



## Geo-Engineering

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# GEO-ENGINEERING



Geoengineering means manipulating the earth's climate to lower its temperature to counter global warming

## TYPES OF GEO-ENGINEERING

### CARBON DIOXIDE REMOVAL

Technology/ Method Proposed	Proposed Effects/actions	Potential Side Effects	Feasibility/Cost Effectiveness
Land Use Management	Afforestation/ Reforestation	Minimum Side Effects	High feasibility, Low Cost
Bio-energy with carbon capture and storage (BECCS)	Biomass harvested and used as fuel	Potential Land use conflict	Comparatively expensive
Direct CO <sub>2</sub> Capture	Industrial Process	Minimal	High technical feasibility
Fertilization of the ocean	Increased CO <sub>2</sub> absorption by promoting algae growth	High potential for adverse side effects	Feasible but not cost-effective
Accelerated Weathering	Pulverization of silicate rocks	Potential respiratory health impact	Could be combined with crop production, a feasible option at scale

### SOLAR RADIATION MANAGEMENT

Stratospheric aerosol Injection	For reflecting sunlight back into space	Likely impact on the hydrological cycle	Feasible and potentially highly effective
Marine cloud brightening	Seeding of marine clouds with seawater aerosol	Likely impact on precipitation pattern	Low to medium cost and feasible at scale
Giant defectors in outer space	Mirror placed in near earth orbit	Regional climate effects	Capital-intensive and long gestation
Surface albedo approaches	Painting the roof of the building bright white, Installing desert reflector	Major Impact on Desert Ecosystem	High labor and maintenance cost

### REGULATION

- ⌵ No specific international or Indian regulations on geoengineering.

### INDIA'S EFFORTS

- ⌵ **Department of Science and Technology:**
  - ◆ Geoengineering climate-modelling research programme (since 2013)

### ⌵ IISc:

- ◆ Initiative to understand the implications of solar geoengineering for developing countries
- ◆ Scientists simulated injecting 20 million tonnes of sulphate aerosols into the Arctic stratosphere



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## Adultery and Related Intricacies

**For Prelims:** [Parliamentary Committees](#), Legal Standing V/s Legislative Action, Legal Position on Adultery in India.

**For Mains:** Arguments in Favour and Against Criminalising Adultery

**Source:** [IE](#)

## Why in News?

The [Parliamentary Committee on Home Affairs](#) has suggested that **adultery should be re-instituted as a crime in the [Bharatiya Nyaya Sanhita \(BNS\), 2023](#)**, the proposed law to replace the **Indian Penal Code (IPC), 1860**.

## What is the Legal Position on Adultery in India?

### ▪ About Adultery:

- Adultery is the voluntary act of engaging in sexual relations by a married individual (man or woman) with someone other than their spouse.

### ▪ Legal Position in India:

- Before 2018, the **Indian Penal Code included Section 497**, which classified adultery as a criminal act punishable by imprisonment for up to five years, a fine, or both.
  - Notably, **only men could face penalties under Section 497**, while women were exempt from prosecution.
  - This **ran counter to the broader definition of adultery encompassing both genders** engaging in voluntary sexual relations outside marriage.
- In a landmark case, **Joseph Shine vs Union of India (2018)**, the [Supreme Court](#) unanimously **struck down Section 497**.
  - The ruling highlighted discrimination and constitutional violations, asserting [Articles 14, 15, and 21](#) of the Indian constitution, protecting **equality, non-discrimination, and life and liberty**, respectively.
- Recently, the **Parliamentary Committee on Home Affairs** proposed re-instituting adultery as a **crime in the Bharatiya Nyaya Sanhita (BNS), 2023**.
  - However, it suggests a crucial change: **making it gender-neutral, applicable to both men and women**.
  - It argued that **Section 497 was struck down on grounds of discrimination**, and making it gender-neutral would address this deficiency.

## Legal Standing V/s Legislative Action

- The recent Parliamentary Committee on Home Affairs proposal appears to challenge the legal standing of the Supreme Court.
- The **Supreme Court's decision holds as the law of the land**. While Parliament cannot directly contravene the Supreme Court's decision, it has the authority to pass legislation that addresses the judgment's basis, aiming to rectify the identified defects while potentially considering retrospective or prospective laws to align with the court's observations.
- In the **Madras Bar Association vs. Union of India (2021)** case, the Supreme Court clarified that for a validating law to be considered valid, **it must effectively rectify the flaw identified in the initial judgment**.
  - This implies that if the changes proposed by the statute had been in place during the earlier judgment, they should have addressed the issue raised in a way that prevented the flaw from being highlighted.

## What are the Arguments in Favour and Against Criminalising Adultery?

### ▪ Arguments For Criminalizing Adultery:

- **Preserving Marital Sanctity:** Proponents argue that **criminalizing adultery safeguards the institution of marriage**, maintaining its sanctity and traditional values within society.
- **Deterrent Effect:** Making adultery a punishable offense **might act as a deterrent, discouraging individuals from engaging in extramarital affairs**, thereby reducing the incidence of such actions.
- **Legal Recourse:** Criminalizing adultery provides a **legal avenue for addressing the breach of marital fidelity**, offering recourse to the aggrieved spouse for an act perceived as a violation of trust.
- **Moral Grounds:** Some argue that adultery is **morally wrong** and should therefore be punishable under the law, **reflecting societal norms and ethical standards**.

