



## Draft Explosives Bill 2024

**For Prelims:** [Petroleum and Explosives Safety Organisation](#), [Department for Promotion of Industry and Internal Trade](#), Explosives Act of 1884, Arms Act, 1959

**For Mains:** Regulation of explosives, Enhancing national security and mitigating risks associated with explosives

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

### Why in News?

The Government of India aims to replace the [Explosives Act 1884](#) with the new Explosives Bill 2024.

- The [Department for Promotion of Industry and Internal Trade \(DPIIT\)](#) has proposed the draft bill.
- The key objectives are to raise fines for regulatory violations and enhance the efficiency of licensing procedures.

### What are the Key Provisions of the Proposed Explosives Bill 2024?

- **Designation of Licensing Authority:** Under the proposed bill, the Union government will designate the authority responsible for **granting, suspending, or revoking licences**.
  - Currently, the [Petroleum and Explosives Safety Organisation \(PESO\)](#) operates under the DPIIT and serves as the regulatory body.
- **Specified Quantity in Licences:** Licences will specify the quantity of explosives that a licensee can manufacture, possess, sell, transport, import, or export for a specified period.
- **Penalties for Violations:** The proposed bill outlines stricter penalties for violations. Offenders may face **imprisonment for up to three years, a fine of Rs 1,00,000, or both** for manufacturing, importing or exporting explosives in violation of regulations.
  - Possession, use, sale, or transportation of explosives in violation may lead to imprisonment for up to two years, a fine of Rs 50,000, or both, whereas the **current fine stands at Rs 3,000**.
- **Streamlined Licensing Procedures:** Efforts are underway to enhance the efficiency of licensing procedures, making it easier for businesses to obtain necessary permits while maintaining stringent safety standards.

### Petroleum and Explosives Safety Organization (PESO)

- The **PESO**, formerly known as the **Department of Explosives**, since its inception in 1898, has been serving the nation as a nodal agency for regulating the safety of hazardous substances such as explosives, compressed gas and petroleum.
- PESO's major work is to administer the responsibilities delegated under the **Explosives Act 1884 and Petroleum Act 1934** and the Rules made thereunder related to the manufacture, import, export, transport, possession, sale and use of Explosives, Petroleum products and Compressed gases.

- It operates under the **DPIIT, Ministry of Commerce and Industry.**
- The organisation has provided training to law enforcement, security, and intelligence personnel in handling explosives safely, filling a critical gap in the country's training resources.

## What is the Explosives Act of 1884?

- **Historical Context:** Enacted during British colonial rule, the Explosives Act of 1884 aimed to regulate various aspects of explosives.
- **Safety Regulations:** The Act applies to various types of explosives, including **gunpowder, dynamite, nitroglycerin, and other similar substances.**
  - The Act mandated safety standards and procedures to mitigate risks associated with explosives, encompassing handling, transportation, and storage guidelines to prevent accidents.
  - The Act empowers the Central Government to make rules regulating the **manufacture, possession, use, sale, transport, import, and export of explosives.**
    - These rules govern the issuance of licences, fees, conditions, and exemptions.
- **Prohibition of Dangerous Explosives:**
  - The Central Government can prohibit the manufacture, possession, or importation of especially dangerous explosives in the interest of public safety.
- **Exemption:**
  - The Act does not affect the provisions of the [Arms Act, 1959](#), and provisions are made for licences issued under the Explosives Act to have the effect of licences under the Arms Act.
    - The Arms Act of 1959 regulates the possession, acquisition, and carrying of ammunition and firearms. It also aims to curb illegal weapons and violence. **The act replaced the Indian Arms Act of 1878.**
- **Evolution and Amendments:** Over time, the Explosives Act underwent several amendments to adapt to technological advancements and emerging challenges, primarily focusing on enhancing safety standards and regulatory mechanisms.

## Note:

- The Kodavas, a martial race in Kodagu (Coorg) district, are **one of the few tribes in India allowed to possess a gun without a licence.**
  - **The Kodavas, exempted from the Indian Arms Act since 1834,** are known for their valiant support to the **British against Tipu Sultan**, and they are **required to obtain an exemption certificate** from the government.

## Popular Explosives:

- **Dynamite:**
  - Dynamite is a type of explosive mainly made **by mixing nitroglycerin** with an absorbent material such as clay.
    - This mixture stabilises the **highly volatile nitroglycerin**, making it safer to handle and transport.
- **Ammonium Nitrate:**
  - Ammonium nitrate is an inorganic compound consisting of ammonium ions (NH<sub>4</sub>) and nitrate ions (NO<sub>3</sub>).
    - It's commonly used as an agricultural fertiliser, but it can also be used as an **explosive in certain conditions, particularly when combined with a fuel source.**
- **TNT (trinitrotoluene):**
  - TNT is an organic compound derived from toluene, an aromatic hydrocarbon.
    - TNT is a yellow, odourless solid that is relatively stable and insensitive to shock and friction, making it a popular choice as an **explosive used in military shells, in industrial uses, and in underwater blasting.**
- **TNE (Trinitroethylene):**

- TNE is an **organic nitrate compound**. It has been used as an explosive but is less common compared to other explosives like **TNT**.
- **RDX (Royal Demolition explosive):**
  - **RDX is an organic compound**, in appearance it is a **white powder** and is very explosive widely used in **military and civilian applications** due to its high explosive power and stability.
  - It is also known as **cyclonite or hexogen**.

### **Drishhti Mains Question:**

Q. Analyse the impact of colonial-era legislation, such as the Explosives Act of 1884, on India's current regulatory landscape for explosives and hazardous materials.

## **Central Bank Digital Currency**

**For Prelims:** [Central Bank Digital Currency](#), [Reserve Bank of India \(RBI\)](#), [Cryptocurrencies](#), [Fiat currency](#), Informal economy, Cyber Security.

**For Mains:** [Central Bank Digital Currency](#), its Significance and Challenges.

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

### **Why in News?**

Recently, the **Governor** of the [Reserve Bank of India](#) emphasised the innovative features being developed for **India's** [Central Bank Digital Currency \(CBDC\)](#), also known as the **e-rupee**.

- He emphasised the potential of features like **permanent transaction** deletion to boost **user anonymity**.

