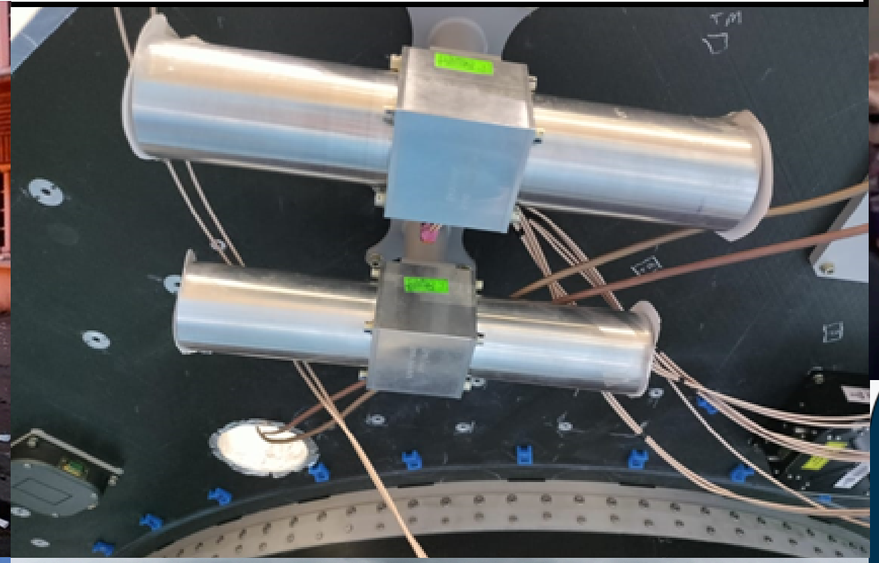
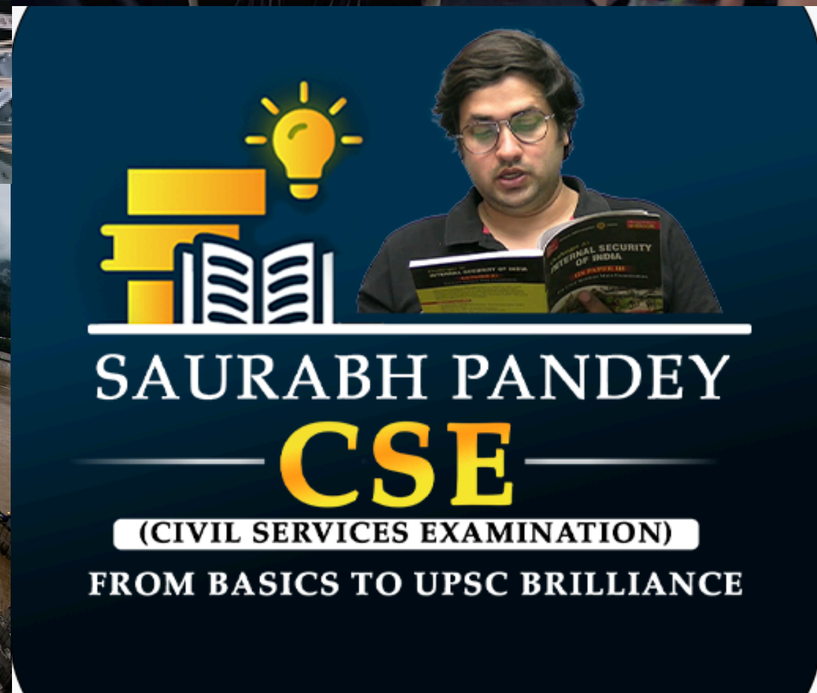
DAILY CURRENT AFFAIRS COMPILATION

December 2024

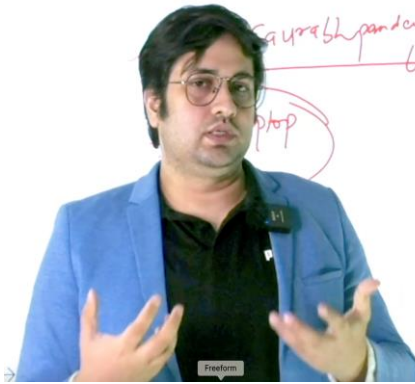
By Saurabh Pandey Sir





Topics - MINDS MAPS included (Daily current affairs 2nd & 1st December November 2024

- International Negotiations on Plastic Pollution
- The Bhopal Gas Tragedy: A Catastrophic Industrial Disaster
- Marine Carbon Dioxide Removal (mCDR)
- Shock Diamonds in Supersonic Flight
- The Sombrero Galaxy (M104)
- Aortic Stenosis
- Understanding Sound Waves
- MAINS



By saurabh Pandey

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Themes-- (Upcoming month)

Week -1

Border management and internal security

Week -2 - International relations

Week -3 -Ethics and integrity

Week -4 - Ethics and integrity

One short videos of sources will b uploaded + model answers

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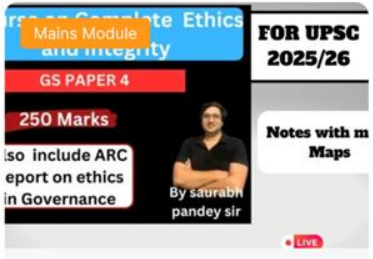

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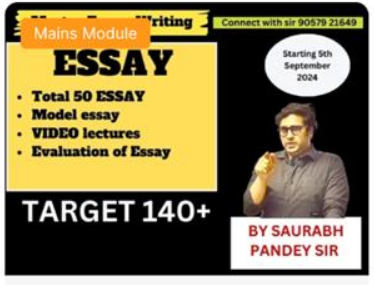

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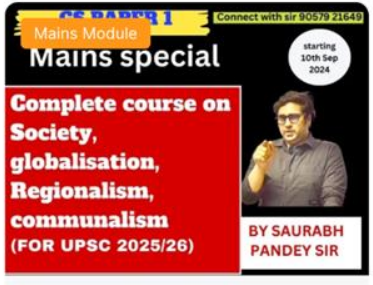

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Topic → International Negotiations on Plastic Pollution

Overview of the Negotiations

🌍 Delegates from nearly 170 countries gathered in Busan, South Korea to discuss eliminating plastic pollution.

📅 This was the fifth and final round of talks for the Intergovernmental Negotiations Committee (INC), initiated in 2022.

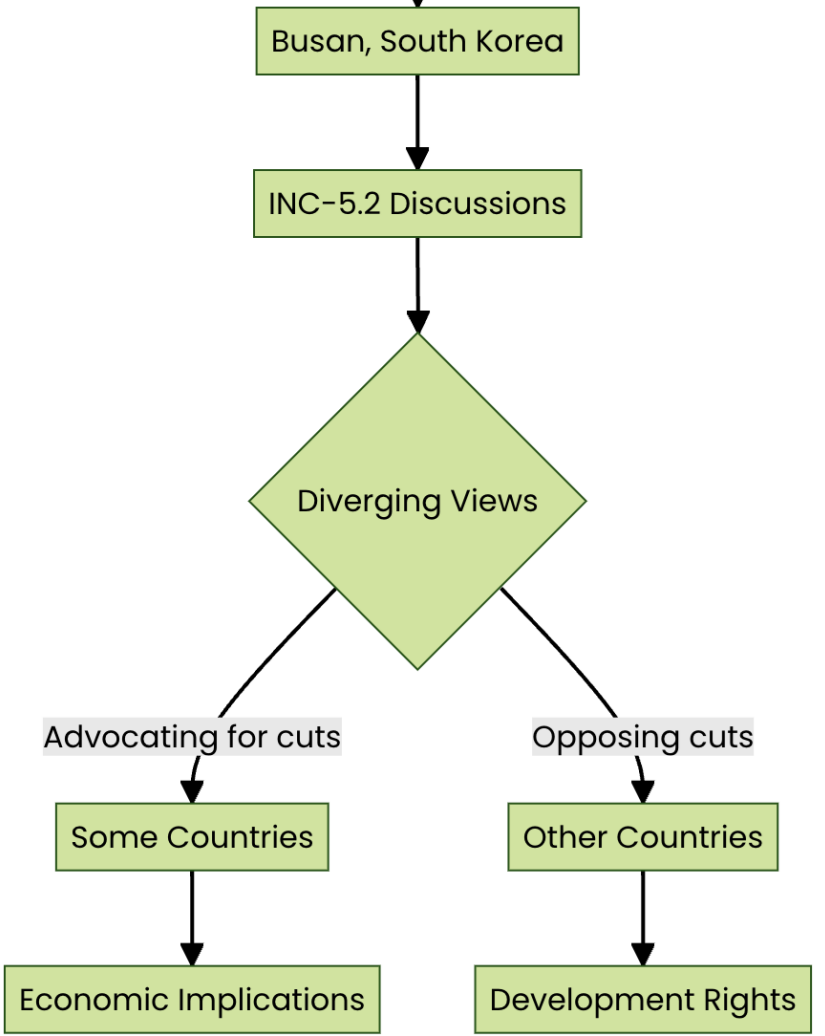
☹️ The assembly expressed disappointment over the limited progress, with concerns about the synthesized text by Chair Luis Vayas Valdivieso.

Diverging Views and Challenges

⚖️ Diverging views emerged, with some countries advocating for cutting plastic production, while others opposed due to economic implications and trade restrictions.

🏭 Countries like Saudi Arabia and India resisted proposals to set targets for reducing virgin plastic polymer production, emphasizing development rights.

🗨️ EU representative Hugo Schally expressed collective unhappiness over the lack of progress, while Kuwait's delegate criticized the negotiations for being influenced by economic agendas.


Busan, South Korea
INC-5.2 Discussions
Diverging Views
Advocating for cuts
Opposing cuts
Some Countries
Other Countries
Economic Implications
Development Rights

Topic → The Bhopal Gas Tragedy: A Catastrophic Industrial Disaster

Overview

🏭 The Bhopal Gas Tragedy occurred on December 2-3, 1984, in Bhopal, India.
☠️ It stands as one of the world's worst industrial disasters, resulting in thousands of immediate deaths and long-term health effects for many survivors.
🌍 The incident was triggered by a gas leak at the Union Carbide pesticide plant, releasing methyl isocyanate (MIC) gas into the atmosphere.

Impact

🚑 Over 500,000 people were exposed to the toxic gas, leading to respiratory issues, eye problems, and other health complications.
⚖️ The disaster raised significant legal and ethical questions regarding corporate responsibility and safety regulations in industrial operations.

Aftermath

- 📉 The tragedy led to a decline in public trust in industrial safety and prompted changes in environmental laws and disaster management protocols in India.
- 🕯 Commemorative events are held annually to honor the victims and raise awareness about industrial safety.

Summary

The Bhopal Gas Tragedy was a catastrophic industrial accident in 1984 that caused widespread health issues and raised critical safety concerns.

Topic → Marine Carbon Dioxide Removal (mCDR)

🌊 Marine Carbon Dioxide Removal (mCDR): Focuses on the ocean's capacity for carbon capture as a complementary strategy to emissions reductions.

🌍 Land vs. Ocean Focus: Historically, climate efforts have targeted land-based solutions, often overlooking the potential of aquatic systems like oceans, seas, lakes, and rivers.