### ▪ Arguments Against Criminalizing Adultery:

- **Autonomy and Privacy:** The Supreme Court highlighted that **criminalizing adultery infringes upon individual autonomy** within marital relationships.
  - Criminalizing adultery was seen as a violation of constitutional principles, particularly **Article 21**, which safeguards the right to dignity and privacy of both spouses.
  - It was suggested that **such matters should be addressed as grounds for divorce** rather than as a criminal offense.
- **Civil vs. Criminal Matter:** Critics argue that **adultery is primarily a civil matter, centered on breach of trust** within a marriage.
  - Treating it as a criminal offense may not be proportionate to the nature of the offense, potentially escalating the situation unnecessarily.
- **Impact on Relationships:** Treating adultery as a criminal offense could exacerbate already strained relationships.
  - **Legal ramifications might intensify emotional distress** and damage the prospects of reconciliation between spouses.
- **Legal Complexity:** Adultery often involves **subjective and nuanced circumstances** within relationships.
  - Attempting to legislate and prosecute such cases may lead to legal complexities, **burdening the judicial system with subjective matters**.

## Conclusion

Navigating the complexities of adultery demands a nuanced approach. Balancing **legal reform, legislative actions, societal awareness** is pivotal for crafting a **fair and harmonious path forward**.

**Legal Insights:** [Re-instate Adultery as a Crime](#)

<https://www.drishtijudiciary.com/en>

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## India Grants Record Patents in 2023-34

**For Prelims:** India Grants Record Patents in 2023-34, Indian Patent Office (IPO), [World Intellectual Property Organization \(WIPO\)](#), [Patent Cooperation Treaty \(PCT\)](#), Patents Act, 1970.

**For Mains:** India Grants Record Patents in 2023-34, Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

[Source: PIB](#)

## Why in News?

Recently, the **Indian Patent Office (IPO)** has granted the **highest number of 41,010 patents** till November 2023.

- In 2013-14 fiscal year, 4,227 patents were granted. According to a [World Intellectual Property Organization \(WIPO\)](#) report, patent applications by Indians grew 31.6% in 2022, extending an 11-year run of growth unmatched by any other country among the top 10 filers.
- The surge in patent grants in India reflects the **country's progress in innovation, technology, and competitiveness**. It also impacts the society, economy, and the youth by addressing challenges, creating opportunities, and nurturing talent.

**Note:** The IPO, governed by the Office of Controller General of Patents, Designs and TradeMarks (CGPDTM), Ministry of Commerce and Industry, is responsible for administering and regulating patents, designs, and geographical indications in India.

## What is a Patent?

### ▪ About:

- A Patent is a **statutory right for an invention granted for a limited period of time to the patentee** by the Government, in exchange of **full disclosure of his invention** for excluding others, from making, using, selling, importing the patented product or process for producing that product for those purposes without his consent.
- The patent system in India is governed by the **Patents Act, 1970** as amended by the Patents (Amendment) Act, 2005 and the Patents Rules, 2003.
  - The Patent Rules are regularly amended in consonance with the changing **environment, most recent being Patents (Amendment) Rules, 2021.**

### ▪ Term of a Patent:

- The term of every patent granted is 20 years from the date of filing of application.
- However, for applications filed under the national phase under [Patent Cooperation Treaty \(PCT\)](#), the term of patent will be 20 years from the international filing date **accorded under PCT.**
  - PCT is an international treaty with more than 150 Contracting States, making it possible to seek **patent protection for an invention simultaneously in each of a large number of countries** by filing an international patent application.
  - Such an application may be filed by anyone who is a national or resident of a PCT Contracting State, and generally be filed with the national patent office of the Contracting State or at the applicant's option, with the International Bureau of WIPO in Geneva.

### ▪ Criteria of Patentability:

- An invention is patentable **subject matter if it meets the following criteria,**
  - It should be novel.
  - It should have inventive steps or it must be non-obvious
  - It should be capable of Industrial application.
  - It should not attract the provisions of section 3 and 4 of the Patents Act 1970.

### ▪ Scope of Patent Protection:

- Patent protection is a territorial right and therefore it is effective only within the territory of India. There is no concept of global patent.
- However, filing an application in India enables the applicant to file a **corresponding application for the same invention** in convention countries or under PCT, within or before expiry of twelve months from the filing date in India.

### ▪ **Patents Act, 1970:**

- This principal law for patenting system in India came into force in the year 1972. It replaced the Indian Patents and Designs Act 1911.
- The Act was amended by the Patents (Amendment) Act, 2005, wherein product patent was extended to all fields of technology including food, drugs, chemicals and microorganisms.
- After the amendment, the provisions relating to Exclusive Marketing Rights (EMRs) have been repealed, and a provision for enabling grant of compulsory license has been introduced. The provisions relating to pre-grant and post-grant opposition have also been introduced.

## **What are the Treaties and Conventions related to Patent and Intellectual Property Rights?**

### ▪ **Global:**

- India is a member of the [World Trade Organisation](#) and committed to the Agreement on [Trade Related Aspects of Intellectual Property \(TRIPS Agreement\)](#).
- India is also a member of World Intellectual Property Organization (WIPO), a body responsible for the promotion of the protection of intellectual property rights throughout the world.
- India is also **a member of the following important WIPO-administered International Treaties** and Conventions relating to IPRs:
  - Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure
  - Paris Convention for the Protection of Industrial Property
  - Convention Establishing the World Intellectual Property Organization
  - Berne Convention for the Protection of Literary and Artistic Works
  - [Patent Cooperation Treaty](#)

### ▪ **National:**

- [National Intellectual Property Rights \(IPR\) Policy 2016:](#)
  - The National Intellectual Property Rights (IPR) Policy 2016 was adopted in May 2016 as a vision document to guide future development of IPRs in the country.
  - Its clarion call is “Creative India; Innovative India”.
  - It sets in place an institutional mechanism for implementation, monitoring and review.
  - It aims to incorporate and adapt global best practices to the Indian scenario.

