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# Current Affairs May 2024

# Polity

## The Collegium System in India: Concerns and Revisions Required

### Introduction and Overview:

The Collegium System refers to the mechanism for appointment and transfer of judges in India. This system, which has evolved through the verdicts of the Supreme Court (SC), has recently been brought into the limelight following a petition by two district judges in Himachal Pradesh High Court against the selection process.

### Current Affairs:

Recently, the Supreme Court had dismissed a plea against the Collegium System. In this context, the two senior-most district judges of Himachal Pradesh leveled allegations that the state's High Court Collegium overlooked their merits and seniority while appointing judges. Despite these concerns being taken to the Supreme Court, the latter maintained the constitutionality of the existing selection process, underlining the importance of preserving judicial independence. This event once again brings into focus the need for transparency and accountability in the Collegium System.

### GK Aspect - Historical Background:

The Collegium System, missed in the Indian Constitution and enforced by the Supreme Court's judgements, is in focus today. According to the Constitution's Articles 124(2) and 217, the Supreme Court and High Court judges' appointment process should be explored. In this context, it is noteworthy that the SC upheld the Collegium System, nullifying the National Judicial Appointments Commission in 2015, which sought extensive executive involvement. A plea to review this judgement was also dismissed in 2018.

### Key Controversies andCritique:

1. Exclusion of the Executive: Some argue that the Collegium System's primary flaw is its exclusionary treatment of the executive from the decision-making process, potentially leading to biases affecting the candidates' selection.

2. Favouritism and Nepotism: Without specified evaluation criteria, the Collegium System may foster favouritism and nepotism, thereby compromising fairness and merit.

3. Violation of Checks and Balances: Critics argue that the Collegium System excessively centralises power within the Judiciary, contravening the democratic principle of checks and balances.

4. Non-Transparency: The critique highlights the system's secrecy, arguing that the decision-making process's closed-door nature undermines transparency and accountability.

5. Unequal Representation: The system is also critiqued for its inadequate representation of women and other marginalised groups in the higher judiciary.

### The Way Forward:

To address these controversies,substantial reforms to the Collegium System have been proposed. These include:

1. Enhanced Transparency: Introduction of clear and objective selection criteria focusing on merit, seniority, and diversity could encourage transparency.

2. Increased Accountability: Official recording and publication of the Collegium's decisions could foster accountability, without infringing on privacy concerns.

3. Balancing Judicial Independence and Executive Involvement: Introduction of a consultative mechanism or a time-bound confirmation process could ensure balanced involvement of the government in the appointment process.

The National Commission to Review the Working of the Constitution (NCRWC) has also recommended the establishment of a National Judicial Commission and a National Judicial Council to review the system's functioning. Implementation of these reforms could optimise the integrity, efficacy, and inclusivity of the Collegium System.

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# Striking a Balance: Fundamental Rights vs Directive Principles in Property Owners Association vs State of Maharashtra

## Introduction and Background:

- The Supreme Court of India is set to make a landmark decision in the case of Property Owners Association vs State of Maharashtra.
- The case draws attention to a constitutional conflict between fundamental rights and the Directive Principles of State Policy.
- It mainly involves the interpretation of Article 39(b) of the Indian Constitution.
- Two critical questions arise from this case; firstly, the interpretation of the phrase “material resources of the community” in Article 39(b), and secondly, whether laws aimed at fulfilling Article 39(b) objectives can be excused from legal challenges valuing fundamental rights for equality and liberty.
- This represents a confrontation between fundamental rights (Part III) and Directive Principles of State Policy (Part IV) of the Constitution.

## The Fundamental Rights-Directive Principles Conflict:

- Foundational Conflict: Fundamental rights, protected by Part III of the Indian Constitution, are enforceable, while the Directive Principles, under Part IV, are non-justiciable, presenting a basic conflict.
- Clash of Priorities: The priority differential between the two sets of principles, with fundamental rights advocating individual autonomy, while Directive principles push for social and economic justice, adds to this conflict.
- Constitutional Foundation: Embodied in Articles 13 and 37 are the crux of the matter, which provide for protection of fundamental rights and non-justiciability of Directive Principles.
- Early Judicial Clarification: In the Mohd. Hanif Quareshi case, the Supreme Court stressed on executing DPSPs without infringing fundamental rights.
- 25th Amendment: Introduced Article 31C, aimed to protect laws in the interest of communal good from scrutiny under fundamental rights.

## Historical Judicial Rulings and Effect:

- Kesavananda Bharati Case (1973): Upheld the validity of Article 31C, but rejected it to judicial review.
- 42nd Constitutional Amendment: The scope of Article 31C was expanded but later rendered unconstitutional in the Minerva Mills case.
- Waman Rao Case: Validated Article 31C in line with Articles 39(b) and (c).
- Coelho v. State of T.N (2007): The Supreme Court underscored the government's duty to secure equilibrium between individual liberty (Fundamental Rights) and public good (Directive Principles).

## Similarities between Fundamental Rights and Directive Principles:

- Fundamental Rights and DPSPs collectively form the crux of the Indian Constitution, embodying its core values and philosophies.
- Despite exhibit different characteristics, these two sets have been intricately linked within Indian Constitution.
- The courts have emphasised their interwoven nature, advocating for a harmonious interpretation to accomplish wider socio-economic objectives.
- Past decade has seen courts underscoring government's need to secure a harmonious balance between individual liberty and public good, ensuring a balanced progress.

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# Interim Bail to Delhi CM: An Insight into India's Legal System

## Supreme Court's Interim Bail to Delhi Chief Minister

- The Supreme Court granted interim bail to the Delhi Chief Minister in the Delhi Liquor Policy

case, in March 2024. He initially was arrested by the Enforcement Directorate.
- The decision to grant temporary release, or interim bail, can be made in certain cases where compelling reasons and grounds exist. This can be applied even if regular bail wouldn't be justified.
- The concept of interim bail isn't explicitly defined in the Code of Criminal Procedure (CrPC). However, it is typically provided as a temporary release during the pending stage of a case when regular bail may not be readily obtainable.

## Understanding Bail, Interim Bail, Parole and Furlough

- Bail acts as a tool to ensure the accused's presence for court appearances while awaiting trial. It is often granted based on the severity of the alleged crime, the defendant's criminal past, and the potential risk of absconding.
- Similar to bail, parole and furlough are practices designed to offer conditional freedom to prisoners during their sentence. These systems have been instituted under the Prisons Act of 1894.
- Parole is a conditional release granted due to specific reasons, such as a death in the family or a significant event. It is a privilege, not a right, and can be denied if authorities believe it may challenge societal peace.
- Furlough, unlike parole, is regarded as a right to prisoners and is granted periodically without any specific reason. It aims to maintain the prisoner's family and social ties and balance the ill-effects of prolonged imprisonment.

## GK Insights: The Legal Framework of Bail and Prison Releases

- Bail, interim bail, parole and furlough form part of India's legal framework aiming to balance public safety with the accused's or prisoner's rights.
- Bail procedures and protocols stem from the Code of Criminal Procedure, an extensive legislative law guiding the process of criminal law procedure.
- The Prisons Act of 1894 is a significant statute that governs the rules and regulations for prisons and prisoners where parole and furlough provisions exist.

## The Ripple Effects of Interim Bail: Implications and Consequences

- The granting of interim bail shows the use of discretion and situational flexibility by the judiciary while dealing with unique cases.
- This decision might strengthen trust in India's judiciary system, as it exhibits fairness and consideration towards defendants.
- However, such decisions can also spark debates on equality before law, if not exercised judiciously and impartially.

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# Self Help Groups in India: Empowering Communities

## Introduction to the Kudumbashree Mission and Self-Help Groups (SHGs)

- Kudumbashree, a significant SHG, recently celebrated its 26th anniversary in Kerala.
- This initiative now involves over 46 lakh members across 3 lakh neighbourhood groups.
- Initially focused on fostering women's enterprises, it now encompasses legal aid, loans, counselling, cultural engagement, and disaster relief.
- An SHG is a self-governed entity comprising individuals sharing similar socio-economic backgrounds, intent on collectively pursuing common purposes.

## A Glimpse into the Origin of SHGs in India

- Early Efforts (Pre-1970s): Informal SHGs, particularly among women for collective action and support.
- SEWA (1972): Established by Ela Bhatt, SEWA stands as a milestone for organising poor, self-employed women workers.
- MYRADA & Pilot Projects (Mid-1980s): MYRADA introduced SHGs as a microfinance strategy to help provide credit to the less privileged.

● NABARD & SHG-Bank Linkage (1992): Initiated by NABARD, this move connected SHGs with formal banking institutions aiding in financial services access.
● Government Recognition (1990s-Present): Government support to SHGs via schemes like Swarn Jayanti Gram Swarozgar Yojana (SGSY) and the National Rural Livelihoods Mission (NRLM) has extended SHGs' reach and impact.

## Government Initiatives and Policy Support to SHGs

● Deen Dayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM)
● SHG-Bank Linkage Programme (SBLP)
● Mission for Financial Inclusion (MFI)

## Impact of SHGs on Women

● Economic Empowerment: SHGs enhanced women's access to microfinance and credit, encouraging entrepreneurship, income generation, and financial stability.
● Women's Agency and Empowerment: SHGs empowered women, enabling them to challenge traditional gender norms and embrace leadership roles.
● Impact on Family and Society: SHGs promoted equitable familial relationships, local governance roles, and ameliorated social issues like domestic violence.

## Challenges and Limitations of SHGs

● Sustainability Concerns: SHGs' long-term success hinges upon continued support, effective leadership, and revenue sufficiency.
● Over Reliance on External Aid: Dependency can hamper self-sustainability and viability, especially in disaster-prone areas.
● Intersectional Challenges: SHGs often face caste, class, and regional challenges resulting in unequal benefit distribution.
● Lack of Advanced Machinery and Technology: Most SHGs operate on a local level focusing on agricultural activities, often without relying on technology.