🌊 Deep-water Carbon Capture: Utilizes deep-water bodies to rapidly remove atmospheric carbon, transporting it to depths where it binds with minerals.

🌱 Biotic vs. Abiotic Approaches:

- Biotic: Involves living systems (e.g., mangroves, macroalgae) for carbon sequestration.
- Abiotic: Manipulates physical properties (e.g., ocean alkalinity enhancement) for scalability and permanence.

📉 Carbon Sequestration Potential:

Biotic: Sequesters less than 1 billion tonnes of CO_2 annually.

Abiotic: Captures between 1 to 22 billion tonnes per year.

⚖️ Challenges for Abiotic Techniques: Faces public skepticism, regulatory hurdles, and high energy requirements.

 Urgency of Action: To limit global warming to 1.5°C, emissions must be capped at 570 billion tonnes by 2050, with the current pace potentially exhausting this budget by 2031.

🌊 Promise of mCDR: Offers potential for deep carbon burial but comes with uncertainties and risks.

🐟 Ecosystem Disruption: Techniques like ocean iron fertilization can disrupt marine ecosystems and reduce oxygen levels in deeper waters.

🌱 Risks of Macroalgae: Cultivating macroalgae may alter local chemistry when decaying, posing similar ecological risks.

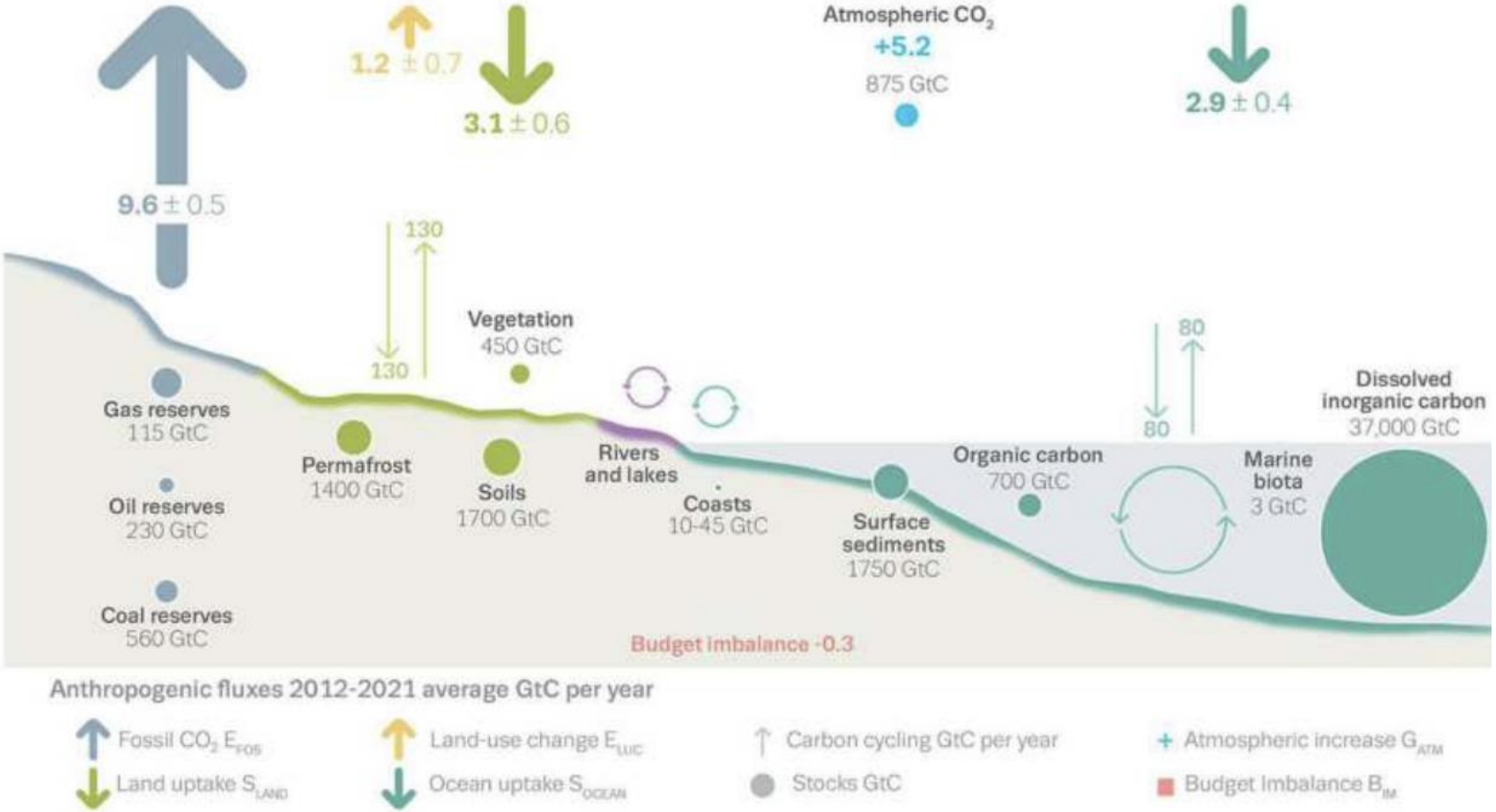
📉 Public Perception: Skepticism exists towards abiotic carbon capture methods, with a preference for biotic approaches like direct air capture.

🔍 Monitoring Challenges: Accurately measuring carbon capture and burial in the ocean is difficult and costly.

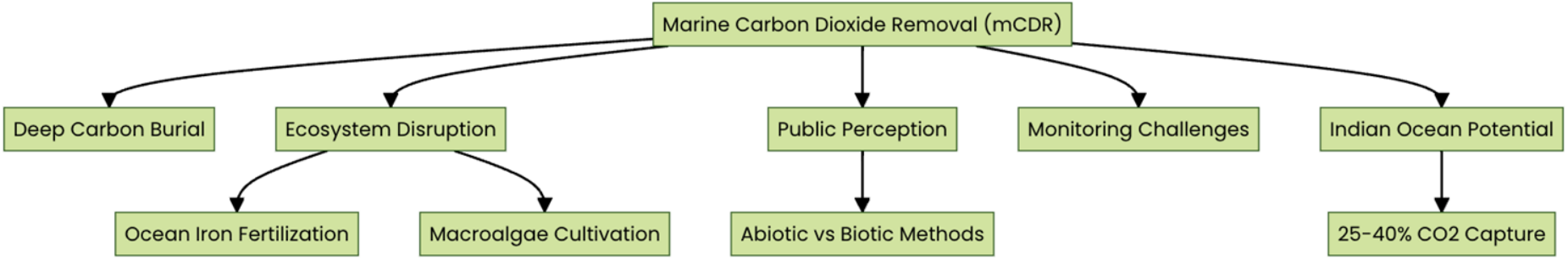
⚖️ Not a Substitute: mCDR cannot replace the need for reducing fossil fuel emissions; it is a complementary strategy in the transition to net-zero.

🌍 Indian Ocean Potential: Could capture 25-40% of marine CO2, highlighting the importance of studying geological and ecological methods

The global carbon cycle



Conceptual Overview:



Target UPSC PRELIMS

Q. With reference to the Moiré material consider the following statements. (The Hindu)

1) A moiré material formed by twisting two layers of tungsten diselenide ($tWSe_2$) by a small angle, creating a unique electronic structure with flat energy bands.

2) Driven by strong electron-proton interactions and half-band filling it exhibits a semiconductor capacity.

Which of the given statements is/are incorrect.

A) 1 Only

B) 2 Only

C) Both 1 and 2

D) Neither 1 or 2

Topic → Shock Diamonds in Supersonic Flight

🚀 Shock Diamonds

Definition: Bright patches in rocket or jet exhaust, also known as Mach diamonds, formed during supersonic flight.

□ Pressure Dynamics

Initial Pressure: Exhaust exits at a lower pressure than the surrounding atmosphere.
Interaction: Leads to complex interactions as the exhaust expands and compresses.

🔄 Seesawing Process

Cycles: Exhaust undergoes multiple cycles of compression and expansion.
Pressure Alignment: Continues until the exhaust pressure aligns with atmospheric pressure.

🌊 Wave Generation

Pressure Changes: Create waves in the exhaust plume.
Contribution: These waves contribute to the formation of shock diamonds.

🔥 Combustion Effects

Inward Bending: Exhaust bends inward, increasing pressure.
Temperature Rise: Higher pressure raises temperature, igniting fuel and creating bright spots.

📈 Temperature Increase

Local Temperature: Inward flow raises local temperatures.
Visibility: Enhances the visibility of shock diamonds.

🌪 Shock Wave Production

Alternating Bending: Generates shock waves.
Propagation: Shock waves propagate through the plume, establishing the diamond pattern.

Summary: Shock diamonds are bright patterns in jet and rocket exhaust formed by the interplay of pressure and temperature during supersonic flight.

BIG SHOT

The Mid-Infrared Instrument (MIRI) of the James Webb Space Telescope captured this brilliant new view of the famous Sombrero Galaxy (officially M104). The core of the galaxy is dim in this view, revealing a smooth inner disk as well as details of how the clumpy gas in the outer ring is distributed. Its name comes from an image by the Hubble telescope, where, together with its prominent core, it appeared like the broad-brimmed hat. NASA

Topic → The Sombrero Galaxy (M104)

Overview

- 🌌 Designation: The Sombrero Galaxy is officially known as M104.
- 🌠 Location: It resides in the Virgo constellation.
- 🔭 Distance: Approximately 28 million light-years from Earth.
- 🌟 Features: Notable for its bright nucleus and prominent dust lane.
- 📏 Size: The galaxy spans a diameter of about 50,000 light-years.
- 🌍 Cluster: Part of the Virgo Cluster, which includes numerous other galaxies.
- 📷 Photography: Known for its striking appearance, making it a popular subject for photography.

Summary: The Sombrero Galaxy (M104) is a prominent spiral galaxy in Virgo, recognized for its bright nucleus and dust lane, located 28 million light-years from Earth

A flutter

Bird society: A Eurasian blue tit (*Cyanistes caeruleus*) leaves with a seed in its beak at the feeding ground called 'Smurfs' Village' for birds and squirrels built by Hungarian artist Tamas Kanya using organic materials in Budakalasz. AFP

Topic → Blue Tit: A Fascinating European Bird

🕊️ The blue tit is scientifically known as Cyanistes caeruleus.

🍃 The text mentions "leaves," indicating a potential focus on the blue tit's habitat or diet.

🌍 Blue tits are commonly found across Europe and parts of Asia.

🤸 They are known for their acrobatic feeding habits, often seen hanging upside down to access food.

🎶 Blue tits have a distinctive song and are known for their vocalizations.

🏠 They typically nest in tree holes or artificial nest boxes.

🌱 The blue tit plays a role in the ecosystem by helping to control insect populations.

Summary: The blue tit (Cyanistes caeruleus) is a European bird known for its acrobatic feeding and distinctive vocalizations, often associated with leaves in its habitat.

