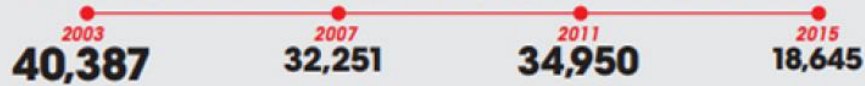


## 1. Ban on Drugs Harmful for Vultures

### VANISHING VULTURES

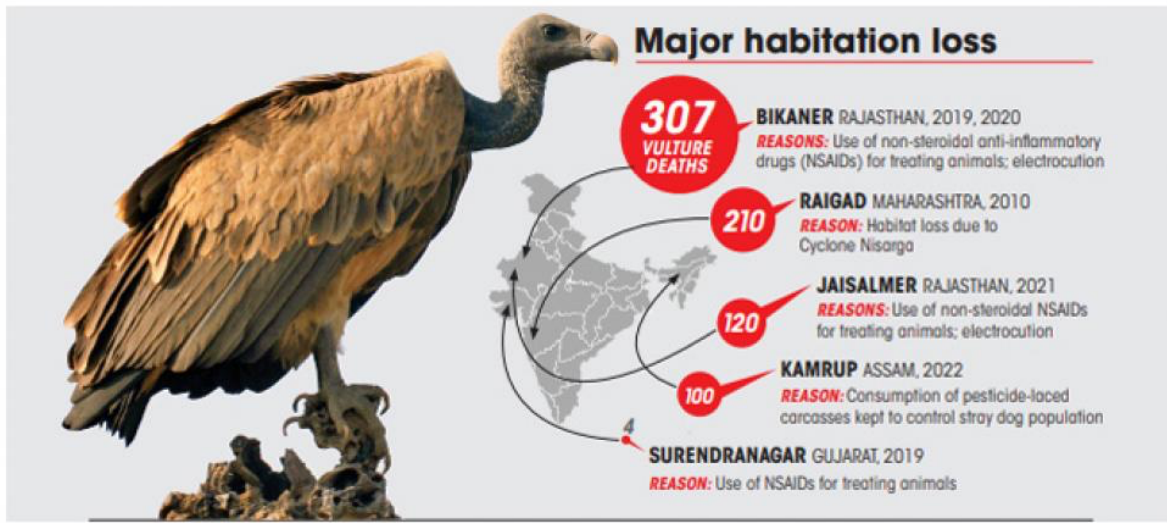
High mortality hinders India's plans of stabilising its vulture population

**53% drop in India's vulture population since 2003**



#### The fatal four

DICLOFENAC	ACECLOFENAC	NIMESULIDE	KETOPROFEN
was banned for veterinary use in 2006 to arrest the shrinking vulture population	gets converted into diclofenac within hours of administration to cattle	causes visceral gout and renal failure in vultures within 30 hours of ingestion	causes death in vultures within 48 hour after ingestion due to heightened toxicity levels



#### Topic: Environment and Ecology

**In News:** Vulture conservationists and experts have welcomed the central government's move to ban veterinary drugs aceclofenac and ketoprofen that are fatal for vultures, but suggest more needs to be done for creating a safe environment for the bird.

#### More on the Topic:

- The decision taken on the ban by the Drugs Technical Advisory Board in May is the second big step towards vulture conservation since the banning of Diclofenac in 2006.

#### About Vultures:

- Vultures are widely distributed, but they are **absent from Australia and most oceanic islands.**



- The vulture is a **critically endangered species**, according to the International Union for Conservation of Nature.
- The preferred habitats of the Vulture are **deserts, savannas and grassland near a water source**. It also inhabits open mountain ranges up to 3,000 metres above sea level.
- It is one of the **22 species of large carrion-eating birds** that live predominantly in the tropics and subtropics.
- They act an **important function as nature's garbage collectors** and help to keep the environment clean of waste.
- Vultures also play a **valuable role in keeping wildlife diseases in check**.

#### Threats:

- Poisoning from diclofenac that is used as a medicine for livestock.
- Loss of Natural Habitats due to anthropogenic activities.
- Food Dearth and Contaminated Food.
- Electrocution by Power lines.