## **Way Forward**

- It is important to bolster the innovation ecosystem. This involves increasing investments in research and development while establishing and supporting innovation hubs and incubation centers.
- Simplifying patent procedures and enhancing the capacity of the Indian Patent Office are equally pivotal to **encourage innovators to seek protection** for their groundbreaking ideas.
- Empowering innovators, especially the youth, through education on IPR and conducting training programs can demystify the patent filing process, fostering a culture of innovation and protection.

## **UPSC Civil Services Examination, Previous Year Questions (PYQs)**

### **Prelims**

**Q.** With reference to the ‘National Intellectual Property Rights Policy’, consider the following statements:  
**(2017)**

1. It reiterates India’s commitment to the Doha Development Agenda and the TRIPS Agreement.
2. Department of Industrial Policy and Promotion is the nodal agency for regulating intellectual

property rights in India.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (c)**

**Exp:**

- The National Intellectual Property Rights (IPR) Policy recognizes that India has a well-established TRIPS compliant legislative, administrative and judicial framework to safeguard IPRs, which meets its international obligations while utilizing the flexibilities provided in the international regime to address its developmental concerns. It reiterates India's commitment to the Doha Development Agenda and the TRIPS Agreement. Hence, statement 1 is correct.
- The DIPP (now DPIIT i.e. Department for Promotion of Industry and Internal Trade) is recognised as the nodal department to coordinate, guide and oversee implementation and future development of IPRs in India. DIPP comes under the Ministry of Commerce and Industry. Hence, statement 2 is correct.
- Therefore, option (c) is the correct answer.

**Q. Consider the following statements: (2019)**

1. According to the Indian Patents Act, a biological process to create a seed can be patented in India.
2. In India, there is no Intellectual Property Appellate Board.
3. Plant varieties are not eligible to be patented in India.

Which of the statements given above is/are correct?

- (a) 1 and 3 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

**Ans: (c)**

**Exp:**

- Section 3(j) of Indian Patent Act, excludes from patentability "plants and animals in whole or in any part thereof other than microorganisms, including seeds, varieties, and species, and essentially biological processes for production or propagation of plants and animals". Hence, statement 1 is not correct.
- The Intellectual Property Appellate Board (IPAB) was constituted in 2003 by the Government of India to hear and resolve the appeals against the decisions of the registrar under the Indian Trademarks Act, 1999 and the Geographical Indications of Goods (Registration and Protection) Act, 1999. Hence, statement 2 is not correct.
- Plant variety protection provides legal protection of a plant variety to a breeder in the form of Plant Breeder's Rights (PBRs). In India, the Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001, is a sui generis system that aims to provide for the establishment of an effective system for the protection of plant varieties and the rights of plant breeders and farmers. A sui generis system is an alternative to the patent system. Hence, statement 3 is correct.
- Therefore, option (c) is the correct answer.

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## **Mains**

**Q.** In a globalized world, Intellectual Property Rights assume significance and are a source of litigation.

## Second Anti-Piracy Patrol in the Gulf of Guinea

**For Prelims:** Gulf of Guinea(GoG), INS Sumedha, Gulf, Anti-Piracy Patrol, [International Fusion Centre \(IFC\)](#)

**For Mains:** Maritime Security Cooperation and Pirate Burden on Countries, Maritime Security and Related Concerns

[Source: TH](#)

### Why in News?

The [Indian Navy](#) recently completed its **second anti-piracy patrol in the Gulf of Guinea(GoG)** in the [Atlantic Ocean](#), with the Offshore **Patrol Vessel INS Sumedha** playing a pivotal role in this mission.

- The maiden GoG anti-piracy patrol was undertaken by **INS Tarkash** in September/October 2022.

### What are the Key Highlights of the Second GoG Anti-Piracy Patrol?

- INS Sumedha operated in the GoG undertaking a 31-day anti-piracy patrol, which is on an extended-range operational deployment in the Atlantic Ocean along the West Coast of Africa.
  - Sumedha's deployment also ensured enhancing **Navy to Navy connection** with regional navies including Senegal, Ghana, Togo, Nigeria, Angola and Namibia.
- INS Sumedha's deployment aimed to **boost regional partners' capabilities** through joint training, emphasizing India's commitment to the philosophy of '[Vasudhaiva Kutumbakam](#)'-The World is One Family.
- The objective of the patrol was to **deter and prevent piracy and armed robbery at sea**, protect the Indian and international merchant vessels, and enhance maritime security and stability in the region.

### What are the Key Facts About the Gulf of Guinea (GoG)?

- The GoG is an inlet of the **Atlantic Ocean** on the **western African coast**, extending westward from **Cape Lopez in Gabon** to **Cape Palmas in Liberia**.
  - A gulf is defined as a portion of the ocean that penetrates the land. They are formed as a result of plate tectonics and are often connected to the ocean by narrow water passages known as straits.
- It is found at the junction of the **Prime Meridian and the Equator at 0°0'N and 0°0'E**.
- Major rivers that drain into the Gulf of Guinea include the **Volta and Niger rivers**.
- The GoG is one of the world's most dangerous gulfs because of the **widespread piracy** that has severely affected many countries in West Africa along with other international countries.
  - The number of vessels attacked by pirates in the gulf is about 100 every year.
- The GoG region accounts for **more than 35% of the world's total petroleum reserves**.
  - Several minerals including diamonds, uranium, copper, etc., are found here.
- The principal economic activities of the Gulf of Guinea region are petroleum exploration, mining and gas flaring, port operations, and fishing.



