhi declaration commits countries to work on mitigating concerns around misinformation and disinformation, unemployment, lack of transparency and fairness, protection of intellectual property and personal data, and threats to human rights and democratic values.
- The GPAI member countries further affirmed their commitment to continue to work within their respective jurisdictions to advance safe, secure, and trustworthy AI, including, as appropriate, through the development of relevant regulations, policies, standards, and other initiatives.



#### **CURRENT AFFAIRS** WEEKLY

- The declaration places emphasis on collaborative efforts towards cultivating necessary knowledge, skills, infrastructure, policies, risk management frameworks, and governance mechanisms.
- ♦ This collective approach seeks to harness the potential of Al advancements, ensuring their responsible and effective utilisation, especially among low and middle-income countries.

#### Significance:

- ♦ The GPAI's commitment ensures that AI serves as a transformative force, providing clear and accountable guidelines to enable millions worldwide while upholding rights, safety, and security standards.
- ♦ The New Delhi declaration stands as a pivotal testament to the concerted global effort towards harnessing Al's potential for societal advancement while mitigating its potential risks.



#### FIRST GENE THERAPIES TO TREAT PATIENTS WITH SICKLE **CELL DISEASE**

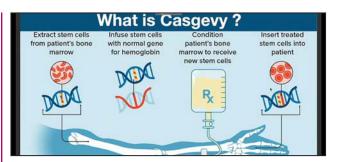
Context: Recently, the U.S. Food and Drug **Administration** approved two treatments namely, Casgevy and Lyfgenia, for the treatment of sickle cell disease (SCD) in patients.

#### **About the information:**

- ♦ These are the First Gene therapies approved for the treatment of sickle cell.
- The cell-based gene therapies were approved for the treatment of sickle cell disease (SCD) in patients 12 years and older.
- Additionally, one of these therapies, Casgevy, is the first FDA-approved treatment to utilize a type of novel genome editing technology, signaling an innovative advancement in the field of gene therapy.

#### How these treatments work?

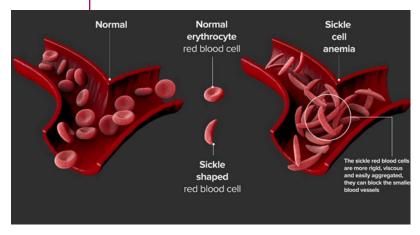
- Casgevy, a cell-based gene therapy, is approved for the treatment of sickle cell disease in patients 12 years of age and older with recurrent vasoocclusive crises.
  - Casgevy is the first FDA-approved therapy utilizing CRISPR/Cas9, a type of genome editing technology.
  - Patients' hematopoietic (blood) stem cells are modified by genome editing using CRISPR/ Cas9 technology.



- CRISPR/Cas9 can be directed to cut DNA in targeted areas, enabling the ability to accurately edit (remove, add, or replace) DNA where it was
- The modified blood stem cells are transplanted back into the patient where they engraft (attach and multiply) within the bone marrow and increase the production of fetal hemoglobin (HbF), a type of hemoglobin that facilitates oxygen delivery. In patients with sickle cell disease, increased levels of HbF prevent the sickling of red blood cells.
- ♦ Lyfgenia is a cell-based gene therapy:
  - ► Lyfgenia uses a lentiviral vector (gene delivery vehicle) for genetic modification and is approved for the treatment of patients 12 years of age and older with sickle cell disease and a history of vaso-occlusive events.
  - With Lyfgenia, the patient's blood stem cells are genetically modified to produce HbAT87Q, a gene-therapy derived hemoglobin that functions similarly to hemoglobin A, which is the normal adult hemoglobin produced in persons not affected by sickle cell disease.
  - Red blood cells containing HbAT87Q have a lower risk of sickling and occluding blood flow. These modified stem cells are then delivered to the patient.

#### **Sickle Cell Disease:**

♦ Sickle cell disease is a group of inherited blood disorders affecting approximately 100,000 people in the U.S.





#### PRELIMS

- It is most common in African Americans and, while less prevalent, also affects Hispanic Americans.
- The primary problem in sickle cell disease is a mutation in hemoglobin, a protein found in red blood cells that deliver oxygen to the body's tissues.
- This mutation causes red blood cells to develop a crescent or "sickle" shape.
- These sickled red blood cells restrict the flow in blood vessels and limit oxygen delivery to the body's tissues, leading to severe pain and organ damage called vaso-occlusive events (VOEs) or vasoocclusive crises (VOCs).
- ♦ The recurrence of these events or

crises can lead **to life-threatening disabilities** and/ or early death.

#### The US Food and Drug Administration (FDA)

- The FDA, an agency within the U.S. Department of Health and Human Services, protects the public health by assuring the safety, effectiveness, and security of human and veterinary drugs, vaccines and other biological products for human use, and medical devices.
- The agency also is responsible for the safety and security of our nation's food supply, cosmetics, dietary supplements, radiation-emitting electronic products, and for regulating tobacco products.