## The Way Forward

● Technological Inclusion: Digital platforms can enhance efficiency and scale of operations.
● Strengthening Financial Institution Linkages: Encouraging formal financial interactions empowers SHGs and promotes financial inclusion.
● Fostering Environmental Sustainability: Encourage SHGs to integrate sustainable practices into their activities.
● Awareness for Inclusivity: Encourage SHGs to consider an inclusive approach, addressing discrimination, and promoting equitable participation.

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# The Power of Election Commission of India to Deregister Political Parties

## Introduction:

The Election Commission of India (ECI) recently emphasised on upholding the Model Code of Conduct (MCC) by star campaigners in order not to disrupt societal harmony. This has intensified a debate regarding the ECI's authority to penalise MCC violators including its capability to deregister parties.

## Understanding Derecognition of Political Parties:

- Derecognition denotes ECI's withdrawal of acknowledgment of a political party, making it recognized as a Registered Unrecognised Political Party (RUPP).
- Even though they can contest elections, these parties forfeit their recognized party benefits.
- The ECI can deregister a party if it violates provisions in the Indian Constitution or the Representation of the People Act, 1951.
- Recognition of a party at the national or state level requires gaining a certain number of seats or achieving a required percentage of votes in a Lok Sabha (LS) or State Assembly (SA) general election.
- Presently, there are six national and sixty-one state recognized political parties.
- Recognized parties receive numerous benefits, including having a reserved symbol during elections and forty 'star campaigners.'

## Grounds for Derecognition of Political Parties:

- Failure to secure at least 6% of total votes in the general LS election.
- Inability to have a minimum of 4 MPs in the LS.
- Failure to secure 8% of the total valid votes in a state during a General Election to the LS or State LA.
- Lack of mitting audited accounts to the ECI on time.
- Failure to conduct its organisational elections.

## Interpreting Deregistration of Political Parties:

- Deregistration pertains to the cancellation of a political party's registration, post which it cannot contest elections.
- The ECI doesn't have the power to deregister parties under the provisions of Section 29A of the Representation of the People Act, 1951, however, parties can be deregistered if their registration was obtained fraudulently or declared illegal by the Central Government.
- There are currently 2,790 active registered political parties in India.

## The Call for Deregistration:

- Less than one-third of RUPPs actual contest in elections arousing concerns of tax exemption misuse and potential money laundering.
- Recognized parties often defy the MCC, but the ECI can only bar leaders from a short campaigning period.
- There is a need to ensure electoral integrity by removing dormant entities, promoting transparency, and enhancing democracy by checking the dilution of the electoral process by inactive parties.

## The Way Forward:

- The ECI in its 2016 memorandum suggested amending the law to empower it to deregister a party.
- Simultaneously, the Law Commission's 255th report on 'Electoral Reforms' recommended the same for a party failing to contest elections for ten consecutive years.
- The commission initiated an effort in 2016 to identify inactive political parties and discourage the establishment of parties solely for tax exemption benefits.
- Former CEC T.S. Krishnamurthy proposed the National Electoral Fund as a potential alternative to state funding, encouraging contributions from all donors, and distributing funds to parties based on election results, to inhibit inactive political parties.

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# BIMSTEC Charter: A New Horizon for Bay of Bengal Cooperation

## I. Understanding the BIMSTEC Grouping

- BIMSTEC, or the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation is a regional group of 7 member states - Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.
- This coalition was formed in 1997 with the goal of fostering technical and economic cooperation among the nations within the Bay of Bengal region.
- Housing around 1.5 billion people and a combined GDP of over USD 3.8 trillion, the regional organisation was originally known as 'BIST-EC', before its renaming following the inclusion of other member-states.

## II. BIMSTEC Charter's Key Features

- The BIMSTEC Charter grants the organisation official recognition and status as a legal entity, allowing for diplomatic interactions with other international bodies.
- The charter establishes consolidated objectives and sets the scene for structured operation, including regular meetings at different levels of significance.
- With the enablement of the charter, the future expansion of BIMSTEC is also possible, with the provision to admit new nations and observer parties.

## III. The Importance of BIMSTEC

- The Charter's adoption marks alignment with India's Act East Policy, hence boosting India's prominence in trade and security in the Indian Ocean region.
- Post the Uri attacks, Indo-Pakistan dynamics have faltered thus making BIMSTEC a practical alternative to SAARC.
- The group stands as a counter-response to China's expanding influence through the Belt and Road Initiative.
- The organisation could lead to new insights in the intangible heritage of the region.
- Providing an opportunity for increased regional cooperation, BIMSTEC also focuses on managing security and humanitarian assistance.

## IV. Challenges Faced by BIMSTEC

- BIMSTEC's efficiency has been impaired due to inconsistent policy-making, limited operational meetings, and a shortage of essential resources.
- BIMSTEC's goal of economic cooperation faces challenges. Regional trade remains far below the ideal level due to the BBIN connectivity project's incomplete status.
- Besides, various bilateral issues such as the Rohingya crisis, India-Nepal border disputes, and Myanmar's political instability cast long shadows over the prospects of the organisation.

## V. Projected Growth of BIMSTEC

- The BIMSTEC Charter's finalisation gives stability and predictability to cooperation efforts, which may help overcome challenges.
- BIMSTEC has plans to enhance connectivity leading to a boost in trade, job creation, and movement facilitation.
- Advancement in tackling transnational crime and curbing IUU fishing are other key areas BIMSTEC is focusing on.
- Plans to cooperate between Diplomatic Academies/Training Institutions and establish a Technology Transfer facility are also in the pipeline.
- Developing structures to promote harmony and prosperity, involving citizen engagement, is a key area where BIMSTEC needs to focus.

The BIMSTEC Charter's enforcement is a significant moment for multilateral diplomacy, identifying a potential pathway towards a cooperative and prosperous environment in Asia. The charter would not only unify and direct BIMSTEC's activity but also enhance its visibility on the global front. However, the complexity of the region's political and economic context will decide its future growth trajectory.

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# Geography

# Eruption Alert: La Cumbre Volcano Rouses from Slumber!

## 1: La Cumbre - An Awakening of Fire and Rock

- March 2 marked the first explosion of La Cumbre since 2020, with NASA's Earth Observatory noting the slow lava leakage from a fissure on its southeast flank 4,850-foot-tall (1,480 metres).
- The volcanic activity sustained with a consistent lava outpouring, eventually reaching the island's coast approximately 6 miles (10 kilometres) from La Cumbre's peak, in early April.

## 2: Backdrop - The Galápagos Islands' Volcanic Powerhouse

- Located on Fernandina, the youngest and most volcanically active of the Galápagos Islands, La Cumbre sits directly above the mantle plume that generated all the islands.
- Despite the uninhabited nature of Fernandina, the spectacle of the volcanic eruption has proven magnificent for observers on passing ships.
- Although recent lava flows render most of Fernandina rocky and inhospitable, a ring of vegetation survives on the volcano's upper reaches.

## 3: Features and Geographic Facts – The Mighty La Cumbre

- La Cumbre, a shield volcano, is situated approximately 1,125 kilometres away from mainland Ecuador.

- The Peninsula's volcanoes, including La Cumbre, typically emit high levels of sulphur dioxide and very little ash.
- A substantial population of rare land iguanas inhabit the island, famously nesting and laying eggs on La Cumbre's large caldera and within it.

## 4: Galápagos Islands - The Birthplace of Evolutionary Theory

- Located 900 km (560 mi) west of South America in the Eastern Pacific, the Galápagos Islands are a volcanic archipelago situated around the Equator.
- These islands, known globally for their diverse endemic species, formed the foundation for Charles Darwin's revolutionary theory of natural selection during his exploration in the 1830s.
- Each island in the Galápagos archipelago is protected as a part of Ecuador's Galápagos National Park and Marine Reserve.

## 5: Consequential Impacts and Implications

- The absence of human infrastructure or population diminishes the risk factor of La Cumbre's volcanic eruption.
- However, the consistent, long-term lava flow could potentially influence the local ecosystem, particularly the nesting habitats of Fernandina's land iguanas.
- Although the immediate threats are minimal, the eruption amplifies the larger narrative of our planet's ongoing geological transformations.

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# India to Host the 46th Antarctic Treaty Consultative Meeting and 26th Meeting of Committee for Environmental Protection in 2024

## I. Introduction

In an indication of India's commitment to environmental stewardship and scientific collaboration, the country will be hosting the 46th Antarctic Treaty Consultative Meeting (ATCM 46) and the 26th Meeting of the Committee for Environmental Protection (CEP 26) in 2024, through the Ministry of Earth Sciences (MoES) and the National Centre for Polar and Ocean Research (NCPOR).

## II. About ATCM

- The ATCM is an annual convergence of the original 12 parties of the Antarctic Treaty along with other nations interested in Antarctic research.
- Established in 1959, the Antarctic Treaty has since garnered participation from 56 nations, including India, which joined in 1983.
- The Treaty emphasises peaceful purposes, environmental protection, and scientific cooperation.
- India's commitment to the Antarctic Treaty has been further reinforced via the 'Antarctic Act' enacted in 2022.

## III. 46th ATCM Agenda

- The forthcoming meeting would address strategic planning for Antarctica's sustainable management, biodiversity prospecting, information exchange, capacity building, and climate change response among others.
- It would also consider the development of a tourism framework and promotion of awareness.

## IV. India's Participation in ATCM

- As a Consultative Party to the Antarctic Treaty, India takes part in the decision-making process of the Antarctic Treaty Consultative Meeting.
- India set up its first Antarctic research station, Dakshin Gangotri, in 1983 and currently operates two-year round at Bharati and Maitri since 2012 and 1989 respectively.
- India has been conducting scientific expeditions to Antarctica annually since 1981.