### **What is Central Bank Digital Currency (CBDC)?**

#### ▪ **About:**

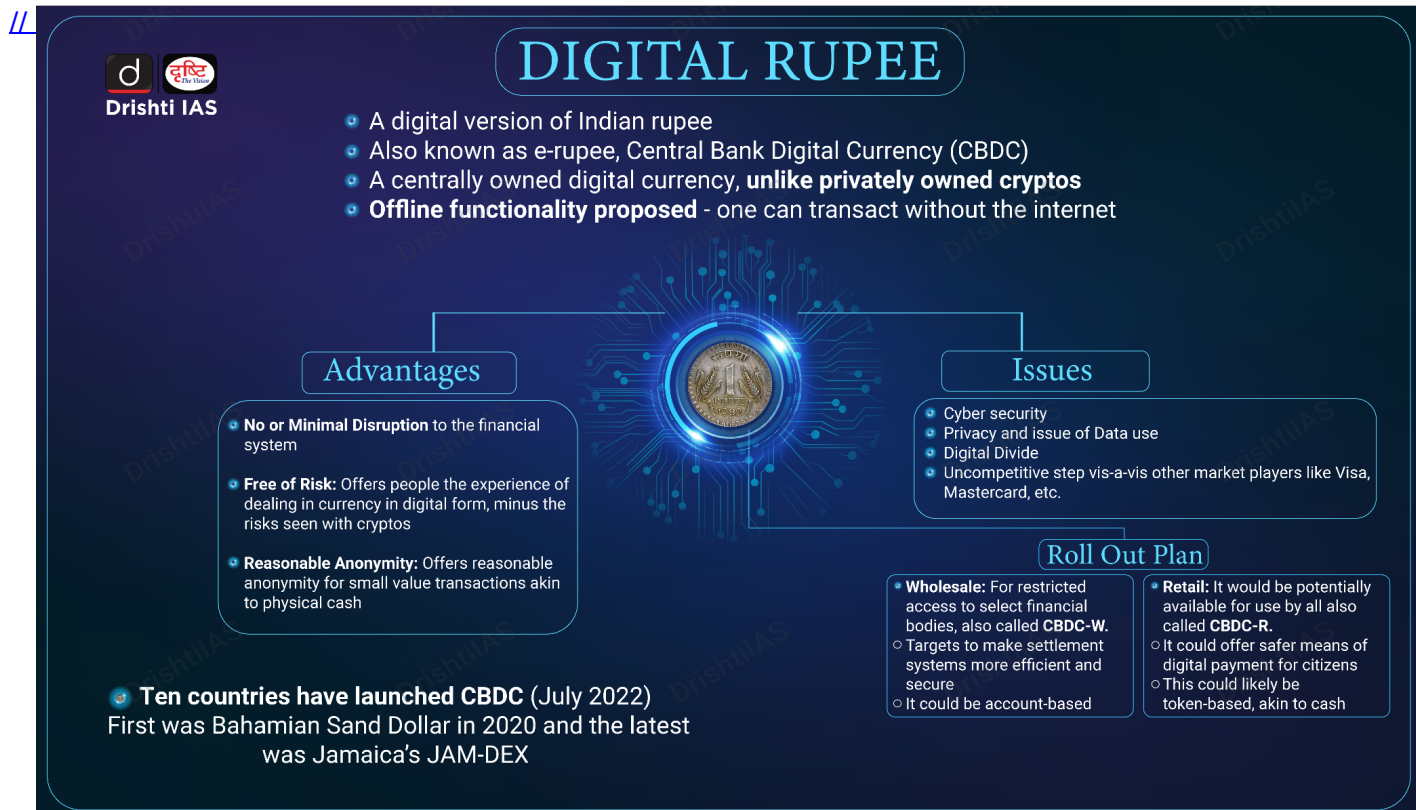
- A CBDC is a **legal tender** issued by a central bank in **digital form**.
  - Unlike private cryptocurrencies, CBDCs are **backed by the central bank**, ensuring stability and trust.
- It is the same as a **fiat currency** and is **exchangeable one-to-one** with the fiat currency.
  - A fiat currency is a **national currency** that is **not pegged** to the price of a commodity such as gold or silver.
- The digital fiat currency or CBDC can be **transacted using wallets** backed by blockchain.
- Though the concept of CBDCs was **directly inspired by Bitcoin**, it is different from **decentralised virtual currencies** and crypto assets, which are not issued by the state and lack the 'legal tender' status.

#### ▪ **Objectives:**

- The main objective is to **mitigate the risks and trim costs** in handling physical currency, costs of phasing out soiled notes, transportation, insurance and logistics.
- It will also wean people away from cryptocurrencies as a means for money transfer.

▪ **Global Trends:**

- **Bahamas** was the **first economy** to launch its nationwide CBDC namely Sand Dollar in 2020.
- **Nigeria** is another country to have rolled out **eNaira in 2020**.
- **China** became the **world's first major economy** to pilot a digital currency **e-CNY in April 2020**.



**What are the Major Advantages of CBDC?**

- **Enhanced Security:** CBDCs leverage **digital security measures**, potentially reducing the **risk of counterfeiting** and theft compared to physical cash.
- **Improved Efficiency:** Digital transactions can be **settled instantly** and efficiently, facilitating **faster and more cost-effective payments**.
- **Financial Inclusion:** CBDCs can potentially **reach unbanked and underbanked** populations by offering a secure and accessible digital payment option.
  - The increased use of CBDC could be explored for many other financial activities to push the **informal economy** into the formal zone to ensure better tax and regulatory compliance.
- **Enhanced Anonymity:** The possibility of **permanent transaction deletion is being explored** to provide users with a level of anonymity comparable to cash transactions.
- **Offline Functionality:** The e-rupee is envisioned to be **transferable offline**, potentially overcoming limitations of internet connectivity in rural areas.
- **Programmability:** Programmable features could be introduced to **enable targeted disbursement** of government benefits or encourage specific financial behaviours, promoting financial inclusion.
- **Cross-Border Transactions:** CBDCs possess unique attributes that can revolutionise cross-border transactions.
  - The instant settlement features of CBDCs are a significant advantage, making **cross-border payments** cheaper, faster, and more secure.
- **Traditional and Innovative:** CBDC can gradually bring a **cultural shift towards virtual currency** by reducing currency handling costs.
- **Improved Monetary Policy:** Central banks might have **greater control over the money supply** and interest rates with CBDCs. This could allow for more targeted and effective monetary

policy interventions.

## What are the Challenges Associated with the CBDC?

- **Cybersecurity Concerns:** Robust security measures are crucial to protect the e-rupee system from cyberattacks.
- **Privacy Issues:** Balancing user privacy with the **need for anti-money laundering** and countering financing of terrorism measures is a critical aspect.
  - Concerns have arisen about the CBDC's privacy, with its electronic nature potentially **leaving a traceable trail**, unlike cash.
- **UPI Preference and Interoperability:** Despite efforts to promote the CBDC, there is a continued preference for UPI among retail users.
  - However, the RBI expressed hope for a change in this trend and highlighted the RBI's efforts to enable the **interoperability of CBDC with UPI**.
- **Non-Remunerative CBDC:** The RBI made CBDC non-remunerative and **non-interest-bearing** to mitigate potential risks of bank disintermediation.
  - However, **non-banks are included** in the CBDC pilot to leverage their reach for distribution and value-added services.
- **Competition with Private Banks:** CBDCs could potentially **compete with private banks** for deposits, impacting their ability to lend and invest.
  - Finding a way for CBDCs to coexist with the existing financial system is necessary.
- **Monetary Policy:** The impact of CBDCs on monetary policy tools like interest rates remains unclear.
  - Central banks will **need to adapt their policies** to accommodate CBDCs effectively.

## Conclusion

The RBI's commitment to **addressing privacy concerns** surrounding the CBDC through **technological and legislative means** reflects its dedication to ensuring the successful implementation of digital currency.

- This emphasis on **maintaining anonymity**, alongside efforts to enhance **accessibility and functionality**, indicates India's progressive stance in adapting to the evolving digital currency landscape.

### Drishti Mains Question:

Q. What are the key features of the central bank digital currency (CBDC) in India, and how does it differ from traditional currency systems? Discuss the potential impact of CBDC on the Indian economy and its role in promoting financial inclusion.