- The **16 coastal countries** that are situated along the Gulf of Guinea are Angola, Benin, Cameroon, Cote d'Ivoire, Democratic Republic of Congo, Republic of Congo, Guinea, Equatorial Guinea, Guinea-Bissau, Gabon, Nigeria, Ghana, São Tomé and Príncipe, Togo and Sierra Leone.



## What Strategic Significance Does the Gulf of Guinea Hold for India?

- The Gulf of Guinea holds immense strategic importance for India's national interests, being a significant source of the **country's energy requirements**.
  - In recent years, Nigeria has been one of the main sources of crude for India lies in GoG, the country emerged as the **fourth-largest supplier of crude oil and Liquefied natural gas (LNG) to India in 2020**.
- The GoG is also a region of security concern for India, as it faces the challenges of piracy, armed robbery, terrorism, and transnational crime.
  - **India has been a victim of piracy incidents in the GoG**, as several Indian nationals have been held hostage by pirates in the past.

## INS Sumedha

- INS Sumedha is the **third of the indigenously developed Naval Offshore Patrol Vessel (NOPV) of the Saryu class** deployed for multiple roles independently and in support of Fleet Operations.
  - The ship is equipped with several weapon systems, sensors, state-of-the-art navigation and communication systems and an Electronic Warfare system.
- INS Sumedha is aimed at meeting the **increasing ocean surveillance** and patrolling requirements of the Indian Navy.
  - The primary role of the ship is to undertake **exclusive economic zone (EEZ) surveillance**,

anti-piracy patrols, fleet support operations, provide maritime security to offshore assets and carry out escort operations for high-value assets.

- Participated in the maiden **India-EU Joint Exercise** in the Gulf of Guinea, showcasing international collaboration in maritime security.
- Played a crucial role in **Operation Kaveri**, contributing to the evacuation of the Indian diaspora from war-hit Sudan in April 2023.

## What are India's Initiatives Related to Maritime Security?

- [SAGAR policy](#).
- [India reiterated its support for the UN Convention on Law of Sea \(UNCLOS\)](#).
- [International Fusion Centre \(IFC\)](#).

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

**Q1. With reference to 'Indian Ocean Rim Association for Regional Cooperation (IOR-ARC)', consider the following statements: (2015)**

1. It was established very recently in response to incidents of piracy and accidents of oil spills.
2. It is an alliance meant for maritime security only.

**Which of the statements given above is/ are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (d)**

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## Sub-Categorisation Within Castes

**For Prelims:** [Sub-categorization, National Commission for Scheduled Castes, National Commission for Backward Classes \(NCBC\), Scheduled Tribes](#)

**For Mains:** Sub-categorisation of Castes, Mechanisms, Laws, Institutions & Bodies Constituted for Protection & Betterment of Vulnerable Sections.

**Source:** [TH](#)

### Why in News?

The issue of [sub-categorization within Scheduled Castes \(SCs\)](#) has recently gained attention, with the Prime Minister of India expressing a commitment to identifying and assisting the most backward

communities within the SCs.

- This move has sparked discussions on the legality, challenges, and potential impact of sub-categorization.

## What is Sub-Categorisation Within Castes?

### ▪ About:

- Sub-categorisation within castes refers to the process of **creating sub-groups within the existing categories of Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs)** for reservation and affirmative action.
- Sub-categorisation aims to address the **intra-category inequalities** and ensure a **more equitable distribution of benefits** and opportunities among the most deprived and marginalized sections of society.

### ▪ Legality of Sub-Categorisation:

#### ◦ Historical Attempts:

- States like Punjab, Bihar, and Tamil Nadu have attempted sub-categorization, facing legal challenges that have reached the Supreme Court.

#### ◦ Constitutional Dilemma:

- The **Supreme Court of India**, in the case of **E.V.Chinnaiah vs State Of Andhra Pradesh And Ors, 2004**, asserted that **only Parliament has the authority to create** and notify SC and Scheduled Tribes (STs) lists.
- However, in another case of **State of Punjab and Others versus Davinder Singh and Others, 2020** judgment, a five-judge Bench ruled that **States could decide on the quantum of benefits in the lists of SCs/STs** already notified without "tinkering" with them.
  - The contradiction between the 2004 and 2020 judgments has led to the 2020 judgment being referred to a larger Bench.
- There is a constitutional mandate and a judicial endorsement for sub-categorisation within castes, as **Article 16 (4) of the Constitution** empowers that the State can make any provision for **reservation in matters of promotion in favour of the SCs and STs** if they are not adequately represented in the services under the State.

## Why is Sub-Categorisation within Castes Needed?

- There is a significant **diversity and heterogeneity within the SC, ST, and OBC** categories, based on factors such as occupation, education, income, social status, and regional variations.
  - There is evidence of disproportionate and skewed representation of certain dominant and influential sub-groups within the SC, ST, and OBC categories, who have cornered the lion's share of the reservation benefits, leaving behind the weaker and more backward sub-groups.
- There is a demand from various sub-groups within the SC, ST, and OBC categories, such as the **Madigas in Telangana**, the Paswans in Bihar, and the Jatavs in Uttar Pradesh, for sub-categorisation and separate quotas to ensure fair and adequate representation.