Inching closer towards human spread

A highly pathogenic avian influenza virus has been spreading across the world since late 2020 driven by a new virus lineage — 2.3.4.4b

- Recent human H5N1 cases in British Columbia, Canada and California have increased concerns about the adaptability of the virus and possible mutations that could facilitate human-to-human transmission
- These two cases have no exposure to H5N1 infected animals
- The British Columbia teenager diagnosed with H5N1 in November 2024 initially experienced conjunctivitis and fever, which rapidly progressed to acute respiratory distress syndrome
- Genomic sequencing revealed that the virus belonged to the 2.3.4.4b clade, genotype D1.1, consistent with strains found in wild birds
- Health officials suspect that the virus may have evolved after infecting the teenager
- Genome sequencing identified the PB2-E627K mutation in the teenager's sample
- This mutation is linked to faster replication in human cells and greater severity of illness

Common heart valve disease linked to insulin resistance

A large population study indicates that insulin resistance may be an important risk factor for the development of heart valve disease – aortic stenosis. Data from over 10,100 Finnish men aged 45 to 73 years old, all initially free of aortic stenosis were analysed. After an average follow-up period of 10.8 years, 116 men (1.1%) were diagnosed with aortic stenosis. Several biomarkers related to insulin resistance (fasting insulin, proinsulin, and serum C-peptide) were associated with increased aortic stenosis risk.

Topic → Aortic Stenosis: Understanding the Condition

Overview

- Aortic stenosis is a condition marked by the narrowing of the aortic valve opening.
- ⚠️ This narrowing can result in reduced blood flow from the heart to the rest of the body.

Symptoms and Diagnosis

- Common symptoms include chest pain, fatigue, and shortness of breath during physical activity.
- 🔬 Diagnosis is typically made through echocardiograms and physical examinations.

Treatment and Management

- 💊 Treatment options may involve medication, lifestyle changes, or surgical procedures such as valve replacement.
- 📈 The condition is more prevalent in older adults, especially those with a history of heart disease.
- 🛡️ Regular monitoring is crucial for managing the condition and preventing complications.

Summary

Aortic stenosis is a serious condition that requires careful management to prevent heart-related complications

Topic → Understanding Sound Waves and the Decibel Scale

Overview of Sound Waves 🌊

Travel in Waves: Sound travels as waves that carry energy.

Energy Intensity: More energy results in more intense waves and louder sounds.

Key Points

Sound intensity is measured in decibels (dB).

The decibel scale is logarithmic, meaning every increase of 10 dB represents a tenfold increase in intensity.

Decibel Thresholds

0 dB: Threshold of hearing.

30 dB: Whisper.

60 dB: Normal conversation.

140 dB: Intensity of a loud firecracker

Topic → Squirting Cucumber: Explosive Seed Dispersal 🌱💥

Explosive Seed Dispersal Mechanism

🌱 The squirting cucumber (*Ecballium elaterium*) uses a ballistic method to disperse its seeds explosively.

💥 When ripe, the fruits detach from the stem and eject seeds in a high-pressure jet of mucilage.

🔬 Researchers have studied the plant's dispersal strategy through mathematical models and various experiments.

📈 Prior to seed dispersal, the fruits build up pressure from mucilaginous fluid, which is redistributed to the stem.

📏 This redistribution makes the stem longer, thicker, and stiffer, allowing the fruit to rotate t 45-degree angle for effective seed launch.

🔄 In the initial microseconds of ejection, the stem recoils, causing the fruit to counter-rotate, enhancing seed ejection dynamics.

🎯 The exit speed and launch angle of the seeds depend on their sequence during the ejection process.

Summary: The squirting cucumber employs a unique explosive mechanism for seed dispersal, involving pressure buildup and strategic fruit rotation

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AAKLAN PLUS- starting From saturday

Themes-- (Upcoming month)

Week -1

Border management and internal security

Week -2 - International relations

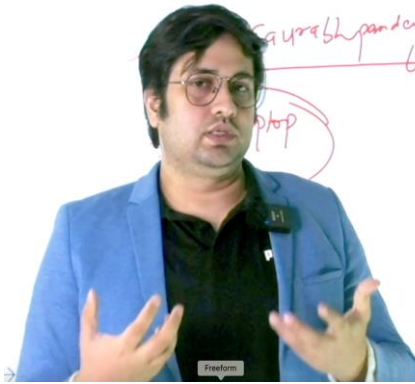
Week -3 -Ethics and integrity

Week -4 - Ethics and integrity

One short videos of sources will b uploaded + model answers

Topics - MINDS MAPS included (Daily current affairs 3rd December 2024

- INS Arighaat:
- PRAGATI Overview
- Spade-Toothed Whale:
- DNA and Genetic Profiling
- Rights of Persons with Disabilities act 2016
- One Nation, One Subscription: Transforming Access to Knowledge in India
- Understanding Proudhon’s Mutualism
- Bond Yield Overview
- MAINS



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Target Mains -2025/26 -

Q ‘Explain the role of technology in improving governance in india’.

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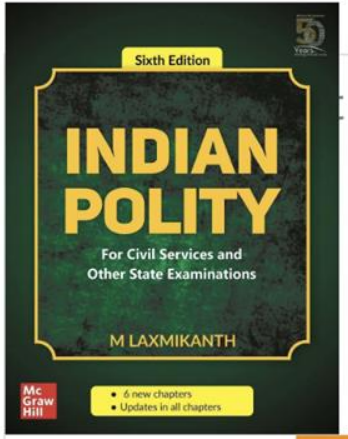

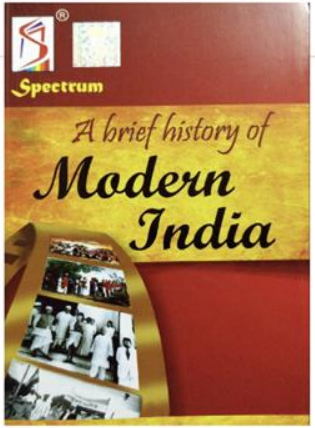

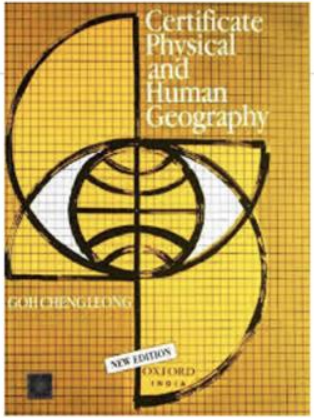

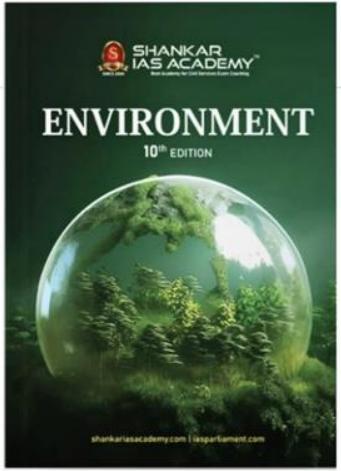

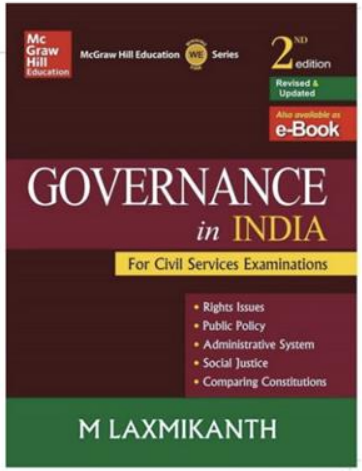

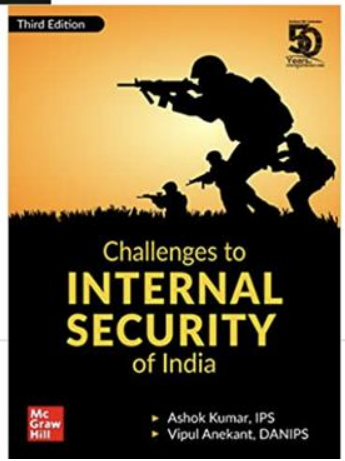

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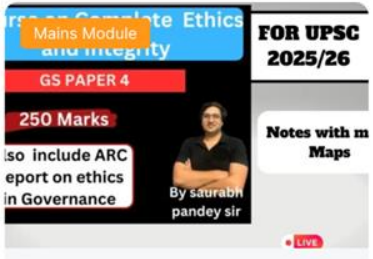

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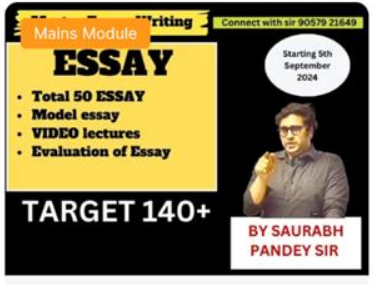

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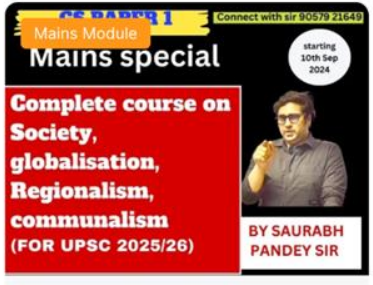

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Topic → INS Arighaat: India's Strategic Submarine

🦈 INS Arighaat is an upgraded variant of the Arihant-class submarine.

⚓ It is the second nuclear-powered ballistic missile submarine developed by India.

▯ The submarine is part of the Advanced Technology Vessel (ATV) project.

▯ Construction took place at the Ship Building Centre in Visakhapatnam.

🔍 INS Arighaat has been assigned the code name S3.

🌊 It represents India's advancements in nuclear submarine technology.

IN The submarine enhances India's strategic defense capabilities.

Summary: INS Arighaat is India's second nuclear-powered ballistic missile submarine, part of the ATV project, built in Visakhapatnam, and designated as S3.

Strategic Importance and Development

Strategic Role: Enhances India's defense capabilities with nuclear deterrence.

Technological Advancement: Showcases India's progress in nuclear submarine technology.

Construction and Development: Built at the Ship Building Centre, Visakhapatnam, under the ATV project

Topic →PRAGATI Overview

📊 PRAGATI: Pro-Active Governance And Timely Implementation, initiated by the Government of India.

🎯 Purpose: Enhance governance efficiency and ensure timely project implementation.

📅 Implementation: Monitors and reviews project progress monthly.

💻 Technology Utilization: Uses video conferencing for real-time communication between central and state governments.

📈 Impact on Development: Addresses project delays and improves accountability.

🤝 Stakeholder Engagement: Encourages collaboration among government officials and project managers.

🔍 Focus Areas: Infrastructure projects, social welfare schemes, and developmental initiatives.

Summary: PRAGATI is a governance system in India aimed at improving project implementation and accountability through technology and stakeholder collaboration.