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

**Q. With reference to Central Bank digital currencies, consider the following statements : (2023)**

1. It is possible to make payments in a digital currency without using US dollar or SWIFT system.
2. A digital currency can be distributed with condition programmed into it such as a time-frame for spending it.

**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: (c)

## Artificial General Intelligence

**For Prelims:** [Artificial Intelligence \(AI\)](#), Weak AI, Types of AI

**For Mains:** Indigenisation of Technology & Developing New Technology, Advantages and disadvantages of AI, Applications of AI in Different Sectors, Generative AI.

**Source:** IE

### Why in News?

During a recent interview, the CEO of **OpenAI** stated his dedication to investing in the advancement of **Artificial General Intelligence (AGI)**.

- AGI is highly advanced, has more scope, and is more capable than [Artificial Intelligence \(AI\)](#), more commonly used in present times.

### What is Artificial General Intelligence (AGI)?

#### ▪ About:

- It is highly advanced and more capable than **Artificial Intelligence (AI)** used commonly.
- AGI envisions a broader, more generalised form of intelligence, not confined to any particular task.
- It aims to create machines that possess human-like intelligence across a wide range of tasks.
  - This includes reasoning, common sense, abstract thinking, background knowledge, transfer learning, ability to differentiate between cause and effect, etc.
- AGI aims **to emulate human cognitive abilities** such that it allows it to do unfamiliar tasks, learn from new experiences, and apply its knowledge in new ways.

#### ▪ Characteristics:

- **Generalisation:** AGI can generalise knowledge and skills across tasks and domains, applying learning from one context to solve new problems.
- **Complex Reasoning:** AGI can engage in intricate reasoning and problem-solving.
- **Learning:** AGI exhibits robust learning capabilities, allowing it to acquire knowledge and skills from data, experience, or instruction.
- **Self-Awareness and Consciousness:** AGI would be aware of its own existence and able to set goals.
- **Human-Level Abilities:** AGI's capabilities would match or surpass human intelligence.
- **Creativity:** AGI demonstrates creativity by generating novel solutions, ideas, or artefacts that are not explicitly programmed or predefined.

#### ▪ Applications of AGI:

- **Healthcare:** AGI has numerous positive implications in various fields, including healthcare.
  - **Personalised medicine**, which tailors medical treatment to individual characteristics, can be greatly enhanced by AGI's ability to analyse diverse datasets and identify personalised treatment options.
- **Finance and Business:**
  - AGI has the potential to automate different tasks and improve decision-making,

providing real-time analysis and accurate market predictions.

- **Education Sector:**
  - AGI has the potential to revolutionise **adaptive learning** platforms that cater to the individual requirements of students, potentially making **personalised education** accessible to people all over the world.
- **Space Exploration:**
  - It can boost the space industry by operating autonomous systems for space exploration and research.
  - AGI could also analyse data from space missions to develop insights and contribute to discoveries.
- **Military and Defense:** A typical use of AGI would be enhanced surveillance, military involvement, real-time strategies on the battlefield, and combat systems.

## What is Artificial Intelligence (AI)?

- AI refers to a broad field of computer science where machines are designed to perform tasks that typically require human intelligence in particular task.
- These tasks can include language translation, image recognition, decision-making, etc.
- It is also called as '**Narrow or Weak AI**' as they excel at specific tasks but lack broader cognitive abilities. These **AI tools are task-specific** and optimised for predefined goals.
- **Examples:**
  - **Chatbots:** AI-powered chatbots can handle customer inquiries.
  - **Recommendation Systems:** AI algorithms suggest personalised content (e.g., Netflix recommendations).
  - **Image Recognition:** AI identifies objects in images.
- **Some Major AI Tools:** [ChatGPT Chatbot](#), [Google's Bard](#), [Chatbot](#).

## What are Some Concerns Related to AGI?

- **Environmental Concern:** The significant computational power needed for developing AGI systems raises concerns about **its environmental impact, including energy consumption and e-waste generation.**
- **Job Losses and Unemployment:** AGI has the potential to result in a substantial decrease in job opportunities and **create extensive social and economic inequality**, with a concentration of power among those who oversee the AGI.
- **Human Oversight and Accountability:** The immense cognitive abilities of AGI could potentially enable it to control information environments and influence results, especially in important areas like elections.
- **Loss of Basic Human Skills and Creativity:** Due to less involvement of humans even for small work.
  - Reducing human involvement may **reduce creativity** at work and AGI's work may be a more innovative carbon copy of human works.
- **Existential Risk:** AGI could surpass human intelligence and potentially pose existential risks. Its capabilities may surpass those of human beings, making its behaviour challenging to comprehend and anticipate.
  - This could result in a scenario where it becomes excessively autonomous, to the extent that humans lose their ability to control it.
- **Ethical Dilemmas:** The advancement of AGI raises ethical challenges, such as concerns about responsibility, confidentiality, and the risk of biased decision-making.
  - It is crucial to guarantee that AGI systems comply with ethical norms in order to avoid unintended outcomes and inequalities.

## What are India's Initiatives Related to Artificial Intelligence?

- [INDIAai.](#)
- [Global Partnership on Artificial Intelligence \(GPAI\).](#)

- [US India Artificial Intelligence Initiative.](#)
- [Responsible Artificial Intelligence \(AI\) for Youth.](#)
- [Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.](#)
- [Artificial Intelligence Mission.](#)

## Way Forward

- **Robust Ethical Frameworks:** It is essential to create and enforce thorough ethical guidelines and regulations to steer the responsible advancement and utilisation of AGI.
  - Collaborative efforts among governments, industry stakeholders, and researchers are essential to create guidelines emphasising safety, transparency, and accountability.
- **Transparency and Accountability:** Prioritising transparency and explainability in AGI systems is essential for ensuring understandable and verifiable decision-making processes, which in turn helps build trust and minimises the risk of unintended consequences.
- **Ongoing Monitoring and Oversight:** Establishing mechanisms for continuous monitoring and oversight is vital to identify and address potential risks associated with AGI. Regular assessments of AI systems can help prevent misuse and ensure alignment with societal values.

### Drishti Mains Question:

Artificial intelligence (AI) is proving to be a Double-Edged Sword bringing both benefits and drawbacks. Discuss how we can ensure AI development is ethical and responsible.

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

### Prelims:

**Q1. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)**

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

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

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

**Ans: (b)**

### Mains:

**Q. What are the main socio-economic implications arising out of the development of IT industries in major cities of India? (2022)**

**Q. "The emergence of the Fourth Industrial Revolution (Digital Revolution) has initiated e-Governance as an integral part of government". Discuss. (2020)**



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## India's Aviation Sector

**For Prelims:** [Regional Connectivity Scheme-UDAN](#), [Open Sky Agreement](#), [Goods and Services Tax \(GST\)](#), [Carbon Neutrality](#), [Digi Yatra](#)

**For Mains:** Transformation of India's aviation sector, Government Policies & Interventions

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

### Why in News?

After ruling the Indian skies, IndiGo is now attempting to make a mark globally with non-stop, **long-haul, and low-cost flights** from Indian airports.

- However, the long-haul, low-cost airline model has been a challenge for many airlines, with numerous failures and few relatively stable and profitable operations.