## What are the Challenges of Sub-Categorisation within Castes?

- There is a **lack of reliable and updated data** on the population and socio-economic status of various sub-groups within the SC, ST, and OBC categories, which hampers the objective and scientific basis for sub-categorisation.
- There is a possibility of **legal and political backlash** from the dominant and influential sub-groups within the SC, ST, and OBC categories, who may resist and oppose the sub-categorisation and the reduction of their share of reservation benefits.
- There is a risk of further fragmentation and division within the SC, ST, and OBC categories, which may **weaken their collective identity** and solidarity and undermine their political and social empowerment.

## Way Forward

- Establish a **systematic and updated data collection** process on the population and socio-economic status of sub-groups within SCs, STs, and OBCs.
  - Conduct a thorough caste census to provide a solid foundation for evidence-based decision-making.
- There is a need to balance the sub-categorisation within castes with the broader goals of social justice and national integration, and to ensure that the **sub-categorisation does not violate the constitutional principles of equality** and non-discrimination.
- Develop communication strategies to articulate the rationale behind sub-categorisation, emphasizing its role in **promoting social justice and equitable distribution of benefits**.

### UPSC Civil Services Examination, Previous Year Question:

**Q. Consider the following organizations/bodies in India: (2023)**

1. The National Commission for Backward Classes
2. The National Human Rights Commission
3. The National Law Commission
4. The National Consumer Disputes Redressal Commission

**How many of the above constitutional bodies?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Ans: (a)**

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## Menace of Fraudulent Loan Apps in Digital Lending Landscape

**For Prelims:** [Digital lending](#), [Non-Banking Finance Companies \(NBFCs\)](#), [Reserve Bank of India \(RBI\)](#)

**For Mains:** Concerns About the Emergence of Fraudulent Practices, Issues Related to Banking Sector

**Source:** [IE](#)

### Why in News?

- The proliferation of [fraudulent loan apps on](#) social media platforms poses a significant risk to borrowers, with instances of outrageous interest rates and mental harassment on the rise.
  - Despite the rapid growth in [digital lending](#), a regulatory vacuum allows scam apps to thrive, exploiting unsuspecting users.

### Note:

Digital lending refers to the process of **providing loans or credit** to individuals or businesses **through online platforms or digital channels** without the need for traditional physical documentation or in-person interactions.

## What are Fraudulent Loan Apps?

### ▪ About:

- Fake loan apps are **unauthorized and illegal digital lending platforms** that offer loans, from as little as Rs.1,000 to Rs.1 lakh targeting low-income and financially untrained individuals.
- They claim to provide **instant and hassle-free loans without any credit checks, documentation, or collateral.**

### ▪ Operating Procedure:

- Fraudulent loan apps often present themselves as **legitimate financial tools**, such as loan calculators or aggregators, exploiting the **trust of users** seeking financial assistance.
- These apps freely advertise on popular **social media platforms** like Instagram, Facebook, and WhatsApp, leveraging the vast user base.
  - Even though there are warning signs, the absence of careful investigation allows them to continue their deceptive advertising.
- Users, attracted by false claims and promises, fall victim to these deceptive apps, exposing them to **exorbitant interest rates and harassment.**
  - If the borrower fails to repay the loan on time, the app starts sending abusive and threatening messages, calls, and emails to the borrower and their contacts.
- The app may also access the borrower's photos and videos, and create morphed and obscene images to **blackmail** them.
- Some apps may even resort to **physical violence and harassment** by hiring recovery agents.
- In some cases, the borrowers are driven to suicide due to the extreme pressure and humiliation.



### ▪ Growth of Digital Lending and Emergence of Fraudsters:

- Over the last 11 years, the digital lending market has experienced significant growth, reaching an estimated USD 350 billion by 2023, having grown at a compounded annual growth rate of almost 40%, much of this is powered by **genuine fintech companies** backed by **Non-Banking Finance Companies (NBFCs)** and banks.
- However, this growth has also provided an opportunity for fraudsters, with the **illegal lending market potentially reaching USD 700-800 million.**
  - Led by banks, **NBFCs**, and fintech companies, digital lending is expected to reach 80 billion in 2023. The collaboration between banks, NBFCs, and fintech firms contributes to the sector's expansion.

## What are the Concerns Regarding the Fraud Loan Apps?

- **Absence of Regulatory Norms:**
  - Stakeholders highlight the absence of government and regulatory norms, enabling online platforms to conduct minimal due diligence.
    - Different regulators like the [Reserve Bank of India \(RBI\)](#), Ministry of Electronics and Information Technology (MeitY), [Telecom Regulatory Authority of India \(TRAI\)](#), and state governments lack coordination and supervision.
  - There is a lack of enforcement and accountability, as many illegal loan apps evade detection and action by using **fake or foreign identities**, changing their names and logos frequently, and operating through **multiple channels and intermediaries**.
- **RBI's Limited Guidelines:**
  - While the [RBI released guidelines for digital lending](#) in September 2022, these guidelines **only apply to regulated entities like banks and NBFCs**. **Fraudulent apps**, without such associations, **remain largely unchecked**.
- **Lack of Seriousness by Social Media Companies:**
  - Despite the growing menace, social media companies are criticized for not actively monitoring advertisements of fake loan apps.
    - Some argue that corporate greed plays a role in the weak oversight.
- **Regulatory Uncertainty Impacting Legitimate Apps:**
  - Regulatory crackdowns sometimes affect legitimate lending apps, causing uncertainty.
    - The [ban on certain apps in 2021](#) impacted genuine lending companies, showcasing the challenges in regulatory actions.
- **Misrepresentation of Legitimate NBFCs:**
  - Legitimate NBFCs express concerns about their **misrepresentation by illegal lending apps**.
    - A few fraudulent apps can tarnish the reputation of the entire sector.
- **Consumer Awareness:**
  - There is a lack of **consumer awareness and protection**, as many borrowers do not verify the credentials and terms of the loan apps, and fall prey to their deceptive and coercive practices