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Answer writing is always considered as a vital part for success in UPSC. GS SCORE helped me in building a strong and solid foundation for development of answer writing skills. Thank You!

**AMBIKA RAINA AIR-164, CSE 2022** 



I am highly obliged towards GS SCORE for its best evaluation and assessment mechanism which helped me to crack UPSC in first attempt.

YASHARTH SHEKHAR AIR 12, CSE 2021



Managing sincere attempt while being in service of IPS was very tedious job. But GS Score helped me a lot in my smart preparation. I will always be thankful to Manoj Jha Sir for his mentoring.

**SHRUTI RAJALAKSHAMI AIR 25, CSE 2021** 



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Cracking UPSC was my childhood dream and I am highly thankful towards GS Score for guiding me in this journey. And special thanks to Manoj Jha Sir

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I am very much Thankful to GS Score for building my capacity of Answer Writing Skills. Value addition, mentoring and personal evaluation by Piyush Choubey Sir did help a lot.

PUSAPATI SAHITYA AIR 24, CSE 2021



I am very thankful to GS Score for realizing my dreams into reality. The well-crafted all India Test Series helped me a lot and augmented my score significantly.

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# Section D [QUIK BYTES]

- **PM-DevINE Scheme**
- Reservation norms for Jute Packaging Materials
- Technology Development Fund (TDF)
- The first Indian Art, Architecture & Design Biennale
- India-Korea Electronic Origin Data Exchange System (EODES)
- **G** Green Rising initiative
- **G** Google Gemini

#### [SPECIES IN NEWS]

- og Dodo (Raphus cucullatus)

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- Golden Triangle of Opium

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#### **PM-DevINE Scheme**



#### About the Scheme:

- Background: Prime Minister's Development Initiative for North East Region (PM-DevINE) was announced in the Union Budget 2022-23 as a new Central Sector scheme with 100% Central funding and the scheme was approved by the Union Cabinet on 12th October, 2022, with a total scheme outlay of Rs.6,600 crore for the 4 years period from 2022-23 to 2025-26 (remaining years of the 15th Finance Commission period).
- Aim: The PM-DevINE scheme aims at rapid and holistic development of NER by funding infrastructure and social development projects based on felt needs of the States.
- Objective: The objectives of PM-DevINE scheme are to:
  - Fund infrastructure convergently, in the spirit of PM GatiShakti;
  - ➤ Support social development projects based on felt needs of the NER;
  - Enable livelihood activities for youth and women; and
  - ▶ Fill the development gaps in various sectors.
- The projects sanctioned under the scheme are targeted to be completed by 2025-26.

#### **Reservation norms for Jute Packaging Materials**



Cabinet Committee on Economic Affairs approves reservation norms for Jute Packaging Materials for Jute Year 2023-24 under JPM Act, 1987.

#### About:

- The Mandatory packaging norms approved for Jute Year 2023-24 provide for **100% reservation of the foodgrains and 20% of sugar** to be compulsorily packed in jute bags.
- Reservation for packaging in jute packaging material consumed around 65% of the raw jute produced in the country (in 2022-23).
- By bringing into effect the provision of JPM Act, the Government will provide relief to **4 lakh workers employed in jute mills** and ancillary units as well as support the livelihood of around **40 lakh farm families**.
- Besides, it will help protect environment because jute is natural, bio- degradable, renewable and reusable fibre and hence fulfils all sustainability parameters.

#### **Jute Packaging Materials (JPM) Act:**

 JPM Act, 1987 protects interest of Jute farmers, workers and persons engaged in jute goods' production.



 75% of the total production of the Jute Industry is Jute Sacking Bags of which 85% is supplied to the Food Corporation of India (FCI) and State Procurement Agencies (SPAs) and remaining is exported/sold directly.

The Jute industry occupies an important place in the national economy of India in general and Eastern Region in particular i.e. **West Bengal, Bihar, Odisa, Assam, Tripura, Meghalaya, Andhra Pradesh and Telangana**. It is one of the major industries in the eastern region, particularly in West Bengal.

#### **Technology Development Fund (TDF)**



It is a flagship programme of **Ministry of Defence** executed by DRDO under 'Make in India' initiative.

#### **Objectives:**

- Grant in Aid to Indian industries, including MSMEs and Start-ups, as well as academic and scientific institutions for the development of Defence and dual use technologies that are currently not available with the Indian defence Industry.
- Engage with the private industries especially MSMEs and Start-ups to bring in the culture of Design & Development.
- Research, Design & Development of Niche technologies for defence and armed forces.
- Create a bridge amongst the Armed Forces, research organizations, academia and qualifying/certifying agencies with private sector entities.
- Creation of an ecosystem of R&D where industry and Academia work together.
- Building of Defence manufacturing ecosystem in country thereby Achieving 'Aatmanirbharta' in defence technology.