### What is the Long-haul, Low-cost Air Travel Model?

#### ▪ About:

- The long-haul, low-cost air travel model is an attempt by **low-cost carriers (LCCs)** to expand their operations **beyond short-haul domestic and regional routes** and offer non-stop, long-duration flights at lower fares.
  - This model aims to replicate the success of LCCs in the short-haul segment by applying similar cost-cutting strategies and business practices to long-haul operations.

#### ▪ Challenges:

- **Higher fuel costs for operating larger, wide-body aircraft** on long-haul routes.
  - Increased operating costs for wider aircraft, such as more crew, maintenance, and airport fees.
- Difficulty in maintaining the rapid turnaround times and high aircraft utilisation levels that are critical to the LCC business model.
- Balancing the need for passenger comfort and amenities on long flights with the low-cost carrier's focus on minimising costs.
- Establishing a **viable network** and flight schedule that can sustain demand and profitability on long-haul, low-density routes.
- Competition from established full-service carriers with stronger brand recognition and loyalty on long-haul international routes.

#### ▪ Successful Examples:

- A few long-haul LCCs like Scoot, Jetstar, and French Bee have managed to establish relatively stable and profitable operations.
- Key strategies include offering a **hybrid product with some premium/business class amenities**, targeting underserved routes, and leveraging strong domestic/regional networks.

### What is the Progress of India's Aviation Sector?

#### ▪ [India's Aviation Boom:](#)

- India has emerged as the **third-largest domestic aviation market in the world**, after the USA and China.

- The industry has undergone a remarkable transformation, shedding its previous limitations and evolving into a vibrant and competitive sector.
- Proactive policies and strategic initiatives by the government have catalysed the growth of the aviation sector, fostering a conducive environment for expansion and innovation.
- **Infrastructure Development:**
  - India's airport network has witnessed a remarkable transformation, doubling its operational airports from **74 in 2014 to 148 in April 2023**, facilitating increased air travel accessibility.
  - **Regional Connectivity Scheme-UDAN:**
    - The **Regional Connectivity Scheme-Ude Desh ka Aam Nagrik (RCS-UDAN)** was launched in 2016 to provide connectivity to unserved and underserved airports in the country.
    - The scheme aims **to revive existing airstrips and airports**, bringing essential air travel access to isolated communities and boosting regional economic development.
    - With **517 RCS routes operational, connecting 76 airports, UDAN has facilitated air travel for over 1.30 crore people**, promoting accessibility and economic growth
- **Passenger Growth:**
  - The aviation industry is experiencing a remarkable resurgence **post-Covid**, with a surge in passenger demand.
    - From January to September 2023, domestic airlines carried 112.86 million passengers, a **29.10% increase compared to the same period in 2022**.
    - International airlines carried 45.99 million passengers between January and September 2023, a **39.61% increase compared to the same period in 2022**.
- **Carbon Neutrality:**
  - The **Ministry of Civil Aviation (MoCA)** has taken initiatives to work towards carbon neutrality and achieving **net zero carbon emissions** at airports in the country.
    - Airport operators have been advised to **map carbon emissions** and work towards **carbon neutrality** and net zero emissions in a phased manner.
  - **Greenfield airports** are being encouraged to prioritise carbon neutrality and net zero emissions in their development plans.
    - Airports like Delhi, Mumbai, Hyderabad, and Bengaluru have achieved **Level 4+ ACI Accreditation and become carbon neutral**.
    - 66 Indian Airports are operating on 100% Green Energy.

## What are the Challenges Facing India's Aviation Industry?

- **High Fuel Costs:**
  - Aircraft Turbine Fuel (ATF) expenses can represent **50-70% of an airline's operational costs** and import taxes add to the financial burden.
- **Dollar Dependency:**
  - Fluctuations in the **dollar rate impact profits as major expenses** like aircraft acquisition and maintenance are dollar-denominated.
- **Cutthroat Pricing:**
  - Airlines often engage in aggressive price competition to attract passengers, leading to thin profit margins amidst high operational costs.
- **Limited Competition:**
  - Currently, IndiGo and a resurgent Air India hold the majority share, possibly nearing 70% combined. This concentration of power can lead to:
    - **Limited Competition:** With fewer major players, there's a risk of reduced competition on routes, potentially leading to higher fares for consumers.
    - **Pricing Power:** The dominant airlines may have more leverage to influence ticket prices, especially if they coordinate strategies.
- **Grounded Fleet:**
  - A large portion (over a quarter) of Indian aeroplanes are grounded due to safety concerns and financial issues, hindering capacity.
- **Environmental Concerns:**
  - Pressure to reduce carbon emissions and adopt sustainable practices can add complexity

to growth strategies.

## India's Initiatives Related to Aviation Industry

- [UDAN Scheme \(Ude Desh ka Aam Nagrik\)](#).
- [National Civil Aviation Policy, 2016](#)
- [Goods and Services Tax \(GST\)](#) rate reduced to 5% from 18% for domestic Maintenance, Repair and Overhaul (MRO) services.
- [Open Sky Agreement](#)
- [Digi Yatra for Seamless Travel](#): This digital platform facilitates a contactless experience for air travellers, with features like facial recognition and paperless check-in.



# UDAN SCHEME

Ude Desh Ka Aam Naagrik



## FEATURES:

- Connecting Small and Medium cities with big cities through air service
- Providing affordable, economically viable, and profitable air travel
- Extending financial incentives to selected airlines to encourage operations from unserved and under-served airports.

## ABOUT:

- A Regional Connectivity Scheme (RCS)
- Launched in October 2016 and operational for a period of 10 years
- Formulated in Pursuance of the National Civil Aviation Policy (NCAP)-2016
- Udan 5.0 is the latest project.

## BENEFITS:

- Democratisation of the Aviation Sector
- Employment Generation
- Boost to Tourism Sector
- Connecting smaller airports, special helicopters and sea plane routes.

• **Lifeline UDAN:**  
Air transport of medical cargo and essential supplies across India at the time of the Covid-19.

• **Krishi UDAN:**  
To assist farmers in transporting agricultural products

• **International UDAN:**  
To connect India's smaller cities directly to some key foreign destinations.



## Way Forward

- **Diversification of Fuel Sources:** Emulate initiatives to incorporate biofuels into the fuel mix, reducing dependence on traditional ATF and mitigating the impact of import taxes.
  - Implement **fuel hedging strategies** to manage the volatility of fuel prices, a practice used by many international airlines.
- **Ancillary Revenue Streams:** Develop ancillary revenue streams such as cargo services, in-flight sales, and premium services to bolster profits.
- **Competitive Pricing Strategies:** Utilise advanced yield management systems to optimise pricing and maintain profitability without engaging in detrimental price wars.
  - Strengthen customer loyalty programs to encourage repeat business and reduce the need for aggressive pricing tactics.
- **Regulatory Reforms:** Advocate for regulatory reforms that encourage new entrants and prevent monopolistic practices in the industry.
- **Route Rationalisation:** Encourage airlines to explore under-served routes, thereby increasing competition and offering more choices to consumers.
  - Consider **aircraft leasing options to maintain operational flexibility** and reduce financial burdens associated with owning a fleet.
- **Carbon Offset Programs:** Implement carbon offset programs like the [ICAO Carbon Emissions Calculator \(ICEC\)](#) to measure and mitigate the environmental impact.

### Drishti Mains Question:

Q. Evaluate the progress of India's aviation sector, considering factors such as infrastructure development, passenger growth, and the impact of government policies.