Key Aspects of PRAGATI

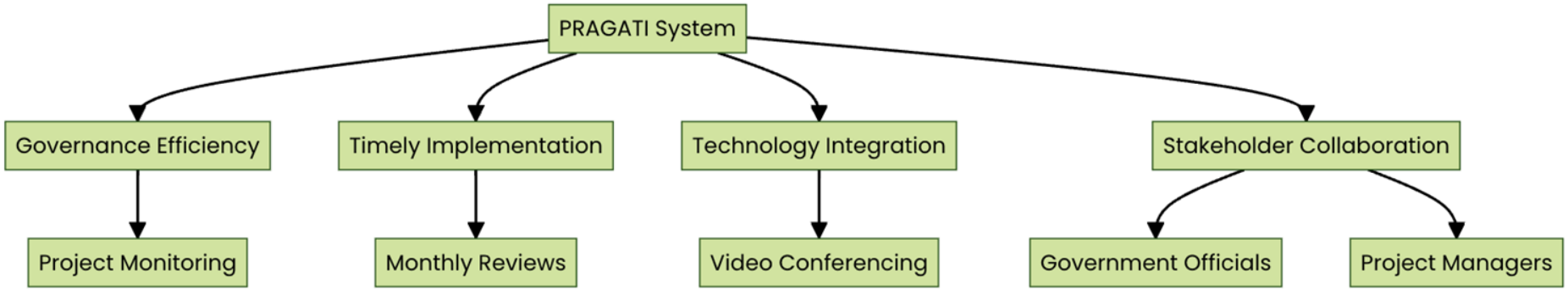
Governance Efficiency: Aims to streamline government operations.

Timely Implementation: Focuses on reducing project delays.

Technology Integration: Utilizes modern technology for effective communication.

Stakeholder Collaboration: Promotes teamwork among various stakeholders.

PRAGATI System Flow:



Topic → Spade-Toothed Whale: A Rare Marvel

Overview

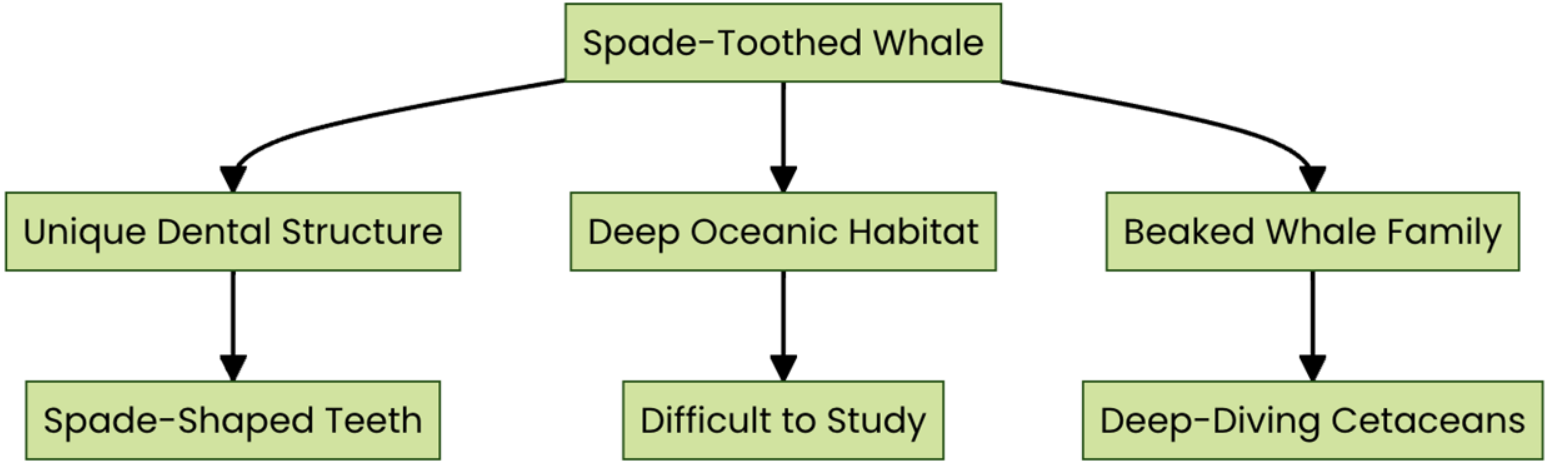
- The spade-toothed whale is a rare species, notable for its unique dental structure.
- Found primarily in deep oceanic waters, making it challenging to study in the wild.
- Can grow to significant lengths, with some individuals exceeding 20 feet.
- Its spade-shaped teeth distinguish it from other whale species.
- Part of the beaked whale family, which includes other deep-diving cetaceans.
- Limited information on its behavior and population due to its elusive nature.
- Conservation efforts are ongoing to understand and protect this enigmatic marine mammal.

Conservation and Research

Efforts are focused on understanding the whale's behavior and population status.
Research is hindered by the whale's deep-sea habitat and elusive nature

The **spade-toothed whale** (***Mesoplodon traversii***) is the rarest species of beaked whale. Most specimens found have been in the South Pacific, mostly in New Zealand, but they have also been found in Chile. Very little is known about the species

Spade-Toothed Whale Characteristics:



Summary

The spade-toothed whale is a rare, deep-diving cetacean known for its unique spade-shaped teeth and elusive nature. Conservation efforts are crucial to better understand and protect this mysterious marine mammal.

Topic → DNA and Genetic Profiling

DNA Structure

Nucleus: Contains two copies of 23 chromosomes, forming the human genome.

Reproductive Cells

Eggs and Sperm: Each receives one chromosome from each pair, forming a zygote with two genome sets.

DNA Molecules

Composition: Each chromosome is a single DNA molecule with two strands made of adenine (A), cytosine (C), guanine (G), and thymidine (T).

Base-Pairs

Chromosome 1: Over 240 million base-pairs.
Chromosome 21: Over 40 million base-pairs.
Total: 3.2 billion base-pairs across all chromosomes.

🔄 Simple Tandem Repeats (STRs)

Repetition: Certain DNA sequences are repeated at specific loci, varying between chromosomes from each parent.

🧬 DNA Profiling

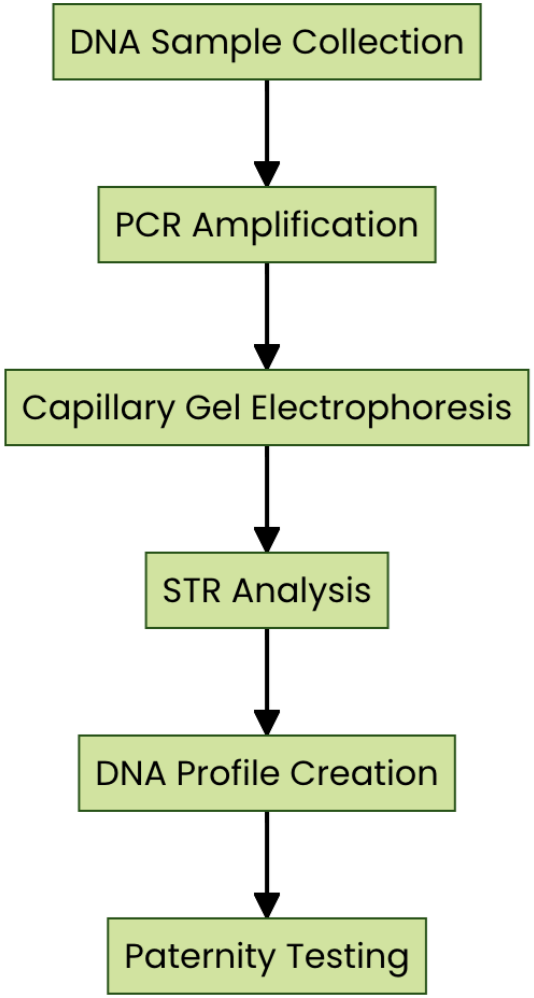
Techniques: Uses polymerase chain reaction (PCR) and capillary gel electrophoresis to count repeats in STR loci.

👪 Paternity Testing

Familial Relationships: DNA profiles can reveal biological relationships, as shown in cases where STRs indicate a different biological father.

Summary: DNA profiles are created by analyzing simple tandem repeats in chromosomes, aiding in determining biological relationships.

DNA Profiling Process:



Citizens with disabilities, making their rights real

Pradeep Kumar Bagival

was Disability Inclusion Adviser to the national governments, the United Nations and International Non-Governmental Organisations (INGOs) and former Assistant Commissioner for Disabilities, Persons with Disabilities Act-1995, Karnataka

For an **inclusive future**

The data from the 2011 national Census of India indicate that persons with disabilities constitute 2.21 % of the total population. This is a grossly underestimated figure. According to the 2019 Brief Disability Model Survey conducted by the World Health Organization across India, Tajikistan and the Lao People's Democratic Republic, the prevalence of severe disability among Indian adults is 16%. India ratified the United Nations Convention on the Rights of Persons with Disabilities on October 1, 2007 and one of the immediate measures expected out of the state parties to the convention is to ensure alignment of the national disability legislations in line with the principles of the convention. Accordingly, Parliament passed the Rights of Persons with Disabilities Act 2016 (RPWD Act) that came into force on April 19, 2017 to replace the earlier Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, which fell short of promoting a social and a human rights model of disability rights.

The role of the State Commissioner

One of the unique points of the RPWD Act in comparison to many disability legislations of the developing countries is the provision for the constitution of the office of the State Commissioners for Disabilities at the State level with a combination of review, monitoring, and quasi-judicial functions to ensure effective implementation of the disability law. According to Section 82 of the RPWD Act, the State Commissioners, for the purpose of discharging their functions under the Act, shall have the same powers of a civil court under the Civil Procedure Code 1908 while trying a suit, and every proceeding before the State Commissioner shall be a judicial proceeding within the meaning of Sections 193 and 228 of the Indian Penal Code (45 of 1860).

Despite the legislation providing far-reaching quasi-judicial powers to the State Commissioners in safeguarding the rights and fundamental freedoms of persons with disabilities, the State Commissioners in many States have fallen short of the expectations of citizens with disabilities. This dismal functioning of the office of the State Commissioners is largely due to the lax attitude on the part of the State governments to invigorate the statutory office in discharging its functions in accordance with the law. This reality has been aptly highlighted in the writ petition WPC 29329/2021, *Seema Girija Lal vs. Union of India*, in which the delay in appointment of the state Commissioners has also been highlighted.

Among various reasons for the failure to fulfil the statutory role by the State Commissioners is the manner in which the commissioners are appointed. The RPWD Rules provide an opportunity for persons with substantial experience in law, human rights, education, social work and rehabilitation and with a non-governmental organisation background to be appointed to the position of State Commissioner. In reality, a majority of the commissioners, either independent or holding additional charge, are civil servants from the nodal ministry. According to the latest report (2021-22) of the Chief Commissioner for Persons with Disabilities, only eight States have appointed commissioners who are not part of the mainstream civil service. Having civil servants from the nodal ministry is in conflict with the purpose of having an impartial and independent office that can exercise oversight over the executive and hold them accountable for not implementing the provisions of the disability law.

Some of the progressive States in terms of disability inclusion have appointed representatives of civil society organisations as State Commissioners and the State governments should consider appointing qualified women with disabilities as commissioners as they will be in a better position to address intersectional forms of discrimination that women and girls with disabilities in India currently experience.

The State Commissioners have a substantive role including powers to intervene *suo motu* to identify and inquire about any specific policy, provision, programme and laws that contravene the provisions of the RPWD Act and recommend appropriate corrective measures.

There are many contraventions of the RPWD Act that are highlighted by aggrieved persons with disabilities and by certain proactive organisations of persons with disabilities (OPDs) and the State Commissioners have not been able to intervene *suo motu* to address discriminatory policies and practices which has led to an erosion of faith in the statutory offices created under the disability law to uphold the rights of citizens with disabilities. The State Commissioners should interact consistently with persons with disabilities and their representative organisations to understand which are those policies, guidelines, executive orders that contravene the provisions of the law and initiate necessary remedial action.