## V. About the Committee for Environmental Protection (CEP)

- Formed under the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol) in 1991, the CEP advises ATCM on Antarctic environmental protection and conservation.

## VI. 26th CEP Agenda

- The 26th CEP Meeting is expected to focus on Antarctic environment evaluation, impact assessment, climate change response, area development, and biodiversity conservation.

## VII. Madrid Protocol

- This protocol presented Antarctica as a “natural reserve, dedicated to peace and science.”
- It formulated the basic principles for human activities in Antarctica and prohibited mineral resource activities.
- Since 1991, the Protocol can only be amended through the unanimous agreement of all Consultative Parties.

## VIII. National Centre for Polar and Ocean Research (NCPOR)

- NCPOR is an autonomous body created in 1998 under MoES.
- It coordinates India’s scientific and strategic endeavours in the polar regions, the Himalayas, and the Southern Ocean.

India's role in hosting these crucial meetings manifests its commitment towards global dialogue on environmental stewardship and scientific collaboration. And it cements its place as a significant player in the preservation and protection of Antarctica.

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# Discovering The Depths: Unveiling The World's Deepest Blue Hole

## Introduction:

- Recently, the spotlight in the world of marine research has centred on Mexico's Chetumal Bay, where researchers have unveiled the world's deepest blue hole, known as 'Taam Ja' Blue Hole (TJBH). This discovery proposes changes to geology textbooks and broadens our understanding of marine life.

## The New Deepest:

- Taam Ja' Blue Hole (TJBH) was once considered only the second deepest but once researchers took recent measurements, they have determined that it plunges deeper than any other known blue hole, exceeding an astounding depth of 420 metres below sea level.
- This pushes this blue hole ahead of others like the Sansha Yongle Blue Hole in the South China Sea (301 mbsl) and even the Dean's Blue Hole in the Bahamas (202 mbsl).
- The new measurement extends into the mesopelagic zone where sunlight is significantly reduced but houses a high density of marine life.

## A Biological Hotspot:

- With this discovery, scientists have identified blue holes as biological hotspots. TBJH hosts an assortment of marine life, from beautiful corals and sponges to molluscs, sea turtles, and sharks.
- These zones are now identified as locations of significant biodiversity and importance, adding value to their preservation and study.

## Challenges of Blue Hole Exploration:

- Notwithstanding their increasing importance, exploring blue holes comes with its share of challenges. The access conditions are notoriously difficult as blue holes often have small openings hundreds of feet underwater.
- This proves to be a restriction for automated submersibles, limiting the scope for exploration.

## General Knowledge Aspects:

- Geographically, TJBH puts Mexico's Chetumal Bay on the map as the location of the world's deepest blue hole.
- This discovery underscores the significance of understanding not just terrestrial geography but also marine topology for a holistic view of our planet.
- It also emphasizes the necessity of marine research given that oceans cover three-fourths of the Earth's surface.
- The significance of blue holes as biological hotspots also adds relevance to environmental science and studies pertaining to biodiversity and its conservation.

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# Revelations Around Galaxy: Unveiling the colossal Black Hole Gaia BH3

## 1: An Introduction to Gaia BH3 - The Second Closest Black Hole

- Recently, astronomers discovered a massive Black Hole in our Milky Way Galaxy, christened as “Gaia BH3”.
- Gaia BH3, 33 times heftier than the sun, has been identified as the most massive black hole of stellar origin within our galaxy, outshining Cygnus X-1.
- This Black Hole occupies the second closest proximity to Earth among known black holes.
- Gaia BH3 is a member of the breed of stellar black holes, which are birthed through the collapse of a singular star.

## 2: Demystifying the Enigma of Black Holes

- Black holes, known for their extraordinary density, possess gravitational force so potent that they can trap light, making their detection challenging.
- A black hole forms when a colossal star implodes within itself at its lifecycle's termination, resulting in a supremely dense object. This object's gravitational pull is potent enough to distort space-time in its vicinity.
- Black holes fall into three categories: Stellar Black Holes, formed by the collapse of a single massive star; Intermediate Black Holes, whose mass ranges between 100 and 100,000 times that of the sun; Supermassive Black Holes, with masses ranging from millions to billions of times that of the sun, residing at most galaxies' centres.

## 3: Exploring the Vastness of Galaxies

- A galaxy is a colossal assembly of gas, dust, billions of stars, and their solar systems, all interconnected by gravity.
- Earth resides within the Milky Way Galaxy, which houses a Supermassive Black Hole named Sagittarius A at its centre. This grand entity's mass is around 4 million times heavier than the sun.

# GK Nuggets:

- The existence of black holes was first hinted at in the 1916 solutions of Albert Einstein's general theory of relativity.
- Our home galaxy, the Milky Way, is categorized as a spiral galaxy. Spiral galaxies are characterised by their swirling, disk-like structure with a central bulge surrounded by spiral arms.
- Cygnus X-1, the second most massive known black hole in our galaxy, is a binary star system that includes a black hole and a blue supergiant variable star.
- Black holes are significant as they assist in understanding the universe's fundamental laws. They can help physicists in diving deep into the domain of quantum mechanics and unravel the mysteries of gravity.

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# The Expanding Batagaika Crater - A Warning to the World?

## Introduction and About: Batagaika Crater

- Batagaika Crater, popularly known as the "gateway to the underworld," is an enormous geological formation found in Siberia, Russia.
- Often talked about due to its extensive expansion, the crater is adding an estimated 35 million cubic feet to its size annually due to melting permafrost.
- The crater, also known as a 'megaslump,' was first noticed on satellite imagery in 1991, following a collapse on the Yana Upland's hillside, in northern Yakutia, Russia.
- The Batagaika Crater is a stark reminder of the after-effects of the Quaternary Ice Age, which occurred about 2.58 million years ago.

## Significance in News

- The importance of Batagaika Crater in the news stems from its rapid growth owing to permafrost melting.

- The latest study is a significant alert about rising global temperatures and consequent impacts on our environment.

## Comprehending Permafrost

- The term "permafrost" refers to permanently frozen ground which remains at or below 0°C (32°F) for at least two years continuously.
- This frozen state plays a crucial role, capping and sealant for organic materials, preventing decomposition and the release of large amounts of CO2 and Methane.
- Disruption to this state due to increasing global temperatures is a significant concern.

## Global Distribution of Permafrost

- Permafrost is predominantly found in Earth's higher latitudes, near the North and South Poles, and regions with high mountains.
- With nearly a quarter of the Northern Hemisphere's land area covered with permafrost below, it's a substantial part of the Earth's makeup and crucial for functioning as a carbon sink, storing vast quantities of carbon.
- Changes in the permafrost's state could lead to significant alterations in the global climate.

## Unveiling the Omens of Batagaika Crater

- The rapid expansion of the Batagaika Crater hints at the potential effects of global warming.
- It serves as a stark warning about the extensive and potentially catastrophic impacts of climate change if the world does not curb the pace of global warming.
- It brings attention to the urgency of addressing climate change and the preservation of permafrost.

## General Knowledge Insights

- Batagaika Crater is located in the Sakha Republic, in Russia's Far East, home to the largest permafrost crater globally.
- Understanding the phenomenon of permafrost and its global distribution is essential for general knowledge and awareness about our planet.
- The issue surrounding the Batagaika Crater sheds light on the significant Ice Age events of the past and provides insights into their impacts in the present and potentially future.

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# The Allure of Auroras: Illuminating the Night Sky

## 1: Introduction: An Overview of Auroras

- The northern lights, or aurora borealis, recently dazzled the night sky at Hanle village in Ladakh.
- Auroras are natural light displays that transpire as vibrant, swirling curtains primarily near the poles of the northern and southern hemispheres. Their colourful display can range from blue, red, yellow, green, to orange.
- These light spectacles persist all year round, but occasionally expand to lower latitudes.
- In the southern hemisphere, these occurrences are known as the aurora australis.

## 2: The Science Behind These Spectacles: Why Do Auroras Occur?

- The phenomenon of auroras is due to activity on the Sun's surface.
- The Sun consistently releases a stream of charged particles, primarily electrons and protons, along with magnetic fields, known as the solar wind.
- Earth's magnetic field acts as a shield against the solar wind, deflecting it away.
- Nonetheless, some of the charged particles from the solar wind are captured by Earth's magnetic field and taken down to the poles into the upper atmosphere. This interaction with different gases results in small flashes that light up the night sky.
- The interaction between solar wind particles and oxygen yields a green light whereas interaction with nitrogen generates shades of blue and purple.
- When the solar wind is incredibly potent due to increased activity on the Sun's surface causing solar flares and coronal mass ejections (CMEs), auroras can expand to mid-latitudes.

## 3: Beyond the Typical Auroras: The Appearance of STEVE

- STEVE is an atypical aurora-like spectacle appearing as a unique, purple-coloured arc with a moving green picket-fence structure. This phenomenon can be viewed from lower latitudes than typical auroras.

## 4: The Scenario of a Geomagnetic Storm

- Geomagnetic storms are major disturbances of Earth's magnetosphere occurring when solar wind's energy is efficiently released into the space environment surrounding Earth.
- These violent storms are infrequent, transpiring roughly every few decades.
- The previous potent geomagnetic storm, resulting from solar charged particles hitting Earth with similar force and intensity, occurred in 2003.

## 5: Geographic and Historic Trivia of Auroras

- Ladakh, where the recent display of aurora borealis took place, is located in the northern region of India.
- The terms 'aurora borealis' and 'aurora australis' were coined by the astronomer Galileo Galilei in the 17th century, with 'borealis' meaning 'north' in Latin, and 'australis' meaning 'south'.
- Viewing auroras is a popular bucket-list experience for travellers, with hotspots including Norway and Canada for aurora borealis, and Australia and New Zealand for the aurora australis.