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

### Mains

Q. Examine the development of Airports in India through joint ventures under Public-Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard? (2017)

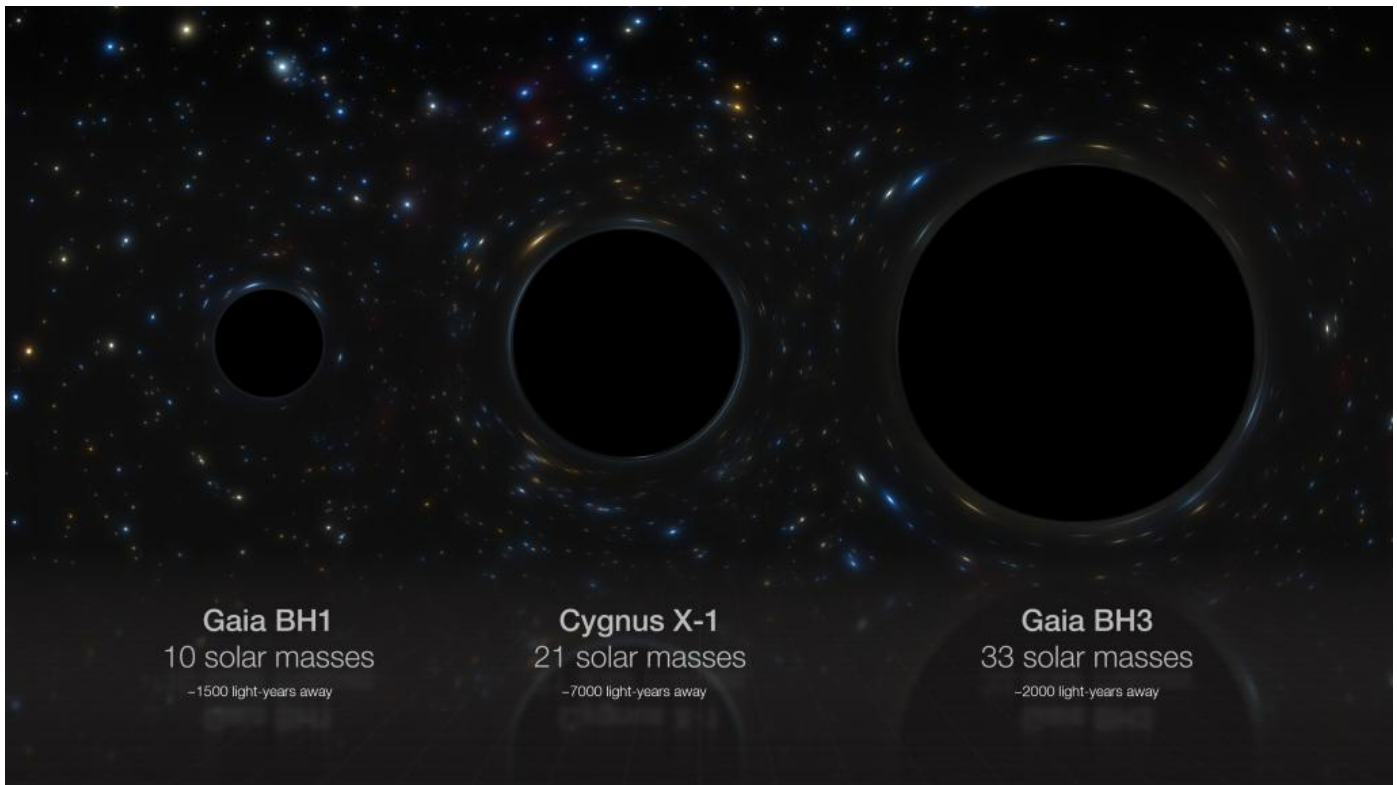
## Black Hole Gaia BH3

[Source: DTE](#)

### Why in News?

Recently, astronomers have discovered a massive [Black Hole](#) in our [Galaxy](#), named “**Gaia BH3**”.

- It's the **2<sup>nd</sup>-closest** known Black hole to Earth. It is **33 times heavier** than the sun and the **most massive** black hole of **stellar origin** in the Milky Way, surpassing **Cygnus X-1**.
  - **Stellar black holes** are formed as a result of the collapse of a single star.



**Gaia BH1**  
10 solar masses  
-1500 light-years away

**Cygnus X-1**  
21 solar masses  
-7000 light-years away

**Gaia BH3**  
33 solar masses  
-2000 light-years away

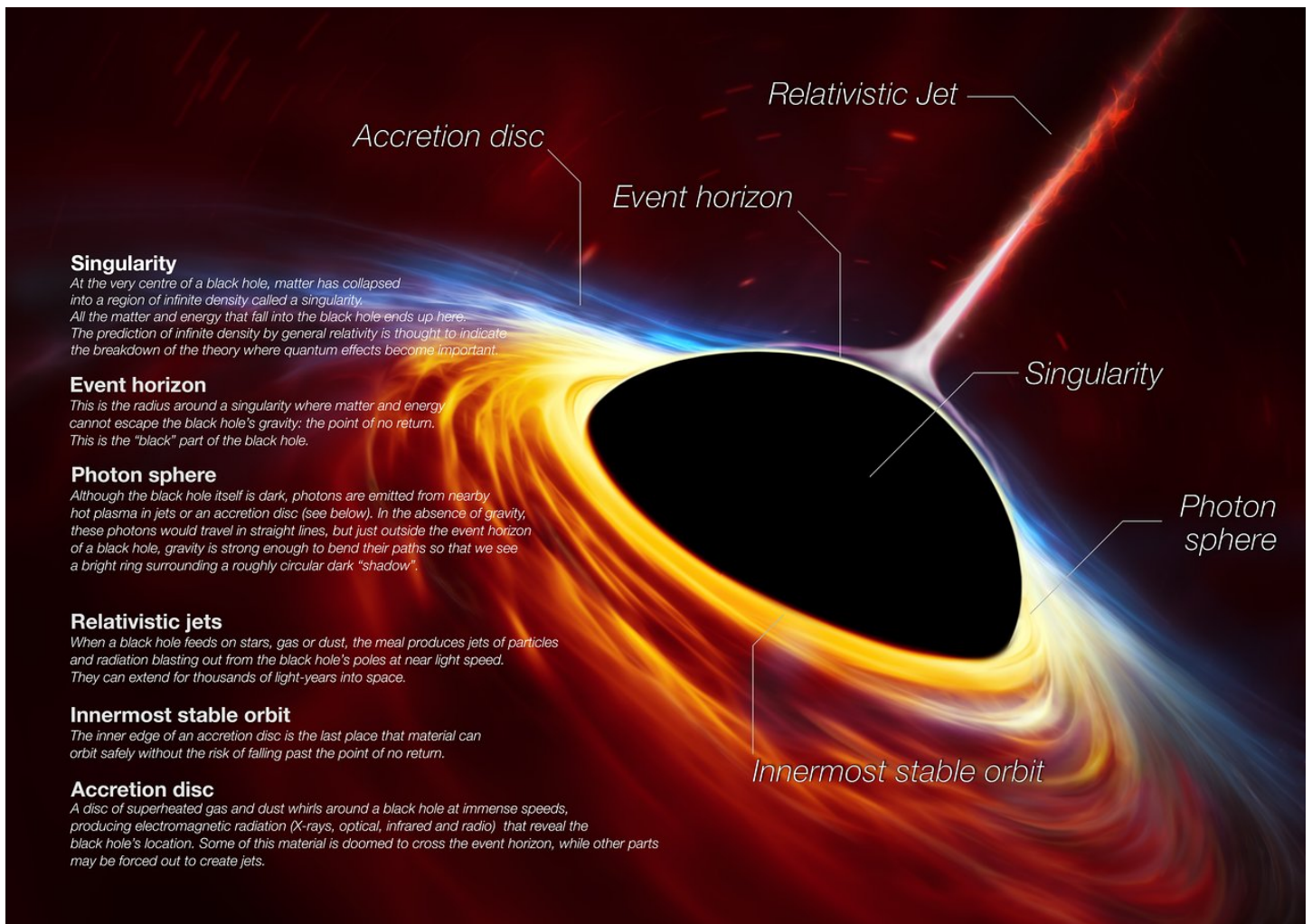
## What are Black Holes?