## Way Forward

- **Strengthening Regulatory Framework:**
  - Establish **comprehensive legal guidelines** for digital lending platforms, particularly those operating through mobile apps.
    - Extend the scope of RBI guidelines to cover a broader spectrum of **digital lending entities, including unregulated platforms**.
  - Enforce **strict due diligence procedures** for online platforms to prevent fraudulent loan apps from exploiting regulatory gaps.
- **Enhanced Oversight on Social Media Platforms:**
  - Collaborate with social media companies to actively monitor and **regulate advertisements related to loan apps**.
    - Encourage social media platforms to implement **stricter screening processes** to identify and remove fraudulent apps.
    - Establish penalties for social media companies that fail to address the proliferation of fake loan apps on their platforms.
- **Consumer Education and Awareness:**
  - Launch awareness campaigns to **educate consumers** about the risks associated with fraudulent loan apps.
    - Promote responsible borrowing habits and encourage individuals to verify the legitimacy of lending platforms before engaging with them.
- **International Collaboration:**
  - Foster partnerships with global organizations and regulators to **track and penalize cross-border fraudulent** loan app operations.
    - Tap into global expertise to strengthen regulatory measures and ensure a unified approach to tackling digital lending challenges.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Prelims

**Q. With reference to the Non-banking Financial Companies (NBFCs) in India, consider the following statements: (2010)**

1. They cannot engage in the acquisition of securities issued by the government.
2. They cannot accept demand deposits like Savings Account.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (b)**

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## Survival of Rainforests Around 50 Million Years Ago

**For Prelims:** Survival of Rainforests Around 50 Million Years Ago, Equatorial (Tropical) Rainforests, [Climate Change](#), Paleontology.

**For Mains:** Survival of Rainforests Around 50 Million Years Ago, Conservation.

[Source: PIB](#)

### Why in News?

Recently, a team of Scientists of **Birbal Sahni Institute of Palaeosciences (BSIP)** has revealed the **Equatorial (Tropical) Rainforests'** climate of around 50 million years ago (during the Early Eocene Climate Optimum (EECO)), which survived when the earth was globally warm.

- The research **utilized innovative techniques**, employing **Plant Proxies** to quantify **terrestrial equatorial climate data** from the past. These methods helped uncover mechanisms that enabled ancient rainforests to withstand adverse conditions.

### What are Plant Proxies?

- In the context of **environmental science or Paleontology (the study of the history of life on Earth as based on fossils)**, "plant proxies" refer to indirect evidence or **indicators that scientists use to understand past environmental conditions**, particularly related to plant life.
- These proxies serve as substitutes or stand-ins for direct evidence that might not be **available or easily accessible**.
- **For Example**, Pollen grains are highly resistant and can be preserved in sediments for thousands or even millions of years. By studying the types and abundance of pollen in sediment cores or layers, **scientists can infer the types of plants that existed in a particular region during a**

### specific period.

- These plant proxies help scientists reconstruct ancient ecosystems, understand long-term environmental changes, and track shifts in climate and vegetation over geological timescales.

## What are the Key Highlights of the Study?

### ▪ Equatorial Rainforest Resilience:

- Despite global warmth and soaring atmospheric carbon dioxide levels approximately 50 million years ago, equatorial rainforests not only survived but thrived.
- It was earlier known that the **Earth was around 13°C warmer** than present and carbon dioxide concentration was **more than 1000 ppmv during this time.**
- This drastically affected the survival of mid- and high latitude forests due to changes in the hydrological cycle, but the **equatorial forests survived successfully.**

### ▪ High Rainfall's Role:

- The study highlights significantly **high rainfall as a crucial factor enabling the survival and thriving** of equatorial rainforests.
- This elevated rainfall likely **enhanced plant water use efficiency**, allowing the flora to function in extreme warmth and high carbon dioxide levels.