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# Economy

# Understanding the Economic Implications of the Paradox of Thrift

## 1: Introduction to the Paradox of Thrift

- The Paradox of Thrift, also known as the Paradox of Savings, is a popular economic concept that suggests that increased saving during a recession can lead to a decrease in overall economic activity.
- This theory was popularised by reputed British economist, John Maynard Keynes in his 1936 book, "The General Theory of Employment, Interest, and Money".

## 2: Why the Paradox of Thrift is Currently in News

- The ideology of the Paradox of Thrift has recently been brought into discussions relating to our current economy.
- As economies worldwide grapple with the implications of a recession, it is important to understand how individual saving habits can collectively impact broader economic trends.

## 3: The Implications of the Paradox of Thrift on Economy

- Reduced Consumption: A rise in savings corresponds to a dip in consumer expenditure. During economic downturns, the uncertainty pushes individuals to save more and spend less. This precautionary measure can collectively lead to reduced overall consumption levels.
- Contraction of Output: As spending dwindles, businesses face a decreased demand for their goods and services. With this, they reduce production leading to a contraction of economic output, which in turn affects both employers and employees through reduced income.

## 4: The Paradox of Thrift in the Context of Business Cycle Theories

- The ideological underpinnings of the paradox of thrift align with under-consumption theories of the business cycle.
- These theories point to weak consumer spending and high savings rates as some of the primary factors behind economic downturns.

In conclusion, while saving money might seem like a prudent individual decision, the implications of the Paradox of Thrift theory suggest that widespread increase in saving, particularly during a recession, can worsen the recession by reducing overall economic activity. Understanding this concept is crucial for policy makers and economists who aim to guide the economy through tumultuous times.

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# NPCI International Signs Agreement with Bank of Namibia for Real-Time Instant Payment System

## 1: Introduction and Background

- NPCI International Payments Ltd. (NIPL), a fully owned subsidiary of the National Payments Corporation of India (NPCI), has recently signed an agreement with the Bank of Namibia. The agreement is based on the establishment of a real-time instant payment system that mirrors India's Unified Payment Interface (UPI).
- NIPL was established on April 3, 2020, with the primary objective to internationalise the RuPay card scheme and UPI mobile payment solution. The company is dedicated to bringing revolutionary changes in global payments by optimising innovation and technology.

## 2: The Initiative and its Impacts

- This new instant payment system to be developed in Namibia will hasten Person-to-Person (P2P) and Person-to-Merchant (P2M) transactions.
- The system is expected to increase financial inclusion, particularly among the underserved populations of Namibia.
- This strategic partnership will enhance the payment systems worldwide, especially in resource-limited countries, by leveraging NIPL's vast experience and advanced payment knowledge.

## 3: A Quick Hermeneutic of Namibia

- Namibia, the partner country of this agreement, is the second least densely populated country in the world. It is situated along the Southern African coast.
- The country shares its borders with South Africa, Botswana, Zimbabwe, Zambia, and Angola.
- Its topographically diverse environment comprises deserts, marshlands, savannahs, mountains, and river valleys.

## 4: About National Payments Corporation of India (NPCI)

- NPCI is a 'Not for Profit' Company that operates under the provisions of the Payment and Settlement Systems Act, 2007. It comes under Section 8 of Companies Act 2013, earlier Section 25 of Companies Act 1956.
- This umbrella organisation manages retail payments and settlement systems in India.
- Initiated by the Reserve Bank of India (RBI) and the Indian Banks' Association (IBA), NPCI aims to provide an infrastructure to the entire Banking system in India for physical as well as electronic payment and settlement systems.
- The partnership with the Bank of Namibia further underlines its objective and commitment to enhancing global payment systems.

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# Science And Tech

# Revolutionising Anti-marine Warfare: DRDO's SMART System

## Exploring the Supersonic Missile-Assisted Release of Torpedo (SMART) System

**Introduction and About:**

- Defence Research and Development Organisation (DRDO), a pioneer in Indian defence technology, has achieved another groundbreaking success. They successfully flight-tested the Supersonic Missile-Assisted Release of Torpedo (SMART) system.
- The test was conducted from Dr APJ Abdul Kalam Island off the coast of Odisha - a location well recognized for being an integral part of India's missile development program.

**Why in News:**

- DRDO's SMART system has been making headlines for not only being a new-age technology but also due to its promise of significantly enhancing the anti-marine warfare capabilities of the Indian Navy.
- Unlike the conventional range of lightweight torpedoes, the SMART missile system extends beyond traditional boundaries, promising superior efficiency and effectiveness.

## Diving into the Details of the SMART System

**Learning about the SMART Missile System:**

- At its core, the SMART system is a missile-based lightweight torpedo delivery system. It adds a new dimension to the ongoing research and development in defence technology.
- The missile takes off from a ground mobile launcher, demonstrating its easy deployment and flexibility.
- The state-of-the-art system is canister-based and harnesses various advanced -systems including a two-stage solid propulsion system, an electromechanical actuator system, and a precision inertial navigation system.
- In operation, when the missile approaches close enough to a merged marine, it ejects the torpedo system into the water. The autonomous torpedo then maneuvers towards its target to eliminate the marine.

**Understanding Torpedoes and their Importance:**

- Torpedoes are underwater weapons, typically with a cigar-shaped design. Powered by its propulsion system, it serves as a vital tool in naval warfare.
- These can be launched from diverse platforms - marines, surface vessels, or aeroplanes.
- The first indigenous heavyweight ship-launched anti-marine electric torpedo, Varunastra, plays a significant role in India's ordnance progression.

In conclusion, the successful test of the SMART missile system has values beyond the realms of defence and security. It also serves as a testament to India's technological capabilities and emphasises the country's constant progress in building robust defence mechanisms. Additionally, the system fortifies India's geopolitical significance, hinting at the prospect of exporting indigenous defence technology in the future.

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# Unravelling Mysteries of Earth's Ancient Magnetic Field

## 1: Discoveries of the Recent Study

- Geologists at the Massachusetts Institute of Technology and Oxford University conducted a study to gain insights about Earth's ancient magnetic field
- The study, published in the Journal of Geophysical Research, used ancient rocks from the Isua Supracrustal Belt in southwestern Greenland, dating back around 3.7 billion years,

which are believed to hold the oldest remnants of Earth's early magnetic field.
- These rocks bear signatures of a magnetic field with a strength of at least 15 microtesla, a value close to the current strength of Earth's magnetic field (around 30 microtesla).
- Earlier studies had suggested that Earth's magnetic field was at least 3.5 billion years old. This latest study extends the timeline by an additional 200 million years, making Earth's magnetic field approximately 3.7 billion years old.

## 2: The Role of Earth's Magnetic Field in Habitability

- The early magnetic field likely played a pivotal role in maintaining a life-supporting environment on Earth by helping to retain the atmosphere and shielding the planet from harmful solar radiation.
- This is a crucial aspect of the Earth's habitability, indicating that the magnetic field has been integral to life on Earth for billions of years.

## 3: Understanding Earth's Magnetic Field

- The Earth's magnetic field, also known as the geomagnetic field, is created within the Earth's interior, extending to space and interacting with solar wind.
- The magnetic field is a consequence of convection currents of molten iron and nickel in Earth's core, which carry charged particles, thereby creating magnetic fields.
- Other planets like Jupiter, Saturn, Uranus, and Neptune also have magnetic fields, the exact mechanisms of which still remain largely unknown.

## 4: The Geodynamo Process and Magnetic Poles

- Earth's magnetic field is the result of the geodynamo process taking place in the outer core, where convective energy from molten iron is transformed into electrical and magnetic energy, leading to a positive feedback loop.
- The Earth has two sets of poles: the geographic poles and the magnetic poles. The North Magnetic Pole, which is the location indicated when a compass points north, is currently located on Ellesmere Island in northern Canada.

## 5: Protection from Space Weather and Resulting Phenomena

- Earth's magnetosphere, the region in space created by the extension of Earth's magnetic field, safeguards our planet from harmful space weather like solar wind, coronal mass ejections, and cosmic rays.
- Geomagnetic storms, caused by strong disturbances in Earth's magnetic field, can lead to blackouts and communication disruptions.
- These disturbances also result in beautiful auroras or polar lights by guiding ions towards polar regions.

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# 1. Introduction to Boeing Starliner

- The Boeing Starliner is a revolutionary spacecraft built with the purpose of transporting astronauts to space. A product of Boeing's ambitious space program, Starliner is set to be launched on an Atlas V rocket, marking its third test flight and first manned journey into the cosmos.
- The spacecraft comprises two main sections: the crew capsule and the service module. The crew capsule, the astronaut's spaceflight accommodation, is designed to survive both, rigours of space and reentry to Earth. Meanwhile, the service module houses all necessary life support equipment and necessary technical systems - from air and temperature control to water supply, sanitation and the engines for movement control in space.

## 2. Unique Attributes of the Starliner

- A marvel of modern engineering, Starliner is more than 4 metres wide and has the capacity to house up to seven astronauts for space missions.
- The spacecraft stands out due to its innovative, weldless structure and reusability, boasting of a turnaround time of six months and up to ten reuses.
- In a blend of aerospace and digital technology, the capsule provides wireless internet and incorporates tablet technology for crew interfaces.

- Starliner is compatible with the Atlas V rocket, owned by United Launch Alliance - a joint venture between aerospace giants Boeing and Lockheed Martin.

## 3. The Starliner Mission and its Importance

- NASA, in 2014, awarded contracts to both SpaceX and Boeing for undertaking manned missions to the International Space Station (ISS).
- Since then, SpaceX has managed 13 missions with its Dragon crew capsule. However, after NASA's Space Shuttle programme cancellation in 2011 and waiting for SpaceX's Dragon capsule till 2020, the only spacecraft that could transport astronauts to the ISS was Russia's Soyuz.
- If the manned Starliner mission succeeds, it will be a substantial achievement for the U.S., marking the first time in history for the country to have two operable spacecraft for astronaut launches.
- SpaceX and Boeing will be alternating in their dispatch of astronauts to the ISS. Each crew's expedition can last up to six months. This arrangement will continue until the decommissioning of the ISS, which is expected in the next decade.