### ▪ About:

- Black holes are extraordinarily dense objects with **gravity** so strong that not even light can escape, making it difficult to spot them.
- They are formed when a massive star collapses in on itself at the end of its life, creating an incredibly dense object with a gravitational pull that is **so strong that it warps space-time around it.**

### ▪ Types of Black Holes:

- **Stellar Black Hole:** It is formed by the collapse of a single massive star.
- **Intermediate Black Hole:** Their masses are between 100 and 100,000 times that of the sun.
- **Supermassive Black Hole:** Their masses ranging from millions to billions of times that of the sun, found at the centres of most galaxies including our own **Milky Way galaxy.**



## What is a Galaxy?

- A galaxy is a huge collection of gas, dust, and billions of stars and their solar systems, all held together by gravity.
- Earth is the part of the [Milky Way Galaxy](#), which also has a super Massive Black Hole named **Sagittarius A at it's centre** whose mass is about 4 million times that of suns.

## UPSC Civil Services Examination, Previous Year's Question

**Q. Recently, scientists observed the merger of giant 'blackholes' billions of light-years away from the Earth. What is the significance of this observation? (2019)**

- (a) 'Higgs boson particles' were detected.  
 (b) 'Gravitational waves' were detected.  
 (c) Possibility of inter-galactic space travel through 'wormhole' was confirmed.  
 (d) It enabled the scientists to understand 'singularity'

**Ans: (b)**

**Q. Consider the following phenomena: (2018)**

1. Light is affected by gravity.
2. The Universe is constantly expanding.

3. Matter warps its surrounding space-time.

**Which of the above is/are the prediction/predictions of Albert Einstein's General Theory of Relativity, often discussed in the media?**

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

**Ans: (d)**

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## Drip Pricing

[Source: HT](#)

### Why in News?

Recently, the concept of "drip pricing" has garnered significant attention from both governmental bodies and consumers due to its impact on the transparency of pricing practices in various industries.

### What is Drip Pricing?

#### ▪ About:

- **Drip pricing** is a pricing strategy where only a **portion of an item's total cost** is displayed initially, with **additional charges** revealed as the customer progresses through the purchase process.
  - This strategy is used to attract customers with a seemingly lower price at the outset.

#### ▪ Mechanisms:

- The **initial price shown to consumers is often lower** than the total cost, excluding essential fees like local taxes, booking charges, or necessary add-ons.
- As the purchase process continues, additional fees are **incrementally disclosed or "dripped"** to the consumer, which can lead to a higher total cost than initially presented.

#### ▪ Implications of Drip Pricing:

- **Deceptive Pricing:** Advertisers initially display a lower price, luring customers in before hitting them with unexpected fees. This makes informed decision-making difficult.
- **Comparison Shopping Challenges:** Drip pricing makes it **hard to compare prices** accurately across different vendors, as the true cost might only be revealed at checkout.
- **Short-Term Gains vs. Long-Term Reputation:** While drip pricing might attract initial interest, it can **damage brand trust** and loyalty in the long run.
- **Potential Regulation:** Regulatory bodies might enact stricter rules to curb drip pricing practices, restricting ease of doing business.
- **Positive Aspect:** It allows businesses **to offer a base price** with optional add-ons, giving consumers the flexibility to pay for only what they need.
  - This can be particularly beneficial in industries where **customisation and personalisation** are valued.

#### ▪ Challenges:

- The challenge lies in **distinguishing between competitive pricing strategies** and those that are genuinely deceptive or harmful.
- The regulatory approach has **not been unified or consistently applied**, leading to enforcement challenges.



- **Countries like Australia** have **explicit regulations** against drip pricing, while others rely on broader consumer protection laws to address misleading practices

▪ **Potential Solutions:**

- **Industry Standards:** Industry-wide adoption of transparent pricing practices could create a fairer marketplace.
- **Consumer Awareness:** Educating consumers about drip pricing tactics can help them make informed purchasing decisions.
- **Call for Transparency:** There is a growing call for regulations that require all fees to be included in the initial advertised price or at least clearly disclosed early in the purchase process to protect consumers and ensure fair competition.
- In India, the [Department of Consumer Affairs](#) **cautioned against "drip pricing,"** urging consumers to be wary of hidden charges and seek help if they notice unexpected increases in a product's maximum retail price (MRP).

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

### Prelims:

**Q. With reference to 'consumers' rights/privileges under the provisions of law in India, which of the following statements is/are correct? (2012)**

1. Consumers are empowered to take samples for food testing.
2. When a consumer files a complaint in any consumer forum, no fee is required to be paid.
3. In case of death of consumer, his/her legal heir can file a complaint in the consumer forum on his/her behalf.

**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: (c)**

### Mains:

**Q. Has the Indian governmental system responded adequately to the demands of Liberalization, Privatization and Globalization started in 1991? What can the government do to be responsive to this important change? (2016)**