#### Species of Vultures found in India and their Conservation Status:

- Indian Vulture or Long-billed vulture (*Gyps indicus*)-Critically Endangered
- Indian White-backed Vulture (*Gyps bengalensis*)-Critically Endangered
- Red-headed Vulture (*Sarcogyps calvus*)- Critically Endangered
- Slender-billed Vulture (*Gyps tenuirostris*)- Critically Endangered
- Egyptian Vulture (*Neophron percnopterus*)- Endangered
- Cinceros Vulture (*Aegypius monachus*)- Near Threatened
- Bearded Vulture (*Gypaetus barbatus*)-Near Threatened
- Himalayan Vulture (*Gyps himalayensis*)-Near Threatened
- Griffon Vulture (*Gyps fulvus*)- Least Concern

**Source: Indian Express**

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## 1. SO<sub>2</sub> Emissions Norms



### Topic: Environment and Ecology

**In News:** As of April 2023, only 5 per cent of the country's installed coal-based thermal power generation capacities had the flue gas de-sulfurization (FGD) mechanism in place.

#### More on the Topic:

- Flue-gas desulfurization (FGD) encompasses a range of **technologies employed to eliminate Sulphur dioxide (SO<sub>2</sub>) from the exhaust flue gases discharged by fossil-fuel power plants** and other processes that emit Sulphur dioxide, such as waste incineration.
- FGD systems can be categorized into **wet scrubbing or dry scrubbing methods**.
- In wet FGD systems, the flue gases come into contact with an absorbent, which can be a liquid or a slurry consisting of solid material. **The absorbent either dissolves or reacts with the Sulphur dioxide, effectively capturing it.**
- Dry FGD systems employ a **dry pulverized absorbent**, such as lime or limestone. Once absorption takes place, the solid particles are removed using baghouse filters.

#### Norms should be followed by Thermal Power Plants:

- In 2015, Ministry of Environment, Forest, and Climate Change notified environmental norms for particulate matter (PM), sulphur dioxides (SO<sub>2</sub>), nitrogen oxides and mercury and water use for coal based thermal power plants (TPPs).
- Coal TPPs are responsible for more than **50% of the SO<sub>2</sub> concentration, 30% of nitrogen oxide emissions, and 20% of PM in the surrounding air.**
- To adhere to these regulations, existing TPPs need to be **retrofitted with additional equipment, such as Flue Gas Desulphurisation (FGD) and Selective Catalytic Reduction, to control emissions.**

#### Limitations of ICC:



- Sulphur dioxide (SO<sub>2</sub>) pollution, mainly from burning fossil fuels, harms human health and the environment.
- High concentrations of SO<sub>2</sub> in the air generally lead to the formation of other Sulfur Oxides (SO<sub>x</sub>).
- SO<sub>x</sub> can react with other compounds in the atmosphere to form small particles. These particles contribute to Particulate Matter (PM) pollution.
- It causes respiratory issues, eye irritation, and contributes to acid rain and particulate matter formation.
- **Sources:** burning of fossil fuels in power plants and other industrial facilities.
- Other sources include industrial processes such as extracting metal from ore, natural sources such as volcanoes, and locomotives, ships and other vehicles and heavy equipment that burn fuel with high sulphur content.

Source: Indian Express

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## 1. Mutual Legal Assistance Treaties (MLATs)



### Topic: International Relations

**In News:** India and Belgium have signed a Mutual Legal Assistance Treaty allowing Belgian authorities to execute search warrants issued by Indian courts and summon suspects.

#### More on the Topic:

- The move is expected to aid investigations into fugitives related to Punjab National Bank (PNB).
- Indian agencies will also be able to summon individuals hiding in Belgium, including several Khalistani supporters suspected of doing so by security agencies.