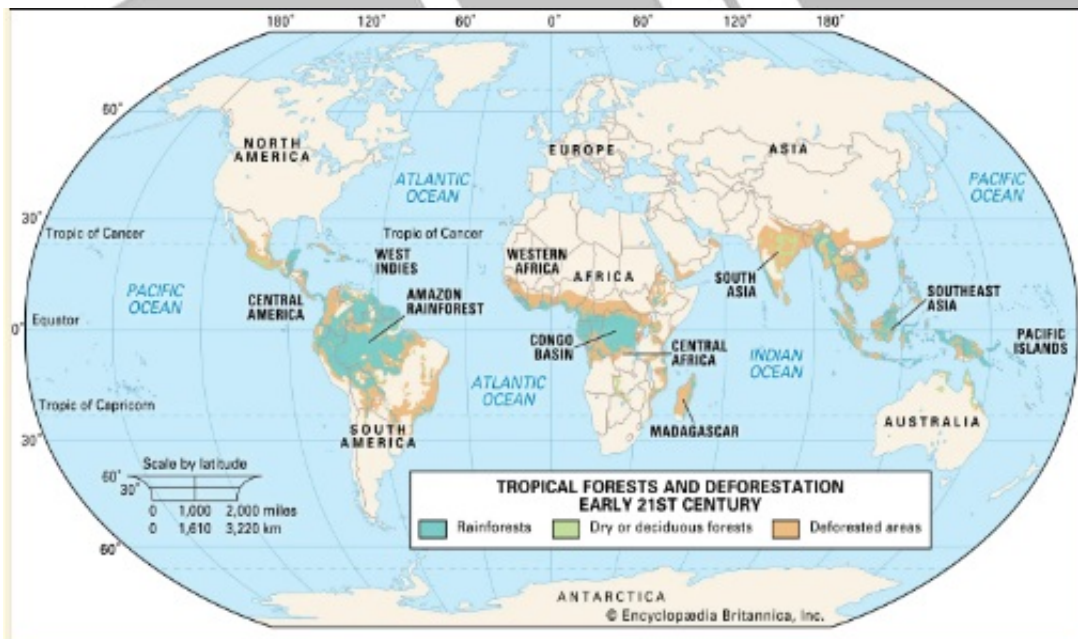
### ▪ Implications of This Study:

- Understanding the climate dynamics and resilience of equatorial rainforests during warm periods like the EECO holds significance for future climate predictions and provides insights into the survival strategies of tropical ecosystems under extreme climatic conditions.

## What are Equatorial Rainforests?

### ▪ About:

- Equatorial rainforests are lush, biodiverse forests found near the **equator in tropical regions.**
- These forests typically lie **within 10 degrees latitude north or south of the equator** and are characterized by **high temperatures and heavy rainfall** throughout the year.



### ▪ Key Features:

- **Climate:** They experience a **hot and humid climate** with temperatures consistently high year-round, usually averaging **around 25-27°C (77-81°F).** **Rainfall is abundant**, often exceeding 2,000 millimeters (80 inches) annually, leading to the term "rainforest."
- **Biodiversity:** Equatorial rainforests are **among the most diverse ecosystems** on Earth,



- housing an incredibly rich variety of plant and animal species.
- These forests contain a myriad of **species of trees, plants, insects, birds, mammals, and other organisms**, many of which are endemic to these regions.
  - **Flora and Fauna:** The vegetation in equatorial rainforests is **characterized by tall trees forming a dense canopy** that shades the forest floor, creating a multi-layered ecosystem.
    - A variety of plant species, including epiphytes (plants growing on other plants), lianas (climbing vines), and numerous species of trees, contribute to the rich biodiversity.
  - **Importance:** Equatorial rainforests play a **crucial role in regulating the Earth's climate** and carbon cycle. They absorb carbon **dioxide through photosynthesis and act as carbon sinks**, helping mitigate climate change. Additionally, they provide habitat for countless species, support indigenous communities, and are centers of medicinal plant resources.
    - **Threats:** Unfortunately, these rainforests face significant threats from deforestation, **logging, agriculture, mining**, and other human activities.
      - The loss of equatorial rainforests not only endangers the vast array of species that **call these forests home but also contributes to climate change** and the disruption of global ecosystems.

### UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. Which of the following is/are unique characteristic/ characteristics of equatorial forests? (2013)**

1. Presence of tall, closely set trees with crowns forming a continuous canopy
2. Coexistence of a large number of species
3. Presence of numerous varieties of epiphytes

**Select the correct answer using the codes given below:**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Ans: (d)**

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## Ladakh Sea Buckthorn and Kerala Onattukara Sesame

[Source: TH](#)

### Why in News?

Recently, the [Geographical Indication \(GI\) Registry](#), operating under the Ministry of Commerce & Industry, Government of India, has awarded the GI tag to the Department of Industries & Commerce, Ladakh, for '**Ladakh Sea Buckthorn**'.

- This recognition follows the previously granted **GI tags for Ladakh Apricot (Raktsey Karpo), Ladakh Pashmina, and Ladakhi Wood Carving.**
- In another region, the Onattukara Vikasana Agency (OVA), the registered owner of the **GI-tagged Onattukara sesame in Kerala**, is actively working to expand the cultivation of this unique

sesame variety.

## What are the Key Facts About the Sea Buckthorn?

- Sea Buckthorn (**Hippophae L**) a shrub which produces an **orange-yellow coloured edible berry** is sour in taste but rich in vitamins, especially **Vitamin C**.
  - Ladakh Sea Buckthorn is a vital crop in Union Territory Ladakh, with 90% of its production originating from the region.
  - It is also popularly known as 'Wonder Plant', "Ladakh Gold", "Golden Bush" or "Gold Mine".
- In India, it is found above the tree line in the Himalayan region, generally in dry areas such as the **cold deserts of Ladakh and Spiti**.
- It is a soil-binding plant which prevents **soil-erosion**, checks siltation in rivers and helps preserve floral biodiversity.



## What are the Key Facts About the Onattukara Sesame?

- Onattukara sesame is a type of **sesame grown in Kerala, India**.
- The OVA plans to increase the area under sesame cultivation from 600 hectares to 2,000 hectares.
- Onattukara sesame and its **oil are famous for its unique health benefits**.
  - Relatively **higher antioxidant** content in Onattukara sesame helps in fighting the free radicals, which destroy the body cells.
  - Also, the high content of unsaturated fat makes it beneficial for **heart patients**.
- Traditional ayurvedic doctors in the region have used Onattukara sesame oil for treating **rheumatism** (umbrella term that refers to arthritis and several other conditions that affect the joints, tendons, and muscle) and **skin protection** since the 18<sup>th</sup> century.