## SMART System

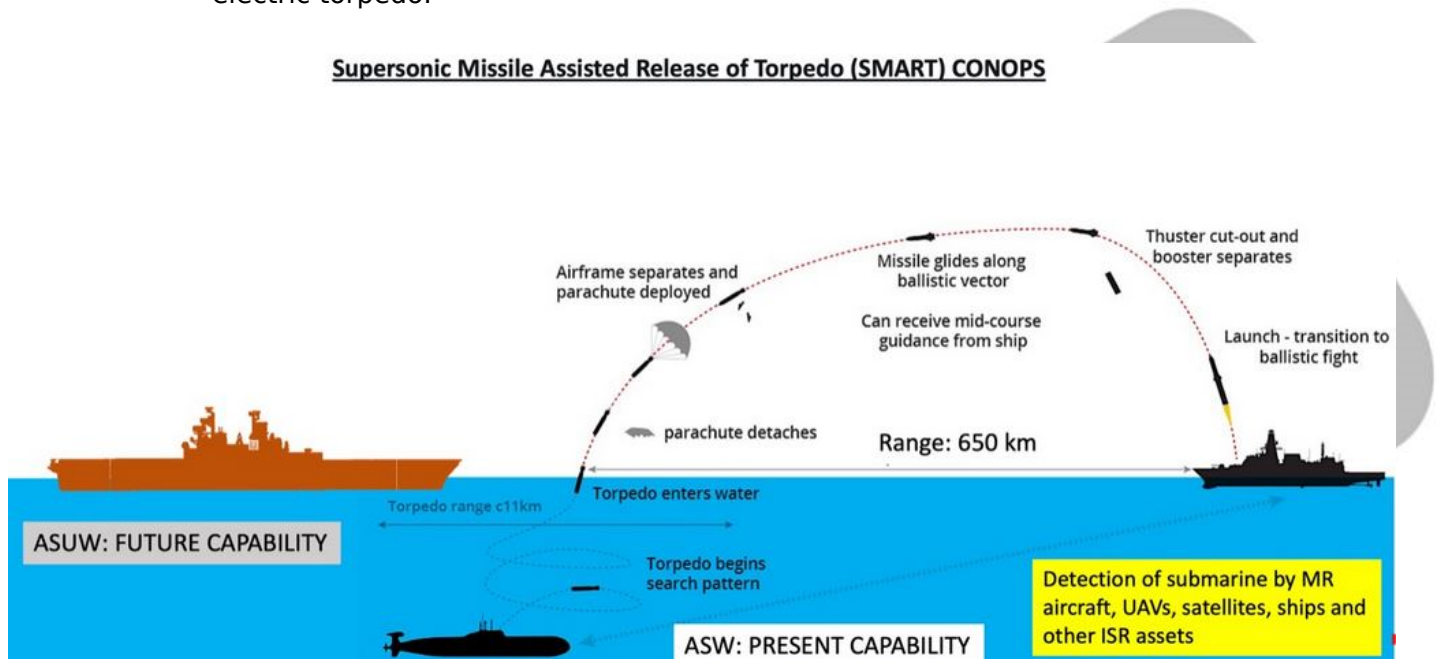
**Source: PIB**

Recently, the [Defence Research and Development Organisation \(DRDO\)](#) successfully conducted a flight test of the [Supersonic Missile-Assisted Release of Torpedo \(SMART\) system](#) from **Dr APJ Abdul Kalam Island** off the coast of Odisha.

#### ▪ SMART System:

- It represents a next-generation missile-based **lightweight torpedo delivery system**.
- Its primary aim is to significantly augment the anti-submarine warfare capabilities of the **Indian Navy** extending beyond the conventional range of lightweight torpedoes.
  - The missile is launched from a **ground mobile launcher**.
- This canister-based missile system incorporates various advanced sub-systems,
- It includes a two-stage solid propulsion system **electromechanical actuator system** and **precision inertial navigation system**.
- When it approaches close enough to the submerged submarine, the missile will **eject the torpedo system into the water** and the autonomous torpedo will start moving towards its target to take out the submarine.
- A **torpedo** is an underwater weapon with a **cigar-shaped design**, propelled by its power.
  - It can be launched from various platforms such as submarines, surface vessels, or aeroplanes.
- **Varunastra** stands as the inaugural indigenous heavyweight ship-launched anti-submarine electric torpedo.

#### Supersonic Missile Assisted Release of Torpedo (SMART) CONOPS



Read more: [Supersonic Missile Assisted Torpedo](#)

## International Sun Day

Source: [PIB](#)

The Government of India marked **International Sun Day** on 3<sup>rd</sup> May 2024, reaffirming its commitment to sustainable energy practices with a **special focus on solar power**.

- The **Ministry of New & Renewable Energy** organized a 'Run for Sun' Marathon at Jawaharlal Nehru Stadium, New Delhi, to raise awareness about the pivotal role of solar power in **mitigating climate change**.
  - The Ministry announced Solar Art, an **All-India Intra-School Solar Art Competition**, aiming to promote awareness of solar energy among school students through artistic expression.
- Solar Stops were set up in six Indian cities to **educate citizens about the significance of solar energy** through captivating installations and displays.

- International Sun Day is recognised globally as an opportunity to acknowledge the **importance of the Sun and to promote solar energy** as a sustainable and environmentally friendly energy source.

Read more: [India's Solar Power Dream](#)

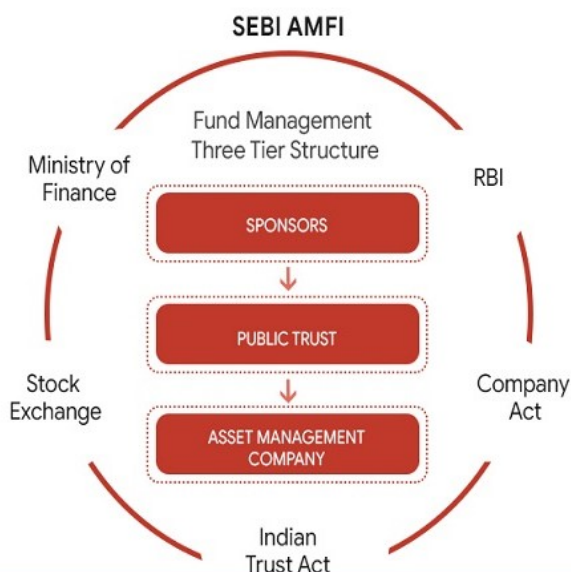
## Amendment to Mutual Fund Rules

Source: TH

Recently, the [Securities & Exchange Board of India \(SEBI\)](#) approved amendments to **SEBI (Mutual Funds) Regulations, 1996** and it has mandated amendments to enhance **regulatory oversight** within [Asset Management Companies \(AMCs\)](#), some other recent proposed amendments are:

- **Institutional Mechanism:**
  - AMCs are required to implement **enhanced surveillance systems**, internal controls, and escalation processes to identify and address specific types of misconduct.
  - It aims at preventing **front-running, insider trading**, and misuse of sensitive information within the industry.
    - **Front running** refers to the **unethical practice of a broker or trader**, executing orders on a security based on advance knowledge of pending trades from their clients, which can impact the market price.
    - **Insider trading**, on the other hand, involves buying or selling a security **based on material, non-public information about the security**.
- **Recording of Communication:**
  - SEBI has exempted **face-to-face interactions** during market hours from the requirement of recording all communication by dealers and fund managers.
- **Prudential Norms for Passive Schemes:**
  - SEBI has streamlined **prudential norms for passive schemes**, allowing equity passive schemes to invest up to the weightage of constituents in the underlying index, with a **35% cap** on investment in sponsor group companies.

## Regulatory mechanism for Mutual Funds



## Dry Aral Sea

**Source: DTE**

A recent study reveals that the **drying up of the Aral Sea** has resulted in the emergence of the **Aralkum Desert**, making Central Asia dustier **by 7%**.

- The **Aral Sea**, once the **world's fourth-largest lake**, dried up in **Soviet Central Asia** in the **1960s**, leading to severe environmental consequences like **increasing dust** and consequently **affecting air quality** and could change the overall weather patterns, **and increase the air pressure** on the ground in the Aral region.
  - It can **intensify** the Siberian high in winter and a **weakening** of the Central Asian warm low in summer.
  - The dust can accelerate the **melting of glaciers**, **exacerbating the water crisis** in the region.
- The Aral Sea was fed by the two great rivers of Central Asia — **the Amu Darya** (from the **Pamir Mountains**) and the Syr Darya (Tien Shan mountain ranges).
- Other similar examples:
  - **Lake Urmia in Iran and Lake Hamoun** on the Iran-Afghanistan border have also dramatically shrunk and become strong local sources of dust.