> State Commissioners have a vital role in safeguarding the rights and fundamental freedoms of persons with disabilities, but in many States, their statutory role has fallen short of expectations

The example of Karnataka

It is vital for State governments and the office of the Chief Commissioner for Disabilities to build the capacity of the State Commissioners in performing their quasi-judicial role and in functioning as a civil court. As done by the State Commissioner's office in Karnataka, collaborating with law schools and legal experts in strengthening their respective capacities could be a viable option. While some States such as Karnataka and Delhi have been able to infuse confidence among persons with disabilities to register complaints with regard to a deprivation of their rights, it is equally important for State Commissioners to look into complaints and dispose of them expeditiously. The websites of the office of the State Commissioners should – on the dashboard – indicate the number of cases received, disposed of and those pending for action along with other vital information such as annual reports and special reports submitted to the government on implementation of the law by the government with concrete recommendations.

Mobile adalats (mobile courts), as practised years ago by the Karnataka Commissioner's office, could be a good practice for other States to emulate in reaching out to persons with disabilities in remote areas and to look into a deprivation of their rights. Adalats were organised in the State with prior notice to persons with disabilities through the nodal disability office in the districts for aggrieved individuals or institutions to get their grievance redress.

Often, these grievances would be resolved on the spot for persons with disabilities and their families. Designating District Magistrates as Deputy Commissioners for persons with disabilities – as done in the case of Karnataka – is a promising way to make local governance disability inclusive.

The RPWD Act enables State Commissioners to monitor the implementation of various pieces of legislation, programmes and schemes that impact persons with disabilities. To maximise the effectiveness of this critical role, the District Disability Management Review (DDMR) undertaken by the Karnataka State Commissioner's office could be one of the preferred practices for State Commissioners. The DDMR has become an inclusive governance tool for the State Commissioner in Karnataka to have sight of how development and welfare programmes and policies have been implemented by the relevant departments at the district level, and to what extent the quotas earmarked for persons with disabilities have been fulfilled.

Research as a function

One of the key functions of the State Commissioners is to undertake and promote research in the field of disability rights. This opens up opportunities for the State Commissioners to collaborate with United Nations entities which have a mandate to promote disability inclusion on the basis of the UN Disability Inclusion Strategy in undertaking research in areas such as disability inclusive social protection, disability inclusive care economy and the impact of climate change on persons with disabilities. The findings could pave the way for more inclusive policies and in advancing the rights of persons with disabilities in India.

SAURABH PANDEY
CSE
ENGINEERING MANAGEMENT
FROM BASICS TO UPSC MULTI AGENCY

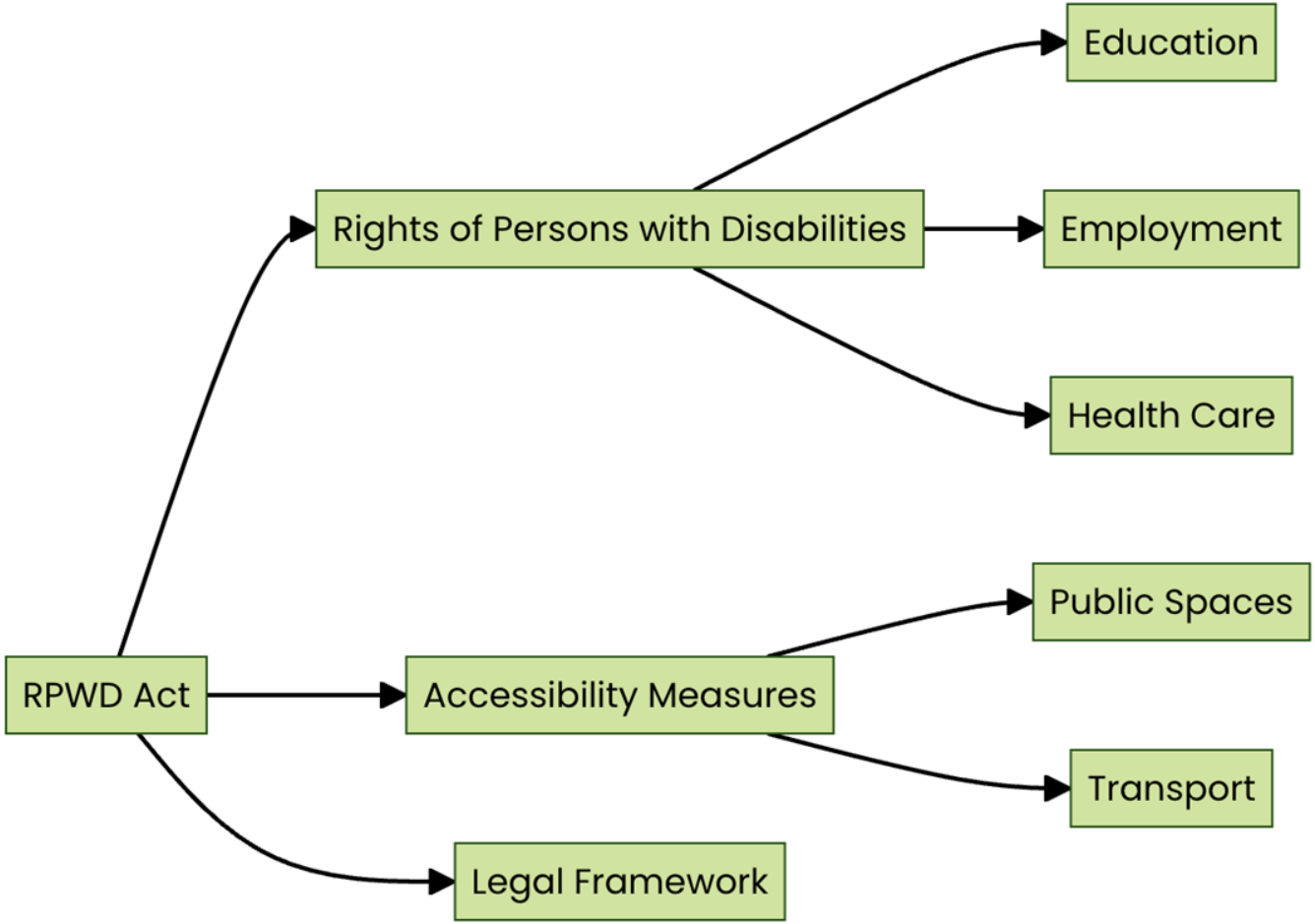
Topic → Rights of Persons with Disabilities act 2016

Rights of Persons with Disabilities Act 2016: A Comprehensive Guide

Title	Description
Rights of Persons with Disabilities Act 2016: A Comprehensive Guide	Explore the intricacies of the RPWD Act, its implications, and how it aims to empower individuals with disabilities in India. Understand the ongoing challenges and the path forward in ensuring equality and justice for persons with disabilities.

> The Rights of Persons with Disabilities Act, 2016 (RPWD Act) is a landmark legislation in India that seeks to enhance the rights and dignity of individuals with disabilities. This act not only aims to promote inclusivity but also lays down a robust legal framework to address the challenges faced by persons with disabilities in their daily lives.

Figure 1.1: Key Features of the RPWD Act:



Key Provisions of the RPWD Act

The RPWD Act encompasses a plethora of provisions designed to safeguard the rights of individuals with disabilities. Some of the key features include:

Definition of Disabilities: The act broadens the definition of disabilities, encompassing various conditions such as physical, intellectual, and mental disabilities.

Rights Guaranteed:

Right to education and employment.

Right to live independently and be included in the community.

Access to public spaces and transportation.

Implementation Challenges

Despite the ambitious goals of the RPWD Act, its implementation has been riddled with challenges:

- Lack of Awareness: Many individuals and organizations remain unaware of the rights conferred by the act.
- Inadequate Resources: Government bodies often lack the necessary resources to enforce the provisions effectively.
- Social Stigmas: Deep-rooted societal attitudes continue to impede the integration of individuals with disabilities into mainstream society.

Recent judicial interventions have shed light on these challenges, with the Supreme Court expressing displeasure over the "dismal" implementation of the RPWD Act.

Recent Developments and Judicial Interventions

In recent years, the judiciary has played a crucial role in upholding the rights of individuals with disabilities. Notable developments include:

- **Supreme Court Rulings:** The court has mandated stricter adherence to the RPWD Act and called for accountability from government bodies.
- **Public Interest Litigations:** Activists and organizations have filed litigations to address specific grievances faced by persons with disabilities.

Conclusion

The RPWD Act represents a significant step forward in the fight for disability rights in India. However, for its provisions to be effective, there must be a concerted effort from all sectors of society to ensure that individuals with disabilities can enjoy their rights and live with dignity

State Commissioners for Disabilities: An Overview

Key Responsibilities and Challenges

- State Commissioner Role: The RPWD Act establishes the office of State Commissioners for Disabilities, a unique feature among disability legislations in developing countries.

- ⚖️ Judicial Powers: Under Section 82 of the RPWD Act, State Commissioners are endowed with civil court powers for conducting inquiries and proceedings.

- 🔍 Monitoring and Review: Tasked with reviewing and monitoring the implementation of the RPWD Act to ensure compliance.

- 🕵️ Suo Motu Intervention: Empowered to intervene on their own initiative to investigate policies or laws that violate the RPWD Act.

📉 Challenges in Implementation: Numerous instances of contraventions reported by individuals with disabilities and organizations, indicating a failure in proactive interventions.

- Erosion of Trust: The inability to address discriminatory practices has led to a decline in public confidence in these statutory offices.

📜 Corrective Recommendations: Responsible for recommending corrective measures for identified violations of the RPWD Act.

Summary: The State Commissioners for Disabilities play a crucial role in enforcing the RPWD Act, but their effectiveness is undermined by challenges in intervention and public trust

Topic → One Nation, One Subscription: Transforming Access to Knowledge in India

Introduction

The One Nation, One Subscription (ONOS) scheme is a groundbreaking initiative designed to revolutionize access to knowledge across India. In a world where education and research are pivotal to progress, ONOS aims to democratize access to academic resources, ensuring that every educational institution, regardless of its size or location, can benefit from comprehensive research materials. 📚✨

What is the One Nation, One Subscription Scheme?

The ONOS scheme represents a paradigm shift in how educational institutions in India access journals, databases, and other research materials.

Definition and Objectives:

- Designed to create a unified subscription model for educational institutions.
- Aims to provide access to a plethora of academic resources through a single subscription fee.

How It Works:

- Institutions register under the ONOS program.
- They gain access to a centralized repository of research journals and publications without the burden of individual subscriptions.

Benefits of ONOS for Educational Institutions

The potential benefits of the ONOS scheme are vast, promising to enhance the academic landscape in India.

Enhanced Access to Research Materials:

Institutions can access high-quality research papers, journals, and e-books, which were previously restricted due to high subscription costs.

Improvement in Academic Performance and Research Quality:

Increased access to information fosters better research outcomes and academic performance among students and faculty alike.

Encourages collaborative research and knowledge-sharing across institutions.

Challenges and Criticisms of the ONOS Scheme

Despite its noble intentions, the ONOS scheme is not without its challenges.