## 4. Pointers for Current Affairs and General Knowledge Examination

- Boeing's Starliner is set to embark on its first manned test flight to space.
- Starliner is a two-part spacecraft, consisting of a crew capsule (reusable) and a service module (non-reusable).
- Starliner has the capacity to accommodate up to seven astronauts and can be reused up to 10 times.
- Unlike many spacecraft, the Starliner is also equipped with wireless internet and tablet interfacing for the crew.
- The successful launch of Starliner would provide the U.S. with two functional spacecraft for astronaut missions, the other being SpaceX's Dragon crew capsule.
- The successful launch and operation of both the Starliner and Dragon crew capsule are important steps towards increased human presence and operations in space.

# Lakshya Aircraft - An Indigenous Marvel and its Current Spotlight

## 1: Introduction to Lakshya Aircraft

- Lakshya aircraft developed by the Aeronautical Development Establishment (ADE), a Bengaluru-based subsidiary of Defence Research and Development Organization (DRDO).
- It is a micro-light, pilot-less target aircraft that is indigenously developed.
- The three branches of the Indian Armed Forces have inducted Lakshya, with its inception in the Indian Air Force, Navy, and Army happening in 2000, 2001, and 2003, respectively.
- Engineered to be reusable, Lakshya airways work on a cost-effective, high sonic aerial target system powered by a gas turbine engine.
- The Aircraft engine specifically crafted by Hindustan Aeronautics Limited (HAL) in Bangalore.

## 2: Current News with respect to Lakshya Aircraft

- The Central Bureau of Investigation (CBI) recently visited Aeronautical Development Establishment (ADE), the lab that silenced the Lakshya aircraft.
- The reasons for CBI's visit are yet to be disclosed, spotlighting the otherwise less-discussed marvel of Indian Aeronautical technology in current news.

## 3: Diverse Applications of Lakshya Aircraft

- The Lakshya aircraft serves as an important element in the evaluation and developmental trials of new surface-to-air and air-to-air weapon systems.
- It carries two tow targets each of 1.5 km length, equipped with radar, visual signature augmentation, IR, and a Miss Distance Indicator Scoring System.
- The tow targets are primarily used for training land-based or ship-based gun and missile crew and combat aircraft pilots in weapon engagement.

- This Aircraft can be launched from either sea or land using a zero-length launcher and can be recovered via a dual-stage parachute system.

## 4: Advanced Control Mechanism of Lakshya Aircraft

- Lakshya aircraft can be manipulated from a ground control station (GCS) utilising pre-programmed software and hardware systems.
- It is engineered for reuse over 15 missions and has the ability to spiflicate (break into parts) incoming enemy targets while airborne.

## 5: Importance and General Knowledge Aspects

- Lakshya, built indigenously by India, is a specimen of the country's growing prowess in the field of aeronautical technology.
- The cost-effectiveness and reusability aspect of this aircraft make it a valuable asset for training and research purposes.
- Given its ability to be controlled from the ground control station, it underscores the advanced state of technological developments and autonomous control systems in India.
- The fact that Lakshya can be launched from different environments (land or sea), highlights the flexibility and diversity in its application, crucial for comprehensive armed force training.
- Lakshya's role is critical in enhancing the preparedness of the Indian Armed Forces, thereby contributing to the nation's defence capabilities.

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# Uncovering the Future of Intelligence: A Deep Dive into Artificial General Intelligence (AGI)

## I. Introduction to Artificial General Intelligence (AGI)

- Artificial General Intelligence (AGI) is the advanced version of commonly used Artificial Intelligence (AI).
- It broadens the concept of intelligence and aims to create systems that can mimic human intelligence across manifold tasks.
- OpenAI's CEO has recently highlighted his commitment to advancing AGI, making it a topic of current importance.

## II. What is AGI and How is it Different from AI?

**Key Characteristics of AGI**

- Generalisation: AGI has the ability to extrapolate knowledge and skills to new contexts and problems.
- Complex Reasoning: Rather than performing predefined tasks, AGI can solve intricate problems.
- Learning: It has superior learning capabilities and can acquire knowledge and skills from data, experience, or instruction.
- Self-Awareness and Consciousness: Unlike AI, AGI could be aware of its own existence and goals.
- Human-Level Abilities: AGI's ability is hypothesised to match or even surpass human intelligence.
- Creativity: AGI can invent novel solutions that are not explicitly programmed into it.

**AI vs AGI**

- AI is a category of computer science where machines perform tasks that typically require human intelligence within a specific task.
- Despite their prowess at specific tasks, these AI tools (also known as Narrow or Weak AI) lack broad cognitive abilities.
- Examples of AI include Google's Bard, chatbots, recommendation systems, and image recognition technologies.

**III. Applications of AGI Across Sectors**

- Healthcare: AGI's ability to analyse diverse datasets can enhance personalised medicine, increasing its effectiveness and efficiency.
- Finance and Business: AGI can automate tasks, enhance decision making through real-time data analysis and provide accurate market predictions.
- Education: Adaptive learning platforms could be revolutionised by AGI, enabling personalised education for individuals globally.
- Space Exploration: AGI can operate autonomous systems for space exploration and

research, potentially enabling new insights and discoveries.
- Military and Defense: AGI can bolster surveillance, military manoeuvres on the battlefield, and combat systems.

**IV. Concerns Related to AGI**
- Environmental Impact: The development of AGI can lead to energy consumption and e-waste.
- Job Losses and Unemployment: AGI can significantly decrease job opportunities and create social and economic inequality.
- Human Oversight and Accountability: AGI's cognitive abilities could potentially control information environments and influence outcomes, raising questions of accountability.
- Loss of Human Skills and Creativity: Reduced human involvement could negatively affect creativity and foster dependency on machines.
- Existential Risk: AGI can surpass human intelligence, posing potential existential risks and raising concerns about human control.
- Ethical Dilemmas: Guaranteeing that AGI systems comply with ethical norms is critical to prevent unintended consequences and biases.

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The development and advancement of AGI will play a critical role in the future of technology, various sectors, and even human existence. While its potential benefits are staggering, it's crucial to navigate the associated risks and ethical dilemmas responsibly.

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# The Influential Role of X Chromosome in Biological Processes and Diseases

## 1. Introduction to the X Chromosome:

- Humans and many other organisms have two sex chromosomes, one of which is X.
- Females have two X chromosomes (XX), and males have one X and one Y (XY).
- The presence or absence of the Y chromosome determines the biological sex.

## 2. Genes and Functions of X Chromosome:

- The X chromosome contains approximately 800 genes involved in diverse biological functions.
- The malfunction or loss of these genes can result in X-linked genetic diseases, diseases influenced by X-chromosome inactivation (XCI) escape and diseases tied to X-chromosome aneuploidies.

## 3. X-linked Genetic Diseases:

- Diseases from mutations in genes on the X chromosome are termed X-linked genetic diseases.
- Males are more prone to these diseases as they possess only one X chromosome.
- Examples include red-green colour blindness, Duchenne muscular dystrophy, and Agammaglobulinemia.

## 4. X Chromosome Aneuploidies:

- Aneuploidies, abnormalities in the number of chromosomes in a cell, can result in diseases when they occur in the X chromosome.
- Examples include Klinefelter syndrome (with an additional X chromosome) and Turner syndrome (with one less X chromosome).

## 5. Understanding X-Chromosome Inactivation (XCI) Escape:

- One X chromosome is typically inactivated in females to maintain a gene balance. Problems arise when inactivation is incomplete or skewed.
- These issues can contribute to X-linked disorders, certain cancers, and autoimmune conditions.
- Two non-coding RNAs, Xist and Tsix, discovered in the 1990s, are crucial in regulating the XCI process.

## 6. Linking X Chromosome and Autoimmune Diseases:

- Recent studies indicate a relationship between gene changes on the X chromosome and autoimmune diseases.
- Autoimmune conditions — where the immune system attacks healthy cells — are more prevalent in females than males.
- A study found that manipulating the gene Xist led to lupus-like symptoms by reactivating other inactive genes on the X chromosome.

## 7. Correlation Between X Chromosome and Alzheimer's Disease:

- Alzheimer's disease, more common in women than men, might be related to the X chromosome.
- A gene on the X chromosome, USP11, escapes inactivation and is overexpressed in females.
- This overexpression results in tau protein accumulation, which can lead to Alzheimer's disease.

Study of the X chromosome has uncovered its pivotal role in auto-immune diseases and Alzheimer's disease. Hence, the understanding and research of the X chromosome is crucial not only for genetics but also for medical science. This could potentially lead to the development of new treatments and prevention methods for such diseases.

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# Biocontrol Agent Developed by Punjab Agricultural University to Battle Foot Rot Disease in Basmati Rice

## 1: Introduction to Foot Rot (Bakane) Disease in Basmati Rice

- Foot Rot, also known as the Bakane Disease, is a serious fungal infection affecting rice, particularly the renowned Basmati variety.
- This disease is caused by the fungus Gibberella fujikuroi (alternatively referred to as Fusarium moniliforme), which majorly impacts the roots and basal stems of rice plants.
- The infection leads to abnormal elongation of the seedlings, which then turn a pale yellow. Over time, these infected seedlings dry up and perish.
- The adverse effects of Foot Rot are not limited to crop yield, but extend to posing health risks due to mycotoxin contamination in the affected rice grains.

## 2: Foot Rot (Bakane) Disease: A Persistent Challenge for Punjab

- Foot Rot has been a persistent issue in the Punjab region, resulting in significant losses for farmers and posing a threat to the state's Basmati rice export prospects.
- Traditionally, chemical fungicides were used to combat Foot Rot. However, their negative environmental impact and residue-related concerns have led to the search for alternate solutions.