#### The first Indian Art, Architecture & Design Biennale



Prime Minister will inaugurate the first Indian Art, Architecture & Design Biennale (IAADB) 2023 being held at Red Fort.

#### About:

- Different theme based exhibitions to be showcased on each day of the week.
- Organised with the Vision to develop and institutionalise a flagship Global Cultural Initiative in the country like the International Biennales at Venice, Sao Paulo, Singapore, Sydney and Sharjah.
- In line with this vision, a nationwide campaign to reinvent, rebrand, renovate and re-house museums was launched.

- Further, development of cultural spaces in five cities of India namely Kolkata, Delhi, Mumbai, Ahmedabad & Varanasi was also announced. Indian Art, Architecture & Design Biennale (IAADB) will serve as an introduction to the Cultural Space at Delhi.
- Vision of 'Vocal for Local', 'Aatmanirbhar Bharat Centre for Design' at Red Fort is being set up. It will showcase the unique and indigenous crafts of India and provide a collaborative space between the karigars and the designers (sustainable cultural economy).

#### India-Korea Electronic Origin Data Exchange System (EODES)



CODES will facilitate implementation of India-Korea Comprehensive Economic Partnership Agreement (CEPA) by electronic exchange of origin information between the two customs administrations for goods traded under the CEPA

# About the Electronic Origin Data Exchange System (EODES)-

- The Electronic Origin Data Exchange System is aimed at facilitating the smooth implementation of the India-Korea Comprehensive Economic Partnership Agreement (CEPA).
  - ➤ By way of electronic exchange of origin information between the two customs administrations in respect of the goods traded under the CEPA.
- The data fields in a Certificate of Origin (CoO) shall be electronically shared by the exporting customs administration with the importing customs, as soon as the certificate is issued.
  - ➤ This would facilitate faster clearance of imported goods.

#### **Green Rising initiative**



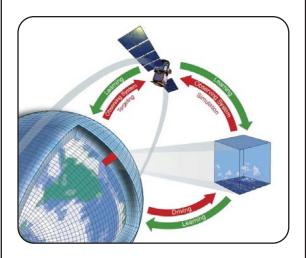
At the **ReWired Summit** at COP28 Dubai, the official launch of **Green Rising** took place, which is a platform aiming to empower youth-led climate actions and solutions.

#### About the platform:

- The global "Green Rising" initiative and the "Green Rising India Alliance" involve UNICEF, Generation Unlimited, and a diverse network of public, private, and youth partners.
- It aims to cultivate a proficient workforce within the environment and forest sectors. The recently launched Green Credits Initiative by Prime Minister of India at COP28 was highlighted, encouraging global collaboration for pro-planet actions.
- The minister urged businesses to join in championing sustainable lifestyles.



#### Earth System Model (ESM)



A state-of-the-art **Earth System Model (ESM)** known as the IITM-ESM has been indigenously developed at Centre for Climate Change Research (CCCR), Indian Institute of Tropical Meteorology (IITM) under the Ministry of Earth Sciences.

#### About:

- This is the first Earth System Model from India and the climate change assessment carried out using IITM-ESM, was used in the latest Sixth Assessment Report prepared by the Intergovernmental Panel on Climate Change (IPCC).
- The National Climate Change Assessment report documenting the regional climate change projections has been released to benefit students, researchers, and policymakers.

#### How the system model works?

- Earth system models (ESM) seek to simulate all relevant aspects of the Earth system
- They include physical, chemical and biological processes, therefore reaching far beyond their predecessors, the global climate models (GCM), which just represented the physical atmospheric and oceanic processes.

#### **Google Gemini**



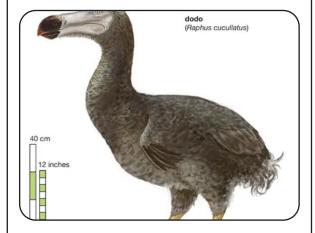
Google took its next leap in Artificial intelligence with the launch of project Gemini, an Al model trained to behave in human-like ways.

#### What is Google Gemini?

- The Al, at first, will only work in English throughout the world.
- The technology will have no problem eventually diversifying into other languages.
- The rollout will unfold in phases, with less sophisticated versions of Gemini called "Nano" and "Pro" being immediately incorporated into Google's Al-powered chatbot Bard and its Pixel 8 Pro smartphone.
- The technology's problem-solving skills are being touted by Google as being especially adept in Maths and physics, fuelling hopes among AI optimists that it may lead to scientific breakthroughs that improve life for humans.