Potential Drawbacks and Concerns:

- Some institutions fear that a centralized model could lead to a lack of diversity in available resources.
- Concerns about the sustainability of funding and support from the government.

Responses from Stakeholders:

- Educators and researchers have expressed mixed feelings, highlighting both the potential for enhanced access and the need for careful implementation.

Future Prospects of ONOS

Looking ahead, the ONOS scheme holds great promise for reshaping the educational framework in India.

Long-term Goals and Vision:

To establish India as a global leader in research and education by ensuring equitable access to knowledge.

How It Could Reshape the Educational Framework in India:

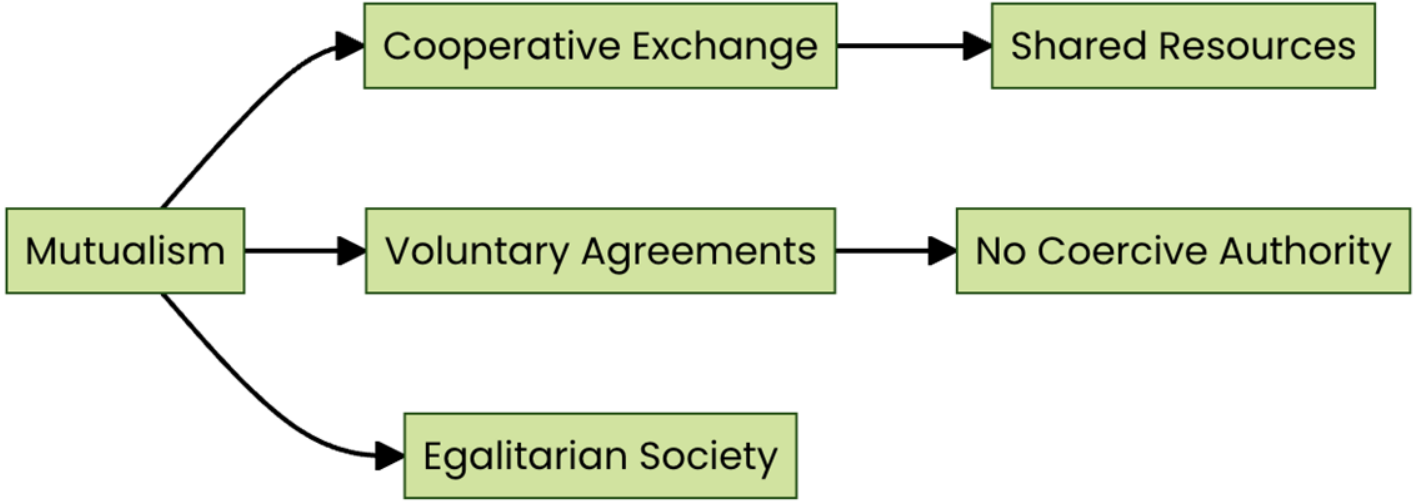
By fostering a culture of research and innovation, ONOS could significantly enhance India’s position in the global academic community.

Topic → Understanding Proudhon’s Mutualism

Proudhon’s concept of mutualism is not merely theoretical; it represents a radical shift in how we perceive economic relationships and societal structures.

Definition and Principles: Mutualism posits that individuals and groups can engage in cooperative exchanges without the need for coercive governmental authority. Proudhon envisioned a society where goods and services are traded based on mutual benefit, emphasizing voluntary cooperation over competition.

Historical Context: Emerging in the wake of the Industrial Revolution, Proudhon’s ideas were a response to the burgeoning capitalism that he believed fostered inequality and exploitation.


Mutualism
Cooperative Exchange
Shared Resources
Voluntary Agreements
No Coercive Authority
Egalitarian Society

Topic → Bond Yield Overview

📈 Definition

Bond yield refers to the return an investor can expect from a bond, expressed as a percentage of its face value.

💰 Types of Bond Yields

Current Yield: Calculated by dividing the bond's annual coupon payment by its current market price.
Yield to Maturity (YTM): Represents the total return anticipated on a bond if held until maturity, considering all coupon payments and the difference between purchase price and face value.
Yield to Call: The yield calculated assuming the bond will be called before it matures.

📊 Current Yield

Formula: Current Yield = (Annual Coupon Payment) / (Current Market Price)

□ Yield to Maturity (YTM)

Concept: Total return on a bond if held until maturity, factoring in all payments and price differences.

🔄 Market Influence

Factors: Interest rates, inflation, and the overall economic environment influence bond yields.

📉 Inverse Relationship

Bond Prices vs. Yields: As bond prices rise, yields fall, and vice versa.

🌍 Investment Indicator

Economic Health: Bond yields serve as indicators of economic health and investor sentiment.

Summary: Bond yield is the expected return on a bond, influenced by various factors and types, and serves as an economic indicator.

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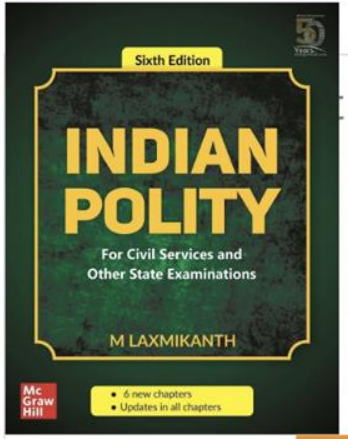

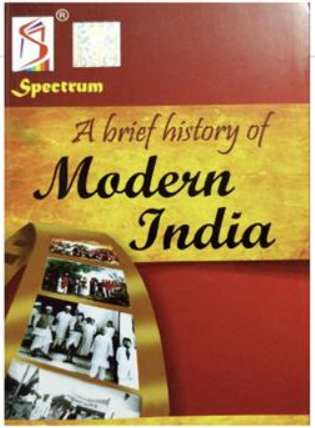

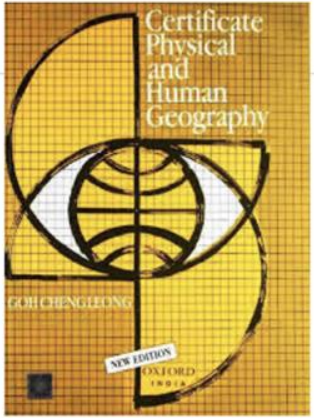

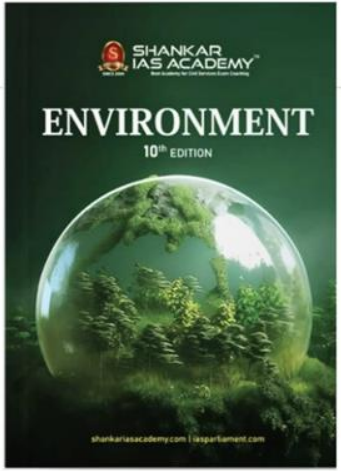

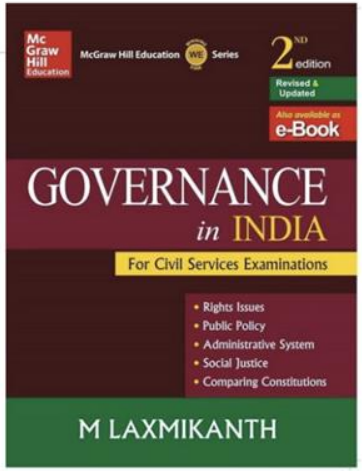

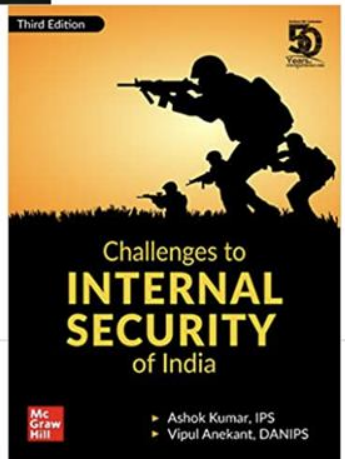

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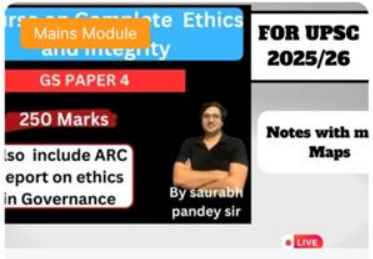

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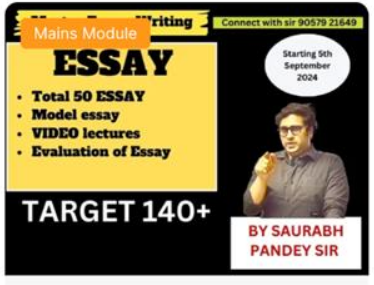

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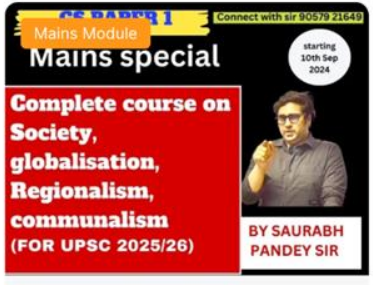

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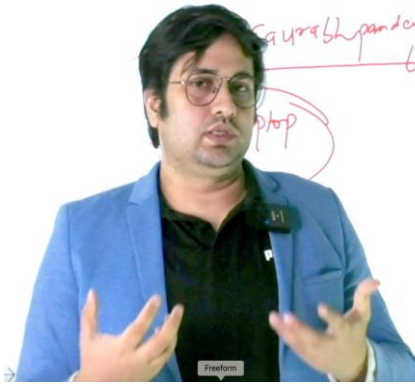
Topics - MINDS MAPS included (Daily current affairs 4th December 2024

- Gussadi dance.
- Introduction to Extrachromosomal DNA (ecDNA)
- Tropical Cyclone Dynamics
- The Daniel - Johnson Dam
- New Collective Quantified Goal (NCQG)- COP 29
- India’s Effort to tackle climate change
- The Places of Worship (Special Provisions) Act, 1991
- Pardon Power: A Historical and Contemporary Overview
- Oilfields (Regulation and Development) Amendment Bill
- MAINS



By saurabh Pandey

THE HINDU

Vibrant moves

Claiming success: Artistes from the Gond tribe perform the Gussadi dance during the 'Praja Palana Vijayotsava', to commemorate the completion of one year of the Congress government in Telangana on Tuesday. NAGARA GOPAL

Topic → Gussadi dance

The Gussadi dance is a folk dance that is a significant part of the cultural heritage of the Gond tribe, a Dravidian ethno-linguistic group in India:

Origin

The Gussadi dance is a part of the Dandari dance form and is traditionally performed during the Diwali festival. The Rajagond tribe of Adilabad district of Telangana perform the Gussadi dance.

🎉 The dance is performed in colorful attire, enhancing the visual appeal and cultural significance of the performance.

- Accompanied by traditional instruments, the music plays a crucial role in setting the rhythm and mood for the dance.

🌍 Gussadi Dance contributes to the preservation of local traditions and promotes cultural tourism in the region

ecDNA challenges law of genetics, groundbreaking new studies find

In normal human cells, the DNA is enclosed in 23 pairs of chromosomes. Some natural processes can damage DNA; cells can also make mistakes in DNA when making copies to imbue in new cells. Such processes could cause a small part of the DNA to break away and float freely inside the nucleus. This is ecDNA

Manjeera Gowravaram

Once brushed aside as a curiosity, extrachromosomal DNA (ecDNA) is now taking centerstage in the complex field of cancer biology. Scientists first discovered it as a small fragment of genetic material in cancer cells 50 years ago. Because it was present in only 1.4% of tumours, they didn't consider it to be important.