Read more: [Aral Sea](#)

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## SPACE for Indian Navy

**Source: PIB**

Recently, [Defence Research and Development Organisation \(DRDO\)](#) has set up a premier testing & evaluation hub for SONAR Systems named “**SPACE**” in Kerala which is dedicated to the Indian Navy.

- It stands for **Submersible Platform for Acoustic Characterisation and Evaluation** (SPACE).
- It will mainly be utilised for evaluation of complete Sonar Systems. It consists of two distinct assemblages.
  - **Floating Part** is a platform which floats on the water surface, and
  - **Submerged Part** is a submersible platform which can be lowered to any depth upto 100 m **using winch systems**.
- Upon completion of operations, the submersible platform can be winched up and docked with the floating platform.
- It will allow quick deployment and easy recovery of scientific packages such as **sensors and transducers**.
- It will be suitable for **survey, sampling, and data collection** of air, surface, mid-water, and reservoir floor parameters using modern scientific instrumentation.
  - It will bring a new era of [Anti-Submarine Warfare](#) research capabilities.
- **SONAR (SOund Navigation And Ranging)** is a device used for measuring distance using ultrasonic waves.
  - The sonar technique is used to determine the depth of the sea and to locate underwater hills, valleys, submarines, icebergs, sunken ships etc.

**Read More:** [Three Anti-Submarine Warfare Ships for Indian Navy](#)

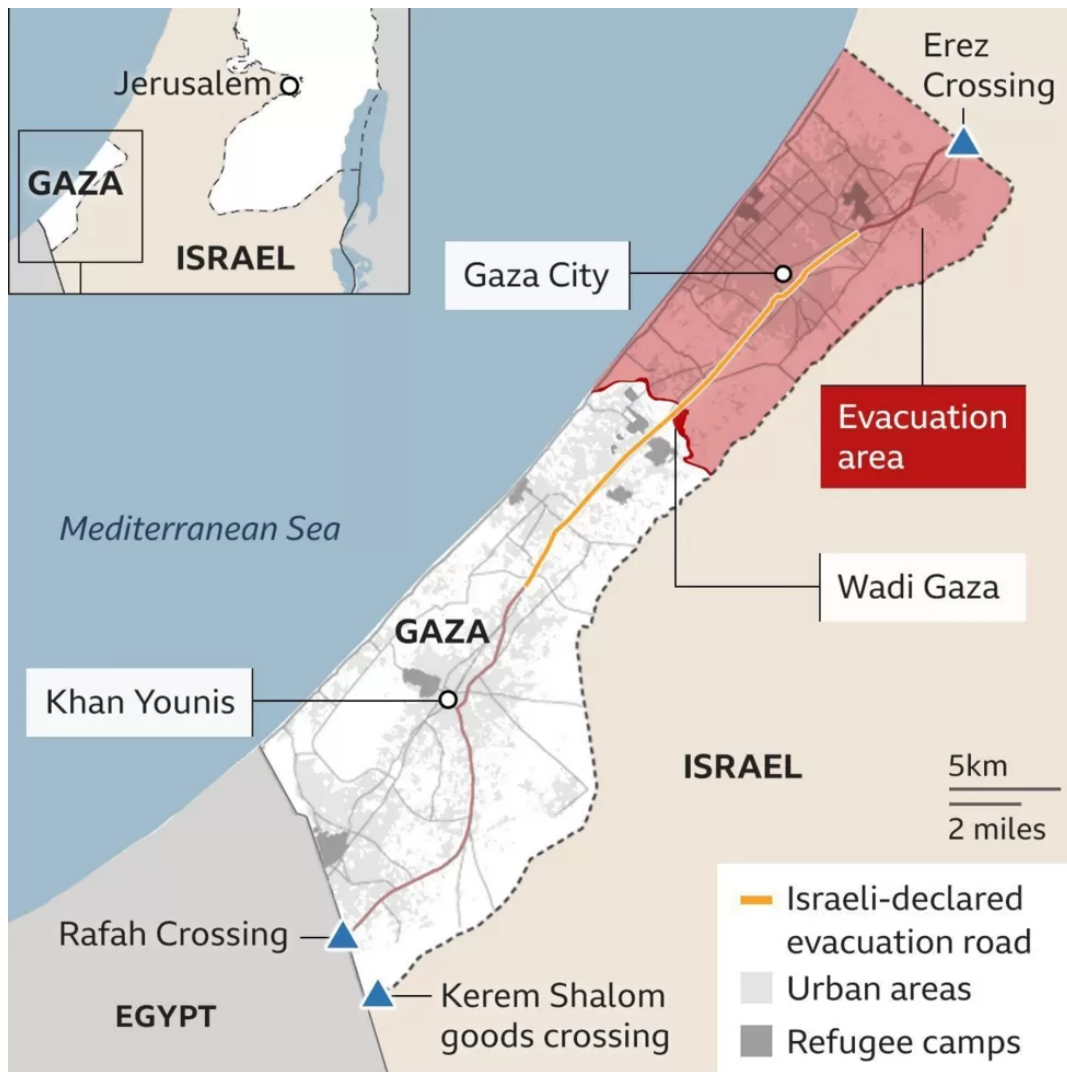
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## Israeli Military Seizes Rafah Border Crossing

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

The Israeli military seized control of the [Rafah border crossing](#) **between the Gaza Strip and Egypt** and its tanks pushed into the southern Gazan town of Rafah after a night of air strikes on the Palestinian enclave.

- The closure of the Rafah crossing hindered aid delivery to the **Gaza Strip**, exacerbating the humanitarian crisis.
- The **Rafah crossing is the southernmost exit** point from the Gaza Strip, and it shares a border with **Egypt's Sinai Peninsula**.
  - The crossing is controlled by Egypt. It is the only exit that does not lead to Israeli territory.
- There are two other border crossings in and out of Gaza are [Erez](#) **in the north for people in Israel, and Kerem Shalom in the south for commercial goods**.



Read more: [Rafah Crossing](#)

## Border Roads Organisation 65th Raising Day

Source: [PIB](#)

Recently, the [Border Roads Organisation \(BRO\)](#) celebrated its **65<sup>th</sup> Raising Day** on 7<sup>th</sup> May 2024.

- Established in 1960 with only two projects, **Project Tusker (now Vartak) in the East and Project Beacon in North India**, the BRO has grown to become a vibrant organisation with 18 projects operating in 11 States and three Union Territories.
  - It is now recognised as the leading infrastructure construction agency in high-altitude and difficult snow-bound areas.
- In 2023-24, the BRO completed 125 infrastructure projects, including the construction of the [Sela Tunnel in Arunachal Pradesh on Balipara-Chardwar-Tawang Road](#).
  - The BRO will soon start construction on the **4.10-km long Shinkun La Tunnel, which will become the world's highest tunnel at 15,800 ft** once completed, bypassing **China's Mila Tunnel at 15,590 ft**.
- The BRO is an Indian executive force under the **Ministry of Defence**, to secure India's borders and develop infrastructure in remote areas of the north and north-eastern states.
- It operates under the **Border Roads Development Board (BRDB)** and is responsible for road

networks in border areas and neighbouring countries.

- The motto of BRO is “**Shramena Sarvam Sadhyam**”, which translates to “Everything is achievable through hard work.”

**Read more:** [BRO Celebrates 64th Raising Day](#)

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