### About Mutual Legal Assistance Treaties:

- A mutual legal assistance treaty (MLAT) is an agreement between two or more countries for the purpose of gathering and exchanging information in an effort to enforce public or **criminal laws**.
- **Ministry of Home Affairs** is the nodal ministry for executing court orders under the MLATs in India.
- **Section 105 of Criminal Procedure Code (CrPC)** explains the reciprocal arrangements to be made.

Source: Hindu

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## 2. Joha rice



### Topic: Agriculture

**In News:** A new research has found that Joha rice, aromatic rice cultivated in Northeast is effective in lowering the bloodglucose and preventing diabetes onset and hence is an effective nutraceutical of choice in diabetes management.

### More on the Topic:

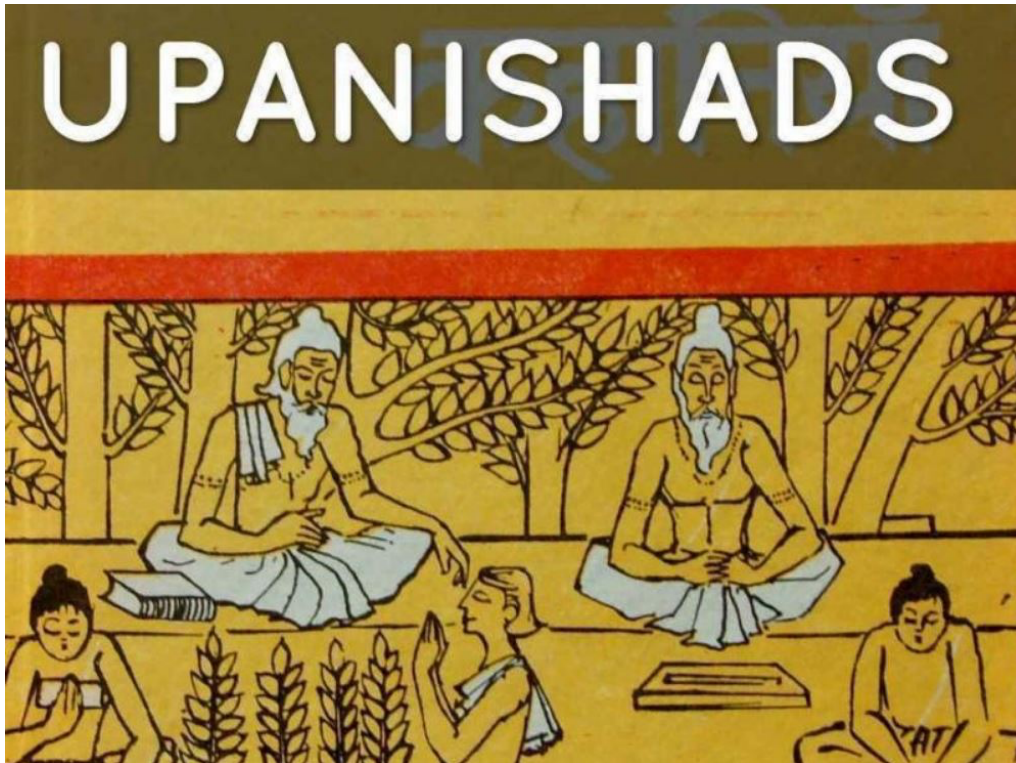
- Joha is a short-grain winter paddy of Assam known for its significant aroma and noteworthy taste.
- Joha rice got a **GI tag in 2017**.
- It is an indigenous rice class of Assam and is a special class of winter rice in cultivation over centuries and characterised by aromatic endosperm.

- Through laboratory analysis, scientists have detected two unsaturated fatty acids viz., **linoleic acid (omega-6) and linolenic (omega-3) acid.**
- These essential fatty acids (which human cannot produce) can help maintain various physiological conditions.
- Omega-3 fatty acid prevents several metabolic diseases such as diabetes, cardiovascular diseases, and cancer.
- Joha rice is also **rich in several antioxidants, flavonoids, and phenolics.**

Source: Indian Express

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## 5.Upanishads



### Topic: Art and Culture

**In News:** PM Modi has presented US President the first edition print of the book The Ten Principal Upanishads from 1937.