But more sophisticated genomic techniques later revealed their mistake: one study published in 2017 revealed ecDNA is present in nearly 40% of cancer cell lines and in up to 90% of patient-derived brain tumour samples, revealing its pivotal role in cancer biology.

On November 6, three papers were published in the journal *Nature* by a team called eDyNAmiC – an international collaboration led by Stanford University professor Paul Mischel. The studies explore how ecDNA is formed and contributes to the progression of cancer and drug resistance.

Importantly, the findings also challenge a fundamental law of genetics.

Rresearchers analysed samples from nearly 15,000 cancer patients from the U.K.'s 100,000 Genomes Projects. GETTY IMAGES/ISTOCKPHOTO

What is ecDNA?

In normal human cells, the nucleus contains 23 pairs of chromosomes that enclose the DNA. There are some natural processes that can damage DNA. For example, in chromothripsis, which occurs in some cancers, the chromosomes are broken and rearranged. Cells can also make mistakes in the DNA when making copies of it to imbue in new cells. Such processes could cause a small part of the DNA to break away from the main chromosome and form a circular structure that floats freely inside the nucleus. This is ecDNA.

One of the three studies was led by eDyNAmiC members Mariam Jamal-Hanjani and Charles Swanton, both professors at University College London. They analysed the mutation patterns in tumours before and after the formation of ecDNA. They identified various environmental factors, including smoking, exposure to certain substances, and genetic mutations, to be triggers of DNA damage that could lead to the formation of ecDNA. In the same study, the researchers attempted a comprehensive analysis of samples from nearly 15,000 cancer patients from the U.K.'s 100,000 Genomes Project, covering 39 tumour types. They validated their findings using a method called fluorescence in-situ hybridisation (or FISH), which specifically looks for certain cancer-related genes in tissue samples.

They found that ecDNA was present in about 17% of tumour samples but more so in liposarcomas, brain tumours, and breast cancers. They also reported that the prevalence of ecDNA rose after treatments like chemotherapy and correlated with metastasis and worse patient outcomes.

ecDNA and cancer growth

ecDNA present in tumours often contains multiple copies of oncogenes – mutated genes capable of causing cancer – that are required to activate tumour growth. But these oncogenes are not present in chromosomes, where scientists used to believe they lived.

A study published in 2021, led by another Stanford University professor, Howard Chang, showed that while chromosomal DNA is fixed within specific regions in the cell, ecDNA moves freely and can interact with other ecDNA to form hubs – concentrated zones where oncogenes are expressed more.

Cells transcribe DNA to mRNA to use the latter to manufacture proteins. The 2021 study also found that when cells transcribe ecDNA to mRNA, the process causes specific oncogenes to become four-times more common in the cell than if the DNA came from the chromosomes.

This anomaly has the potential to accelerate the evolution of tumours and help the cancer resist drugs.

An inheritance of loss

Another finding reported in the new studies involves a fundamental shift in scientists' understanding of genetics.

ecDNA was present in about 17% of tumour samples but more so in liposarcomas, brain tumours, and breast cancers. Prevalence of ecDNA rose after chemotherapy and correlated with metastasis and worse patient outcomes

Typically, when cells divide, they duplicate the chromosomes and distribute them equally among their daughter cells. In this process, researchers have known the genes on the same chromosome are inherited together while those on different chromosomes are distributed independently of one another. This basic genetic principle is called Mendel's third law of independent assortment (named after Gregor Mendel).

But in the second of the three studies, a team led by Mischel and Chang used single-cell sequencing, imaging, and modelling to report that ecDNA is passed on in clusters to the daughter cells during cell division – a violation of the third law. This clustering gives some cancer cells an advantage because it allows them to enhance gene interactions, support cancer growth, and preserve favourable genetic combinations over multiple life-cycles. The researchers have called this the "jackpot effect."

This discovery has profound implications. It overturns the idea that gene inheritance is entirely random when the genes are not linked by DNA strands. The researchers also reported that the transcription process – from DNA to RNA – facilitates the coordinated segregation of ecDNA during cell division.

A new vulnerability in cancer cells

But for the new threats posed by ecDNA, the third study uncovered a potential weakness in tumours that depend on ecDNA. The unusual structure of the ecDNA and its interactions with other DNA elements increase the activity of specific genes. This can lead to a conflict between the cellular machinery involved in making RNA and the activity of cancer cells that leads to DNA damage.

Cells respond to this conflict by the heavy use of a protein called CHK1, which helps fix DNA and allows the cell to keep growing. When the researchers used a drug called BBI-2779 that blocks CHK1, they found the drug selectively killed cancer cells with ecDNA, significantly reducing the number of tumours in mice with stomach cancer.

A San Diego-based biotechnology company co-founded by Mischel and Chang, called Boundless Bio, is currently working to translate these discoveries for clinical use. The company's stated aim is to give patients new treatment options that target vulnerabilities created by ecDNA. This is particularly crucial for patients with ecDNA-driven cancers, such as glioblastoma and ovarian and lung cancers, where current treatments often fall short.

(Manjeera Gowravaram has a PhD in RNA biochemistry and works as a freelance science writer. gmanjeera@gmail.com)

THE GIST

An international collaboration by a team called eDyNAmiCled has discovered how ecDNA contributes to the progression of cancer and drug resistance. The findings contradict Mendel's third law of independent assortment

eDyNAmiC members analysed mutations in tumours and identified environmental factors, including smoking, exposure to certain substances, and genetic mutations, to be triggers that could lead to the formation of ecDNA

ecDNA in tumours often contains copies of oncogenes that are required to activate tumour growth. But these are not present in chromosomes, where scientists used to believe they lived

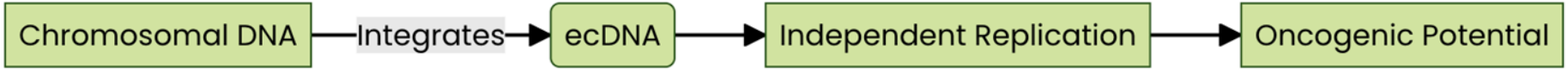
Researchers have found a drug called BBI-2779 that selectively kills cancer cells with ecDNA. A company is now working towards clinical use. This is crucial for patients with ecDNA-driven cancers, such as glioblastoma, ovarian, and lung cancers

Topic → Introduction to Extrachromosomal DNA (ecDNA)

Extrachromosomal DNA (ecDNA) represents a unique class of genetic material that exists outside the conventional chromosomal structures found in the nucleus. Its significance has surged to prominence in recent years, particularly in the context of cancer research.

- **Definition:** ecDNA comprises circular DNA molecules that are not integrated into the chromosomal DNA. This distinctive structure allows them to replicate independently.
- **Historical Perspective:** Once considered a mere curiosity, ecDNA is now recognized as a pivotal factor in tumorigenesis and drug resistance, altering the landscape of genetic research.

Figure 1.1: The Structure of ecDNA:



Statistical Overview of ecDNA:

Type of Cancer	Prevalence of ecDNA
Breast Cancer	30%
Lung Cancer	45%
Colorectal Cancer	25%

The Role of ecDNA in Cancer

The contributions of ecDNA to cancer are profound and multifaceted, reshaping our understanding of oncogenesis.

Mechanisms of Action: ecDNA can harbor oncogenes that drive tumor growth and proliferation. These circular DNA structures can amplify genetic material, leading to increased expression of cancer-promoting genes.

Impact on Cancer Progression: Studies indicate that the presence of ecDNA is linked with aggressive forms of cancer, contributing to increased metastasis and resistance to conventional therapies.

Recent Breakthroughs in ecDNA Research

Recent studies have unveiled groundbreaking insights into the role of ecDNA in cancer, challenging long-held beliefs about genetic stability and inheritance.

Pivotal Studies: Research conducted by Stanford University has demonstrated how ecDNA drives the evolution of cancer cells, enabling them to adapt to therapeutic pressures.

Implications for Future Research: The findings underscore the need for innovative approaches in cancer treatment, focusing on targeting ecDNA to disrupt its role in tumor progression.

Therapeutic Potential of Targeting ecDNA

The therapeutic landscape is evolving with the realization that targeting ecDNA could offer new avenues for cancer treatment.

Current Therapies: Initial studies suggest that therapies aimed at disrupting ecDNA replication may enhance the efficacy of existing treatments.

Challenges and Opportunities: Despite the promise, hurdles remain regarding the delivery of targeted therapies and the potential for off-target effects

Topic → Tropical Cyclone Dynamics

□ Tropical Cyclone Structure

A fully formed tropical cyclone exhibits a complex 3D structure, including an `eye` and an `eyewall`.

□ Eye of the Cyclone

The `eye` is the center of the cyclone, characterized by descending cold air and rising warm air in a spiral pattern.

🌪□ Eyewall Characteristics

The `eyewall` contains intense thunderstorms that produce rain, lightning, and powerful winds.

🌊 Moisture Supply

Cyclones draw moisture from water, aiding in cloud and rain generation; this supply diminishes when they move over land.

□ Definition of Landfall

Landfall occurs when the cyclone's eye moves over land, leading to stronger stormy weather and potential hazards.

⚠□ Impact of Landfall

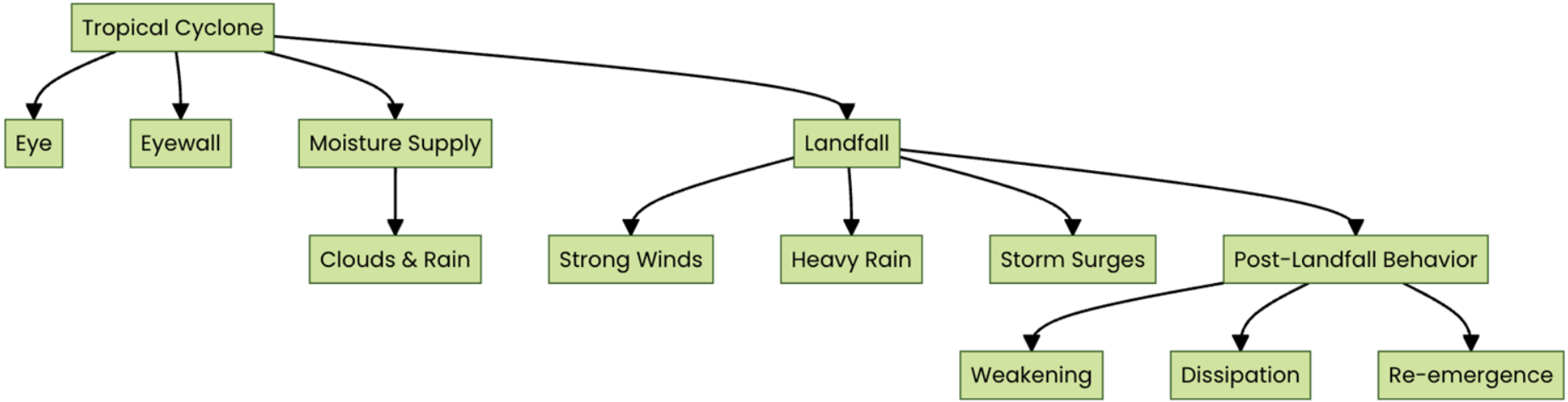
Landfall can be deadly due to strong winds, heavy rain, and storm surges that flood coastal areas.