#### **SPECIES IN NEWS**

#### **Dodo (Raphus cucullatus)**



Recently, under an ambitious new project—collaboration between genetic engineering company Colossal Biosciences and the Mauritian Wildlife Foundation—have targeted to bring back the dodo and also reintroduce it in its once-native habitat in Mauritius.

#### About:

- They are extinct flightless bird of Mauritius (an island of the Indian Ocean), one of the three species that constituted the family Raphidae, usually placed with pigeons in the order Columbiformes but sometimes separated as an order (Raphiformes).
- The birds were first seen by Portuguese sailors about 1507 and were exterminated by humans and their introduced animals.
- The dodo was extinct by 1681.
- Features of the Species:
  - ➤ The dodo, bigger than a turkey, weighed about 23 kg (about 50 pounds).
- It had blue-gray plumage, a big head, a 23-cm (9-inch) blackish bill with reddish sheath forming the hooked tip, small useless wings, stout yellow legs, and a tuft of curly feathers high on its rear end.

#### Indian Bison (Bos gaurus)



The Koya tribe inhabiting the Papikonda hill range along the rivers Godavari and Sabari in Andhra Pradesh has decided to do away with millennia-old traditions in an attempt to conserve **the Indian Bison (Bos gaurus).** 

#### About the Species:

- The Indian Bison or Gaur (Bos gaurus) is the tallest species of wild cattle found in India and largest extant bovine.
- There are about 13,000 to 30,000 gaurs in the world with approximately 85% of the population present in India.
- The first-ever population estimation exercise of the Indian gaur carried out in the Nilgiris Forest Division in February 2020 estimated around 2,000 Indian gaurs to be inhabiting the division.

#### Geography:

- It is native to South and Southeast Asia.
- In India, they are very much prevalent in the **Western Ghats**.
- They are primarily found in Nagarhole National Park, Bandipur National Park, Masinagudi National Park and Biligirirangana Hills (BR Hills).
- It is also found in Burma and Thailand.

#### Habitat:

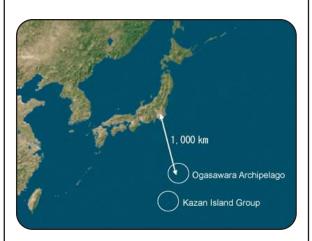
They prefer evergreen forests and moist deciduous forests.



- However, they can survive in dry deciduous forests also.
- They are not found in the Himalayas with an altitude greater than 6,000 ft.
- They generally stick to the foothills only.

#### **LOCATION IN NEWS**

#### Ogasawara Island chain



apan has recently witnessed the **birth of another island** in its archipelago.

 This phenomenon occurred due to a series of volcanic eruptions near **lwoto Island** in the **Ogasawara island chain**, showcasing the dynamic nature of the country's geography.

#### About:

- Iwoto Island, part of the Ogasawara island chain, is approximately 1,200km (745 miles) south of Tokyo.
- Ogasawara Island chain, also known as Bonin Islands, is a volcanic arc comprising more than 30 islands and islets. Some of them are still active.
- Formation of the new island is a rare phenomenon with the last record of such volcanic activity in 2013.
- Japan has the most active volcanoes in the world at 111.

#### **Golden Triangle of Opium**



The United Nations Office on Drugs and Crime (UNODC) has reported that Bangkok (Thailand) – Opium cultivation in the Golden Triangle continued to expand over the past year, with a significant increase in Myanmar.

#### What is Golden Triangle of Opium?

- Northeastern Myanmar is part of the infamous "Golden Triangle", where the borders of Myanmar, Laos and Thailand meet.
- Myanmar, Thailand, Laos coordinated as "the Golden Triangle" which has been one of the largest opiumproducing areas of the world since the 1950s.
- Most of the world's heroin came from the Golden Triangle until the early 21st century when opium production in Afghanistan increased.

#### Why named so?

- The golden triangle is uniquely identified as the only triangle to have its three angles in the ratio 1:2:2 (36°, 72°, 72°).
- Hence, the location of these countries lies in this ratio; I.e 20°21'20"N 100°04'53"E.

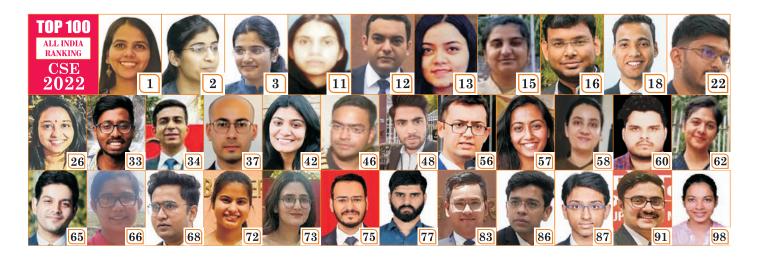
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