### More on the Topic:

- The Ten Principal Upanishads, translated from Sanskrit by **Shri Purohit Swami, a scholar of Hindu scripture, and Irish poet WB Yeats**, is considered to be one of the best translations of the Upanishads, some of the most important Hindu religious texts.



- Upanishads, also known as **Vedanta**, speculate about ontological connection between **humanity and cosmos**.
- The Upanishads are late Vedic Sanskrit texts of religious teachings and ideas still revered in Hinduism.
- The Upanishads played an important role in **the development of spiritual ideas in ancient India, marking a transition from Vedic ritualism to new ideas and institutions**.
- Two broad categories of texts are: shruti (“revealed”) and smriti (“remembered”).
- Shruti consists of four Vedas, Brahmanas, Aranyakas and Upanishads.
- Dated to roughly 800-500 BC, Upanishads discuss concepts such as transmigration.
- More than 200 Upanishads have been discovered. Each Upanishad is associated with a certain Veda. **There are 13 Upanishads which are most well known or most important – Katha, Kena, Isa, Mundaka, Prasna, Taittiriya, Chhandogya, Brihadaranyaka, Mandukya, Aitareya, Kaushitaki, Svetasvatara and Maitrayani.**

Source: IE

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## 6. Implied Volatility

Topic: Economy



**In News:** The state of the economy report of the Reserve Bank of India stated that The Indian rupee is turning out to be the most stable currency, at least among emerging market currencies with implied volatility at its lowest level since 2008.

### More on the Topic:

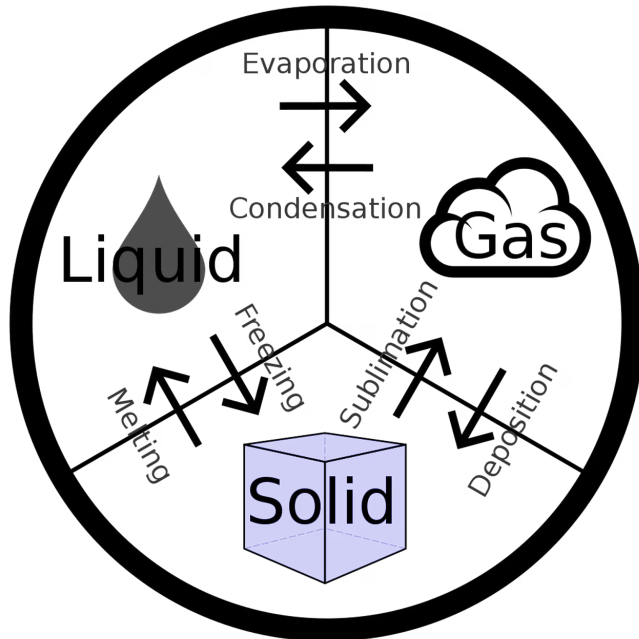
- Implied volatility is the metric that captures the market’s view of the likelihood of fluctuations in its value.
- **Supply and demand and time value are major determining factors** for calculating implied volatility.
- However, it doesn't predict the direction in which the price change will proceed.

- It can often be thought to be a proxy of market risk.

Source: Business Standard

## 7. The Chiral Bose-liquid State

Topic: Science and Technology



**In News:** According to emerging research, the chiral bose-liquid state may be an entirely new state of matter.

### More on the Topic:

- Usually matter is a solid, liquid or gas. But at temperatures approaching absolute zero, or the world within the atom, things are very different.
- In this “quantum” states of matter, **matter behaves in ways quite different from the solid, liquid, gaseous states that we are used to.**
- In this “quantum” states of matter, matter behaves in ways quite different from the solid, liquid, gaseous states that we are used to.
- There are even what physicists called ‘frustrated quantum systems,’ where infinite possibilities result from the interaction of particles.
- When quantum matter in chiral bose-liquid state is cooled down to absolute zero (-273.15°C), **all electrons present freeze in a very predictable way.**
- There is a uniformity noticed between all the particles of the state when disturbed by an external influence.





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- This new state can be used to understand the quantum world better.

Source: Business Standard

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