## 3: Punjab Agricultural University's Breakthrough in Foot Rot Management

- The Punjab Agricultural University (PAU), Ludhiana, has made a significant breakthrough in the management of Foot Rot disease.
- PAU has developed a biocontrol agent - Trichoderma asperellum (2% WP), which has now been registered with the Central Insecticides Board and Registration Committee (CIBRC).
- This biocontrol agent, when applied to seeds or seedlings, can suppress the growth of the Foot Rot pathogen, providing an eco-friendly solution to this prevalent issue.

## 4: Other Practices to Mitigate Foot Rot Disease

- Along with the application of the biocontrol agent, certain cultural practices can also assist in reducing disease incidence.

- These include crop rotation, ensuring proper drainage, and avoiding waterlogged conditions.

In conclusion, the role of PAU's innovative, eco-friendly approach in combating the persistent Foot Rot (Bakane) disease holds promise for Punjab's rice farming and export scenarios. This highlights the importance of scientific interventions in safeguarding agricultural productivity, farmer incomes, and food security.

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# Advanced AI with GPT-4o: A Leap into Multimodal Artificial Intelligence

## Introduction

- Foraying into the future of Artificial Intelligence, OpenAI has introduced its new and most advanced Large Language Model – GPT-4o ('o' stands for 'Omni') that aims at improving human-computer interactions.

## Understanding GPT-4o

- GPT-4o is a high-grade AI model that empowers users to work with text, audio, and images simultaneously, thus entering the realm of multimodal AI models.
- The powerful technology of Large Language Models lies at the heart of GPT-4o. It functions by acquiring large volumes of data to self-learn various aspects autonomously.

## How is GPT-4o Different?

- Reinventing the wheel, GPT-4o marks a significant deviation from its predecessor models by integrating text, vision, and audio tasks into a single model, thus superseding the requirement for multiple models.
- Earlier models mandatorily needed separate modules for transcription, intelligence, and text-to-language activities in voice mode – all of which have been consolidated into an integrated GPT-4o model.

## Key Features of GPT-4o

- GPT-4o exhibits remarkable speed and efficiency, responding to user commands at a conversational pace - approximately within 232 to 320 milliseconds.
- Its advanced audio and vision understanding enable GPT-4o to process tone, background noises, and emotional context distinctly and identify objects with heightened proficiency.
- Another commendable attribute of GPT-4o is its enhanced capabilities in navigating non-English text, which widens its reach to a global audience.

## Safety Concerns and Measures

- As is with any revolutionary technology, GPT-4o too poses challenges in its nascent stages with unified multimodal interactions requiring further improvement and safety measures needing constant monitoring.
- OpenAI has emphasised its commitment to incorporating infallible built-in safety measures while mitigating risks associated with cybersecurity, misinformation, and bias.

## The Large Language Model (LLM)

- A LLM is an AI program that possesses the ability to recognize and generate text. LLMs are trained on massive datasets using machine learning and deep learning methodologies to mimic the human brain's neural structure.
- LLMs have been classified into various categories based on their architecture, training data, size, and availability.
- LLMs are predominantly deployed for generative AI assignments such as producing text, assisting programmers with coding, sentiment analysis, and for chatbot applications.
- Though LLMs demonstrate a high degree of proficiency in understanding natural language and processing complicated data, they can present unreliable information if given low-quality input data. They can also potentially pose security risks if misused or mishandled.

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# Programs And Schemes

## Nurturing Future Leaders: An Insight into the Prerana Program

### 1. Introduction to Prerana Program:

- Prerana program is an initiative driven by the Department of School Education & Literacy, Ministry of Education, Government of India.
- It is categorised as an 'Experiential Learning program', aiming to offer a life changing and inspiring experience to all participants.
- The primary goal is empowering students with leadership qualities and value-based education, deeply imbued in the essence of the Indian education system.

### 2. Recent Event:

- The Secretary of the Department of School Education and Literacy interacted with past participants of the program during a virtual meeting - the first ever alumni congregation of the Prerana program.

### 3. Selection criteria and Curriculum:

- Every week, a group of 20 carefully selected students, ensuring gender equality with 10 boys and 10 girls, are chosen from various geographic parts of the country to attend the program.
- The curriculum is uniquely designed around nine core principles which are: Dignity and Humility, Valor and Courage, Hard Work and Dedication, Compassion and Service, Diversity and Unity, Integrity and Purity, Innovation and Curiosity, Faith and Trust, and Freedom and Responsibility.

### 4. Prerana Program: A Step Forward in Curriculum Innovation

- The Prerana program is a milestone in curriculum innovation. The direction of focus towards the holistic development of a child makes the program unique in its own way.
- By nurturing students on the basis of core universal values, this program has taken a massive leap towards the creation of responsible and compassionate citizens of tomorrow.
- The experience-based approach of the program encourages students to become more self-aware, improves decision-making capabilities, and develops a service-oriented mindset.
- This initiative by the Indian government underlines the remarkable transformation in the Indian education ecosystem, marking a shift from traditional learning methods towards a more dynamic, value-driven and holistic prospect.

### 5. Significance and Contribution to Indian Education:

- The Prerana program is a vital contribution towards improving the Indian education system by blending traditional principles with modern educational philosophies.
- It plays a significant role in shaping students into potential leaders by enhancing their morals and values, and equipping them with soft skills that would prove beneficial in their future endeavours.
- With its experiential learning approach, the program ensures the overall development of students, positively impacting their personal and professional lives.
- This program depicts the flexibility and adaptability of the Indian education system, thus, highlighting India's commitment towards producing world-class leaders.

### 6. Conclusion:

The Prerana program has ushered in a new era of educational reforms in India. It is a testament to India's dedication towards holistic education and developing future leaders who are balanced, compassionate, and value-driven. It upholds the

vision of not just intellectual, but also moral and societal growth of the Indian students.

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# Sahitya Akademi Fellowship Bestowed to Famed Author Ruskin Bond

## 1: "Introducing Ruskin Bond: A Pillar of Indian Literature"

- Born in Kasauli, Himachal Pradesh, on 19th May 1934, Ruskin Bond is a renowned author who has significantly shaped Indian literature with a career that stretches over five decades.
- He has passionately contributed to various genres of literature, including short stories, novels, non-fiction works, romantic tales, and children's books.
- Some of his most famous works are 'Vagrants in the Valley', 'Once Upon a Monsoon Time', 'Angry River', 'Strangers in the Night', 'All Roads Lead to Ganga', 'Tales of Fosterganj', 'Leopard on the Mountain', and 'Too Much Trouble'.
- The 1978 Hindi film 'Junoon' was adapted from his historical novel titled 'A Flight of Pigeons', set during the Indian Rebellion of 1857.

## 2: "Acknowledging Excellence: Honours Received by Ruskin Bond"

- Ruskin Bond has been recognized for his contributions to Indian literature with many prestigious honours, including the Padma Shri in 1999 and the Padma Bhushan in 2019.
- He was awarded the Sahitya Akademi Bal Sahitya Puraskar in 2012 and the Sahitya Akademi Award in 1992, confirming his significant impact in the world of Indian Children's literature and fictional writing.

## 3: "The Current Honour: Sahitya Akademi Fellowship"

- In 2021, Ruskin Bond's excellence in the literature space was once more recognised by the Sahitya Akademi, as he was conferred with the fellowship - the highest literary honour provided by the institution.

## 4: "Understanding Sahitya Akademi Fellowship"

- The Sahitya Akademi Fellowship is the most prestigious honour conferred by the Sahitya Akademi.
- The award is given across four categories to celebrate the substantial contributions made to Indian literature. It also facilitates international scholars' research on Indian literature and culture.

In conclusion, Bond's body of work and his indelible contributions to the realm of Indian literature are rightly celebrated through the prestigious Sahitya Akademi Fellowship for his ceaseless passion and craft in writing.

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# Digital Arrest Scams: An Emergent Threat and the Countermeasures

## 1: Introduction and Context

- 'Digital arrest' scams are a rising trend in India, and the Ministry of Home Affairs (MHA) has raised an alarm about it.
- Cybercriminals, masquerading as government officials, intimidate and con innocent individuals into giving them money.
- The Indian Cyber Crime Coordination Centre (I4C), in collaboration with Microsoft, is also aiding efforts to combat these digital scams.

## 2: Understanding Digital Arrest Scams

- Scammers impersonate officials from the police, RBI, CBI, Enforcement Directorate, and the Narcotics Department.
- The standard modus operandi is to allege the victims' involvement in illegal activities, such as handling contraband items or having relations involved in criminal activities.

- There are cases where victims are subjected to a 'digital arrest,' forced to remain on video calls with the fraudsters until their demands are met.
- The end goal of these scams is to extort money by threatening to expose fabricated legal cases.

## 3: Countermeasures Against Digital Arrest Scams

- The I4C has taken proactive steps, including blocking over 1,000 Skype accounts associated with these scams.
- Further, the I4C is working on blocking the SIM cards, mobile devices, and mule accounts used by the scammers.
- The MHA has identified that the scams are frequently linked to cross-border crime syndicates, indicating a substantial online economic crime network.
- Alert mechanisms have been activated, with I4C issuing warnings about such scams through its social media platform "cyberdost" and other platforms.
- Victims are urged to immediately report any such occurrence on the National Cyber Crime Reporting Portal or the cybercrime helpline number.

## 4: About the Indian Cybercrime Coordination Centre (I4C)

- The I4C is an arm of the MHA, established in New Delhi to provide a framework for law enforcement agencies to tackle cybercrime comprehensively and collaboratively.
- I4C functions as the central point to curb cybercrime in the country.
- It introduces suitable amendments to cyber laws according to evolving technologies and facilitates international cooperation.
- Helping in coordinating the implementation of Mutual Legal Assistance Treaties (MLAT) is also one of its major roles. MLAT is a bilateral agreement among countries enabling the exchange of information and evidence to enforce criminal or public laws.