## UPSC Civil Services Examination, Previous Years Questions (PYQs)

### Prelims

**Q1. Which of the following has/have been accorded 'Geographical Indication' status? (2015)**

1. Banaras Brocades and Sarees
2. Rajasthani Daal-Bati-Churma
3. Tirupathi Laddu

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (c)

**Q2. India enacted the Geographical Indications of Goods (Registration and Protection) Act, 1999 in order to comply with the obligations to (2018)**

- (a) ILO
- (b) IMF
- (c) UNCTAD
- (d) WTO

Ans: (d)

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## Appropriate Age for Class 1 Admission

[Source: IE](#)

### Why in News?

The issue of the appropriate age of **admission to Class 1** has been a matter of debate in India for a long time.

- There were 14 States and Union Territories, as of March 2022, that allow Class 1 admission for children **who have not completed six years**.
- However, the Union government has recently ordered all states and UTs to **make six years the minimum age** of admission for Class 1, by the [New Education Policy \(NEP\) 2020](#).

### What does the NEP 2020 Say About the Minimum Age for Class 1 Admission?

- The new NEP pitches for a “5+3+3+4” design for formal schooling corresponding to the **age groups 3-8 years (foundational stage), 8-11 years (preparatory stage), 11-14 years (middle stage), and 14-18 years (secondary stage)**.
  - This brings early childhood education (also known as preschool education for children of ages **3 to 5 years**) under the ambit of formal schooling.
- This effectively means that a child should be 6 years old to be eligible for admission into Class 1, after completing three years of early childhood education.

### Note:

- [Right to Education \(RTE\) Act, 2009](#) guarantees education from the **age of 6 years to 14 years**.
  - This means that a child is expected to begin elementary education (Class 1) at the age of 6 years.

### What does Research Say About the Entry Age for Formal Education?

- Comparative studies in New Zealand observed groups of children starting formal literacy lessons at ages 5 and 7.
  - Children who started at **age 5 showed less positive attitudes** towards reading and exhibited poorer text comprehension compared to those who started later.

▪ **Global Perspective on Entry Age:**

- Six is the standard age for primary school in East Asia and most European countries.
- Scandinavian countries start formal education at seven.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### ***Prelims***

**Q.** Which of the following provisions of the Constitution does India have a bearing on Education? **(2012)**

1. Directive Principles of State Policy
2. Rural and Urban Local Bodies
3. Fifth Schedule
4. Sixth Schedule
5. Seventh Schedule

Select the correct answer using the codes given below:

- (a)** 1 and 2 only  
**(b)** 3, 4 and 5 only  
**(c)** 1, 2 and 5 only  
**(d)** 1, 2, 3, 4 and 5

**Ans: (d)**

## **Rapid Fire Current Affairs**

### **Javier Milei Wins Argentina Presidential Election**

The Prime Minister of India congratulated **Javier Milei for winning Argentina's presidential election** and emphasized diversifying and expanding [India-Argentina's strategic partnership](#).

- India-Argentina relations were elevated to the level of **Strategic Partnership in February 2019**.
- India is the 4<sup>th</sup> largest trading partner of Argentina, with bilateral trade touching a historic peak of USD 6.4 billion in 2022, recording a growth rate of 12% over 2021.



**Read more:** [India and Argentina Sign Social Security Agreement](#)

## **Santhali Language and Literature**

Recently, the [President of India](#) graced the inaugural session of the **36<sup>th</sup> Annual Conference and Literary Festival** of All India Santali Writers' Association at Baripada, Odisha.

- President appreciated writers and researchers who are contributing to the [Santhali language and literature](#).
- Santali language is a **Munda language** spoken primarily in the **east-central Indian states of West Bengal, Jharkhand, and Orissa**.
- The Santhali language was included in the [Eighth Schedule of the Constitution](#) in 2003.
  - Santhali literature, historically oral, saw notable contributions from **Pandit Raghunath Murmu**, who created the **OI Chiki script, also known as OI Cemet**.

**Read more:** [Translation of India's Constitution into OI Chiki Script](#)

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## World Fisheries Day

[World Fisheries Day](#) is celebrated across the world on **21<sup>st</sup> November** annually.

- The main purpose behind this day is to **highlight the importance of sustainable stocks of fisheries in the world**, to strengthen human rights for the small-scale fishing communities, to make a true difference in the working conditions of fishing communities and to **eliminate illegal, unreported and unregulated fishing**.
- The **Government of India** is organizing the **Global Fisheries Conference India 2023**, on occasion of World Fisheries Day at the **Gujarat Science City in Ahmedabad** with the theme '**Celebrate the Fisheries and Aquaculture Wealth**'.

**Read more:** [World Fisheries Day](#)

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## Cyclone Midhili

Recently, **Cyclone Midhili**, which stemmed from a **deep depression in the Bay of Bengal** and was named by **Maldives**, underwent a downgrade from a "**deep depression**" to a "**depression**" as confirmed by the [India Meteorological Department \(IMD\)](#) after its landfall on the Bangladesh coast.

- A [cyclonic storm](#) is characterized by a maximum sustained **wind speed of 62-88 kmph**, while it is termed a severe cyclonic storm if the maximum sustained wind speed reaches **89-117 kmph**.

**Read more:** [Cyclone](#)

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