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# International Booker Prize 2024 - Triumph for 'Kairos' and its Translation

## I. Introduction and About International Booker Prize

- The International Booker Prize 2024, formerly known as the Man Booker International Prize, was instituted in 2005.
- It is awarded annually for a single book that has been translated into English and published in the UK or Ireland.
- The objective of this prestigious prize is to champion global fiction and celebrate the crucial work of translators, binding together cultures and nations through literature.

## II. Event Highlight - International Booker Prize 2024 Winner

- The recent announcement declared 'Kairos', penned by Jenny Erpenbeck and translated by Michael Hofmann, as the recipient of the International Booker Prize 2024.
- This acknowledgment exemplifies the impact of outstanding international fiction and the significant role of translators in the global literary landscape.

## III. Special Importance of Prize Money

- The valuable prize comes with a considerable amount of 50,000 pounds (USD 64,000), which gets shared equally between the author and the translator.
- The equitable division of the prize money distinctly underscores the value of both the author's creative imagination and the translator's ability to make a story accessible to a broader readership.
- The shortlisted authors and translators also receive considerable recognition for their contributions to literature, accompanied by prize money of 2,500 pounds.

## IV. GK Nuggets and Things to Remember

- Historical Notes: Established in 2005, the International Booker Prize was formerly known as the Man Booker International Prize.
- About the Winner: The International Booker Prize 2024 was awarded for the book 'Kairos', authored by Jenny Erpenbeck and translated by Michael Hofmann.
- Geography of the Prize: The award acknowledges a single book each year that has been translated into English and published in the UK or Ireland.
- Significance of the Prize: The International Booker Prize promotes global fiction and recognizes the vital work of translators in cross-cultural discourse.
- Prize Money: The award comes with a significant monetary reward, shared equally between the author and the translator, underlining the value of both artistic creation and expert translation.
- Shortlisted Authors and Translators: Those shortlisted for the award are also rewarded with recognition and a cash prize of 2,500 pounds each.
- Importance: The International Booker Prize plays a vital role in promoting diverse cultures, global perspectives, and linguistic skills in the field of literature.

# Ranks Reports and Exercises

# World Press Freedom Day 2024 - Spotlight on Press Freedom, Threats and Progress

## The World Press Freedom Day Conference 2024

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) marked the World Press Freedom Day Conference on 3rd May 2024.
- On this occasion, a concerning report was released illustrating the rise in violence against environmental journalists worldwide.
- The report highlighted that over a period of 15 years, 44 environmental journalists have been killed.
- The highest number of these persecutions took place in the Asia and Pacific region.

## Overview of the World Press Freedom Index (WPFI)

- The World Press Freedom Index is an annual report curated by global media watchdog Reporters Without Borders (RSF).
- The index started publishing in 2002 by the France-based NGO and specifically focuses on press freedom across countries.
- The report does not evaluate the quality of journalism or broader human rights violations within the countries it assesses.
- The grading system includes five key categories: political context, legal framework, economic context, socio-cultural context, and security.

## India's Status in the World Press Freedom Index 2024

- India's ranking showed some improvement, moving two spots up from 161 in 2023 to 159 out of 180 countries in 2024.
- However, despite the upward shift, India's overall score witnessed a decline from 36.62 to 31.28, indicating a decrease in press freedom.
- The report underlined that all categories, excluding security, showed a drop in scores.
- The restrictions press freedom face in India, the world's largest democracy, came to light with the detention of 9 journalists and 1 media worker since January 2024.
- A number of laws such as the Telecommunications Act 2023, the Draft Broadcasting Services Regulation Bill 2023, and the Digital Personal Data Protection Act 2023 have been highlighted for extensively regulating media and censoring news, threatening the independence of the media.

## Overview of the Global Scores in World Press Freedom Index

- In the 2024 report, Norway, Denmark, and Sweden retained their positions at the top, ranking 1st, 2nd, and 3rd respectively.
- On the other side of the spectrum, Eritrea was listed as having the least press freedom, followed closely by Syria.

In summary, World Press Freedom Day and the related Index draws attention to the importance of maintaining freedom of speech and safety for journalists globally. While some countries have shown progress, others still continue to exhibit declines, indicating the urgent need for initiatives to protect press freedom and journalists around the world.

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# The Indian Navy Spearheads a Vital Military Exercise: "Poorvi Lehar"

## Introduction - Indian Navy's Exercise Poorvi Lehar

Bringing a refreshingly robust approach to India's maritime preparedness, the Indian Navy has recently spearheaded a keenly focussed military exercise named "Poorvi Lehar" on the Eastern Coast of India. This exercise has emerged as an integral part of India's maritime security strategy, demonstrating the navy's commitment to protect the Indian coastal region.

## Why in News: The Exercise Poorvi Lehar

- The military exercise Poorvi Lehar took centre stage recently when the Indian Navy systematically tested its readiness to counter maritime threats off the Eastern Coast.
- The exercise featured participation from ships, marines, aircraft and special forces from the Indian Air Force (IAF), Andaman & Nicobar Command and Coast Guard. Such comprehensive participation highlighted a high degree of interoperability among the services.

## Phases of Exercise Poorvi Lehar

- The exercise was conducted in multiple phases to assess various elements of maritime combat readiness:
  1. Tactical phase: The teams involved actively engaged in combat training, under realistic scenarios.
  2. Weapon phase: The forces showcased their capabilities by conducting various successful firings.

## Maritime Awareness and Surveillance

- Maintaining continuous maritime domain awareness throughout the Area of Operations, the Indian Navy strategically operated aircraft from diverse locations. This was directed at reinforcing surveillance to ensure maritime security.

## Key Takeaway

- The successful completion of the exercise Poorvi Lehar signified the Indian Navy's robust capacity to deliver ordnance on target. It also affirmed the navy's preparedness in meeting evolving maritime challenges on the eastern coast.

## General Knowledge Insights

Geography: The exercise was conducted on the Eastern Coast of India, showcasing the Indian Navy's prowess over the region and its vigilance against possible maritime threats.

History: In recent years, the Indian Navy has increasingly been involved in various military exercises like Poorvi Lehar to strengthen India's defensive capabilities. Such initiatives are part of India's broader strategic outreach to ensure maritime security.

Importance: Exercises like Poorvi Lehar are of national significance, as they signify India's commitment to maritime security and readiness to face challenges. They also highlight the excellent coordination and interoperability of Indian defence services.

## In Conclusion

Exercise Poorvi Lehar paints a promising picture for India's maritime security, showcasing preparedness, efficiency, and inter-service synergy of the Indian Navy. With such exercises, India continues to assert its position in the maritime domain, building a robust defence mechanism against any potential threats.

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# Navratna Status Conferred to IREDA

## 1: Introduction & Significance of IREDA

- IREDA (Indian Renewable Energy Development Agency) is India's premier financing agency for Renewable energy projects.
- Established in 1987, it functions as a Non-Banking Financial Institution and is under the administrative control of the Ministry of New and Renewable Energy.

## 2: Navratna Status - A Major Milestone

- Recently, IREDA was conferred with the prestigious 'Navratna status' by the Department of Public Enterprises, which operates under the Ministry of Finance.
- This distinction highlights its significance in the economy and implies a greater level of autonomy for its operations.

## 3: Benefits of Gaining Navratna Status

- The conferred Navratna status paves the way for quicker decision-making within IREDA, thereby improving its overall operational efficiency.
- This enhanced autonomy is expected to attract more investments into the renewable energy sector, opening up avenues for its sustainable expansion.
- It is also likely to attract a greater pool of skilled talent, thereby fostering innovation and competitive advantage.

## 4: Importance in Context of Current Affairs

- From a Current Affairs perspective, the conferment of the 'Navratna status' on IREDA constitutes a key development in India's Renewable energy sector, highlighting the Government's commitment to promoting sustainable energy models.
- This development is particularly significant in light of India's goal to achieve 175 GW of renewable energy capacity by 2022, as articulated in the Paris Agreement.

## 5: General Knowledge Insight - Navratna Status

- In terms of general knowledge, 'Navratna Status' is conferred upon Central Public Sector Enterprises in India, providing them with increased autonomy and independence.
- It helps these companies compete more effectively at the national and international level, fostering growth, and expansion. Currently, there are 14 companies in India with 'Navratna Status', with IREDA being the latest addition.
- The concept of 'Navratna Status' originated in 1997, as a part of an endeavour to instil a sense of competition amongst public sector enterprises.

## 6: Conclusion- IREDA's Growth Trajectory

- With the attainment of Navratna Status, IREDA is poised to play a more significant role in India's renewable energy landscape.
- This move is likely to spur the Nationwide initiatives for a more sustainable and less carbon-dependent future.

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# NASA's PRE FIRE Mission: Understanding Earth's Energy Budget

## 1: Introduction and About NASA's PRE FIRE Mission

- The National Aeronautics and Space Administration (NASA) has launched a new mission called PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment).
- The mission involves the launch of two CubeSats (6U), which stands for miniaturised satellites, to monitor the Earth's poles' heat loss.
- The key objective of this mission is to augment our understanding of the planet's energy budget.

## 2: CubeSats: The Frontier of Spatial Technology

- CubeSats are a type of Nanosatellite, weighing less than 10 kilograms.
- They symbolise a standardised, cost-effective and small satellite design widely used for demonstrating technology and research work.
- The use of CubeSats has become increasingly prevalent due to their affordability and the ability to launch them in greater numbers. This makes them a lucrative tool for technological demonstrations and scientific research.

## 3: Role of PREFIRE Mission in Understanding Climate Change

- PREFIRE's main aim is to illuminate the level of infra-red and far-infrared radiation emanating from the Arctic and Antarctica. It achieves this through thermal infrared spectrometers installed in two CubeSats.
- The data so derived assists scientists in comprehending the equilibrium between inbound and outbound heat, a critical factor influencing changes in Earth's ice, seas, and weather patterns.
- By studying heat emissions from Earth's poles, the PREFIRE Mission is indeed an effective tool in the ongoing climate change research.

## 4: General Knowledge Facts Related to PRE FIRE and CubeSats

- The full form of PREFIRE is Polar Radiant Energy in the Far-InfraRed Experiment.
- CubeSats represent a type of mini satellite. Their actual size is based on a unit 'U', which equals a 10x10x10 cm cube. The CubeSats used in PREFIRE are described as 6U, meaning they are equivalent to six standard cubes.
- NASA, the organisation behind this mission, stands for National Aeronautics and Space Administration. It was established by President Dwight D. Eisenhower in 1958.
- The invaluable data contributed by the PREFIRE mission will help model and perhaps predict changes in the Earth's climate, thus playing an instrumental role in the urgent cause of climate change mitigation.

## 5: Importance of PRE FIRE and CubeSats

- As miniature satellites, CubeSats offer a cost-effective solution to understanding complex phenomena such as the Earth's energy budget.
- PREFIRE represents an important mission as it addresses a critical gap in our understanding of Earth's energy, contributing toward a more comprehensive understanding of global climate change.
- The mission exemplifies the crucial role of technological advancements and space study in understanding and addressing the pressing issue of climate change.

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# Ajrakh from Kutch, Gujarat Receives Prestigious Geographical Indication (GI) Tag

## 1: Ajrakh - the Fabric of Beauty and Tradition

- Ajrakh, a traditional hand-block printing technique used for creating treasured textiles, has roots in Kutch, Gujarat.
- Items produced using the Ajrakh technique include sarees, dupattas, stoles and more, each adorned with exquisite geometric patterns.
- The uniqueness of the Ajrakh fabric lies in its use of rich, earth-toned colours like indigo, madder, and mustard.

- The art of Ajrakh printing has been an intrinsic part of Kutchi culture for centuries, and it recently garnered worldwide recognition by receiving the GI tag.

## 2: The GI Tag and Its Significance

- A Geographical Indication (GI) tag is a recognition given to products that originate from a specific geographical location and bear qualities or reputation due to that origin.
- GI tag serves as an intellectual property right and connects a product's reputed quality or characteristics to its geographical origin.
- In India, the Geographical Indications Registry, under the Department of Industry Promotion and Internal Trade, Ministry of Commerce and Industry, issues GI tags.
- GI tags prevent unauthorised use of registered GIs by others and ensure that only authorised users can use popular product names.
- This tagging system is advantageous as it helps in the economic prosperity of producers and ensures quality products for consumers.

## 3: Other Indian Textiles with GI Tags

- Various other Indian textiles have also been honoured with the GI tag, showcasing the diversity and richness of Indian textiles.
- Banarasi Silk: Comes from Varanasi in Uttar Pradesh and is known for its fineness.
- Chanderi Fabric: Originating from Chanderi, a small town in Madhya Pradesh, it is admired for its delicate and lightweight chromatics.
- Kanjeevaram Silk: Kanjeevaram sarees from Tamil Nadu are celebrated for their bright vibes, delightful silk, and detailed zari work.
- Kota Doria: Primarily produced in Muhammadabad Gohna, Mau in Uttar Pradesh, and Kota in Rajasthan, Kota Doria is a popular choice of saree.
- Odisha Ikat: An Ikat variant that comes from Odisha is admired for its resist dyeing technique.

This significant recognition of Ajrakh from Kutch will undoubtedly contribute to preserving India's traditional artistry and enhancing the economic prosperity of its indigenous artisans.

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# International Thalassemia Day: Advocating for Equal Access to Comprehensive Care

## 1. Introduction and About:

- International Thalassemia Day is globally celebrated every year on 8th May with the aim to raise awareness about this deadly disease and to advocate for improved quality care for patients. This year's theme, 'Empowering Lives, Embracing Progress: Equitable and Accessible Thalassemia Treatment for All', accentuates the importance of equal access to comprehensive treatment for everyone afflicted with this disease.

## 2. Celebrations and Goals:

- The day is marked by unifying diverse stakeholders in the fight against Thalassemia through prevention, awareness, early diagnosis and guaranteeing quality behavioural health care for patients.
- The 2024 theme focuses on diminishing the disparity in health care access for Thalassemia patients.
- Part of the celebrations for this year involved advocating for compulsory Thalassemia testing to be integrated into the Reproductive and Child Health (RCH) program.

## 3. The Reproductive and Child Health (RCH) program:

- Initiated in 2005, the RCH program is a flagship program under the National Health Mission (NHM) in India, aimed at reducing maternal and infant mortality and total fertility rates.
- The integration of Thalassemia testing into this program is expected to significantly decrease the burden of this disease in the country.

## 4. Thalassemia in India:

- Despite the increasing awareness, India witnesses around 10,000 new Thalassemia cases each year, with an estimated 1 lakh existing patients.

- These statistics highlight the urgency for spreading widespread consciousness about Thalassemia within the general population.

## 5. Significance and General Knowledge:

- Thalassemia is a genetically inherited blood disorder that can cause anaemia and complications, leading to organ damage. It is a severe health concern with no known cure.
- The celebrations of International Thalassemia Day hold high importance in creating mass understanding of this disease and advocating for better health care facilities and policies to manage and prevent the disease.

## End Note:

The celebration of International Thalassemia Day is more than just a date in the calendar; it is a crucial initiative towards highlighting the plight of those living with Thalassemia and advocating for equitable health care access. Knowledge about this disease and its consequences holds high importance for examinations, but more than that, for building an aware and empathetic society.

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# Prominent Presence of India at World Hydrogen Summit 2024: A Step Forward in Green Energy Revolution

## I. Introduction and Overview

- The World Hydrogen Summit 2024 hosted in Rotterdam, Netherlands, saw a significant presence of India under the aegis of the Ministry of New and Renewable Energy.
- The Indian Pavilion marked one of the largest at the summit, effectively presenting the illustrious advancements India has made in the realm of green hydrogen.

## II. Why in News?

- The recent event has brought India's commitment to green energy under the global spotlight.
- Showcasing India's initiatives in green hydrogen production, the Indian Pavilion served as a representation of India's proactive role in renewable energy.

## III. India's National Green Hydrogen Mission (NGHM)

- Launched in January 2023 with a robust budget of Rs. 19,744 crores, NGHM is aimed at producing 5 MMT of green hydrogen by 2030.
- As part of the mission's progress, contracts have already been given for creating 412,000 tonnes of Green Hydrogen production capacity and 1,500 MW of electrolyzer manufacturing capacity.

## IV. Online Portal for NGHM

- Furthering transparent communication, a dedicated online portal regarding NGHM was introduced to provide extensive information about the mission and measures to enhance the green hydrogen ecosystem in India.

## V. Schemes and Guidelines for Green Hydrogen Use

- Green hydrogen applications are being facilitated through comprehensive scheme guidelines issued by India, addressing its use in steel, transport, and shipping sectors.

## VI. Innovation Clusters for Green Hydrogen

- The Department of Science and Technology has taken up the initiative to establish Hydrogen Valley Innovation Clusters. These clusters' primary objective is to stimulate innovation and encourage the green hydrogen ecosystem in India.

## Key takeaways:

- Green Hydrogen is identified as a clean energy carrier, and India's initiatives towards its production indicate its commitment towards renewable energy sources.
- The presence at the World Hydrogen Summit 2024 shows India's proactive role in global energy dialogues and its progressive strides towards a sustainable future.
- The collaborations and policies under NGHM, like setting up of Hydrogen Valley Innovation Clusters and scheme guidelines for green hydrogen use, significantly contribute towards a

comprehensive green hydrogen ecosystem in the country.

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# Strengthening Defence - Indo-Russian Arms Collaboration

## A. INTRODUCTION:

• The first batch of AK-203 assault rifles from Russia, totalling 27,000 units has been received by the Indian Army strengthening its arsenal.

## B. RECENT DEVELOPMENTS:

• The acquisition of AK-203 rifles is a result of an agreement signed between India and Russia in July 2021.

• As per the agreement, India will manufacture over 6.1 lakh AK-203 rifles with technology transfer from Russia.

• To meet this objective, a joint venture, Indo-Russian Rifles Private Limited (IRRPL) was established in 2019 in Korwa, Uttar Pradesh.

• The IRRPL is a collaboration between Advanced Weapons and Equipment India Limited (AWEIL) and Munitions India Limited (MIL) from India and Rosoboronexport (RoE) and the Kalashnikov concern of Russia.

• The eventual aim is to have 70% of the rifle's parts manufactured domestically within 2 years. Currently, the local manufacturing constitutes approximately 25% of the rifle's parts

• The complete localisation of the rifles' production is expected to be realised within the next 2 to 3 years.

## C. NATIONAL SECURITY CONTEXT:

• The Indian Army is phasing out the INSAS (Indian National Small Arms System) rifles in favour of more advanced weaponry such as the AK-203.

## D. GK ELEMENTS:

**1. GEOGRAPHY & MILITARY:**
Korwa in Uttar Pradesh, the joint venture site, becomes an important location in the defence manufacturing landscape of India.

**2. HISTORY:**
This advancement in indigenous manufacturing marks a significant milestone in India's defence history, building up on the Indo-Russian defence ties.

**3. IMPORTANCE:**
The in-house production would not simply ensure high-quality defence equipment for the Indian Army, it would also boost India's objective of self-reliance in defence production.

In Conclusion, this collaborative initiative not only strengthens the dining Indo-Russian bilateral defence relations but also poses a major advancement in India's journey towards self-reliance in defence manufacturing.

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