🔄 Cyclone Behavior Post-Landfall

After landfall, a cyclone may weaken quickly, dissipate, or re-emerge on the other side of land, as seen with Cyclone Gulab and Cyclone Shaheen in 2021.

Summary: Landfall is a critical moment in a tropical cyclone's life, marked by the cyclone's eye moving over land, leading to potential hazards due to strong winds and heavy rain.

Cyclone Structure and Impact:



BIG SHOT

This aerial view shows a school bus atop the Daniel-Johnson Dam in Quebec, Canada, on July 26. Hydroelectricity production in Canada is plummeting as extreme weather linked to climate change, including sudden swings between drought and flood, has limited output and threatened the structures of the dams themselves. A world leader in hydropower, Canada has also been forced to cut exports to the U.S., which have reached their lowest levels in 14 years. AFP

Topic → The Daniel - Johnson Dam

□ Location: The Daniel-Johnson Dam is situated in Quebec, Canada.

⚡ Purpose: It serves primarily for hydroelectric power generation.

🌊 Structure: The dam is a large concrete structure that creates a reservoir.

□ Construction: It was completed in 1968 and is one of the largest dams in the world.

🌍 Environmental Impact: The dam has significant effects on local ecosystems and water management.

🚤 Recreation: The reservoir created by the dam is used for recreational activities such as boating and fishing.

💡 Capacity: The dam has a substantial power generation capacity, contributing to the region's electricity supply.

Summary: The Daniel-Johnson Dam in Quebec is a major hydroelectric facility completed in 1968, known for its large structure and significant environmental impact

Topic → New Collective Quantified Goal (NCQG)- COP 29

Key Points of the New Collective Quantified Goal (NCQG)

🌍 Adoption at COP29: The NCQG was officially adopted under the UNFCCC framework.

💰 Minimum Financing Target: Aims for a core financing goal of $300 billion per year by 2035.

📈 Additional Funding Goal: Seeks to raise up to $1.3 trillion per year by 2035, mainly from private sector contributions.

🌱 Focus on Developing Nations: Prioritizes channeling funds to meet the needs and priorities of developing countries.

🔄 Mixed Financing Sources: Encourages financial contributions from both public and private sectors.

📅 Vision for 2035: Establishes a long-term goal to be achieved by 2035, highlighting a forward-looking approach.

🌍 Global Effort: Represents a collective global initiative to tackle climate finance challenges.

Summary: The NCQG is a strategic climate finance initiative targeting $300 billion in core financing and up to $1.3 trillion in additional funding by 2035, with a focus on aiding developing countries.

the developed world has in the NCQG agreed to provide an abysmal Figure of $300 billion annually till 2035. This quantum is not only miniscule but hardly represents any major change in real flows — probably a target that could be achieved even with current or minimally additional efforts, if we account for inflation. Further, the mobilisation of funds is expected through all sources of finance including private capital.

India and the Outcome of COP29 in Baku: A Comprehensive Analysis

Introduction

The COP29 summit held in Baku has emerged as a significant event on the global climate change agenda. This year's discussions have spotlighted India's pivotal role in shaping climate policy, alongside the commitments made to combat climate change. As nations rallied to address the pressing environmental challenges, India stood at the crossroads of opportunity and obligation.

Why is COP29 important?

COP29 provided a platform for nations to collaboratively tackle climate change, with particular emphasis on financing, adaptation, and mitigation strategies.

India's strategic position:

As one of the largest developing nations, India's input and response to the outcomes of COP29 carry substantial weight.

Key Outcomes of COP29

The Baku summit yielded several landmark agreements aimed at enhancing global climate efforts.

$300 billion annual climate finance deal:

A commitment from developed nations to provide $300 billion annually to support climate initiatives in developing countries.

Enhanced transparency and accountability measures:

New protocols were established to ensure countries are held accountable for their emissions reductions and climate actions.

Focus on loss and damage:

The discussions included provisions for addressing loss and damage caused by climate impacts, a critical issue for vulnerable nations.

Strengthening adaptation efforts:

Emphasis was placed on enhancing adaptive capacity for nations most affected by climate change.

The agreements reached could serve as a foundation for more ambitious climate actions moving forward

India’s Response to COP29 Outcomes

India's response to the agreements has been a blend of optimism and caution.

Official statements:

Indian representatives voiced the need for developed nations to fulfill their financial commitments, emphasizing that $300 billion is merely a starting point, not a solution.

Concerns about equity:

India highlighted the importance of equity in climate financing, advocating for a fair distribution of resources to support developing countries.

Advocacy for climate justice:

India has been vocal about climate justice, arguing that the historical emissions of developed countries necessitate greater responsibility in financing and support

Reactions from Other Stakeholders

The outcomes of COP29 have elicited varied reactions from different stakeholders, shaping the narrative of global climate politics.

Developed countries:

While some developed nations welcomed the agreements, others faced criticism for not committing enough resources, leading to a perceived lack of sincerity in addressing climate change.

Civil society:

Environmental groups expressed skepticism, labeling the $300 billion deal as insufficient, arguing it falls short of what is needed to effectively combat climate change.

Coalition of developing nations:

Many developing nations echoed India’s sentiments, stressing the need for more robust commitments from wealthier nations

Future Implications of COP29 for India and the World

The agreements reached at COP29 have significant implications for both India and the global community.

Impact on India's climate policies:

The outcomes may influence India's future climate strategies, especially regarding renewable energy and sustainable development initiatives.

Global climate action:

The success of the Baku agreements could set a precedent for future climate negotiations, emphasizing the necessity for cooperation and shared responsibility.

Need for continuous dialogue:

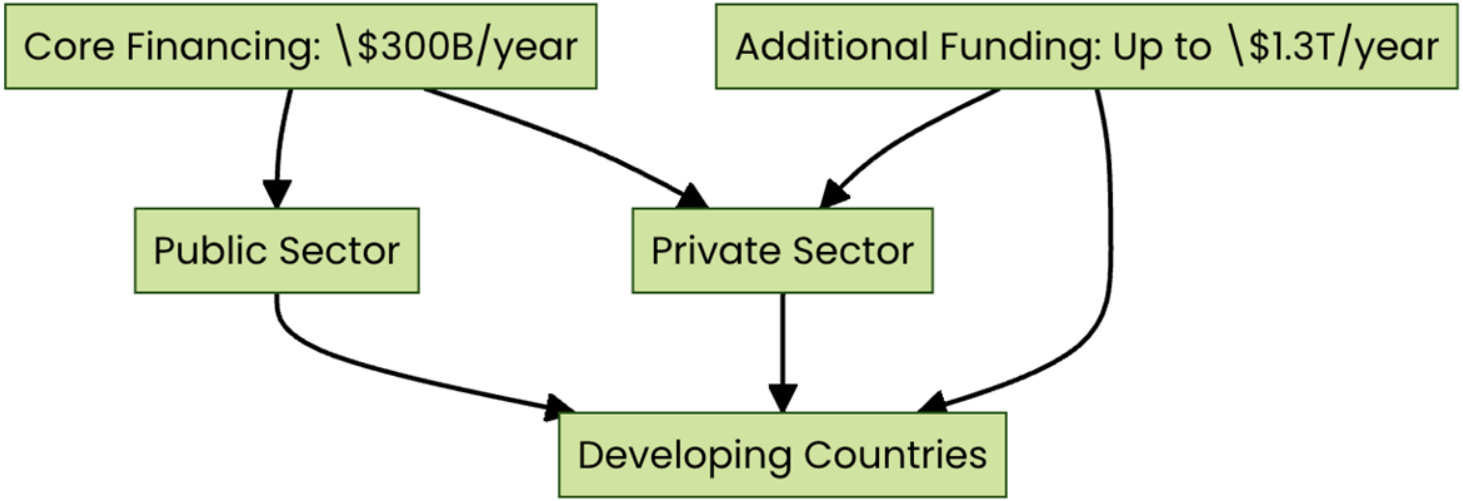
Ongoing discussions and partnerships will be crucial for addressing the complexities of climate change and ensuring that all nations can meet their commitments.

Conclusion

The outcomes of COP29 in Baku represent a critical juncture in global climate discourse. India's active involvement not only underscores its commitment to addressing climate change but also highlights the need for equitable and just solutions.

As nations move forward, the agreements made at COP29 can serve as a springboard for more ambitious actions that prioritize sustainability and resilience in the face of climate challenges

Funding Structure Overview:



Topic → India’s Effort to tackle climate change

IN India's National Focus

National and Sub-national Actions: Prioritizing domestic efforts.
Limited International Finance: Expectation of minimal external funding

☀️ PM Surya Ghar Muft Bijli Yojana

Subsidies for Solar Panels: Encouraging rooftop solar installations.
Dual Benefits: Addresses energy poverty and promotes clean energy

🚗 PM E-DRIVE Initiative

Zero-emission Vehicles: Promotes adoption through subsidies.
Infrastructure Support: Enhances cleaner transportation system

📈 Perform, Achieve, and Trade (PAT) Scheme

Energy Efficiency: Mobilizes investments for industrial improvements.
Transition to Carbon Market: Evolving towards a national carbon market

🌾 State Action Plans on Climate Change

Adaptation Strategies: Tailored for agriculture, forestry, and disaster risk.
Specific Vulnerabilities: Focus on regional challenges

🔄 Sustained Efforts Needed

Emissions Mitigation: Ongoing focus on reducing emissions.
Resilient Infrastructure: Building robust systems for future challenges.
Effective Heat Action Plans: Essential for continued progress.

The salience of the Places of Worship Act

Why was there communal violence in Sambhal, Uttar Pradesh? What were Justice Chandrachud's remarks in the Gyanvapi case in 2022 and why did it spark political controversy? What does the Places of Worship (Special Provisions) Act, 1991 stipulate?

EXPLAINER

Aaratrika Bhaumik

The story so far:

A suit filed against the Shahi Jama Masjid in Sambhal district, Uttar Pradesh, in which the trial court issued an ex-parte order permitting a survey of the mosque, triggered violence on November 24, resulting in the death of four persons. The petitioners have alleged that the 16th-century mosque was built at the site of an ancient Hari Har Mandir which was purportedly demolished by Mughal ruler Babur in 1529. The incident is part of a pernicious trend of local courts in States like Rajasthan and Uttar Pradesh entertaining civil suits contesting the origins of mosques across the country. Experts have however flagged that such suits constitute a violation of the Places of Worship (Special Provisions) Act, 1991.

What does the 1991 Act stipulate?

The 1991 Act was introduced by the Congress government under Prime Minister P.V. Narasimha Rao amid the communal turmoil that followed the demolition of the Babri Masjid in Ayodhya in 1992. Then Home Minister S.B. Chavan stated that the "enactment of this Bill will go a long way in helping restore communal amity and goodwill."

The law preserves the character of a place of worship as it existed on August 15, 1947, and prohibits courts from examining whether any place of worship has been altered since that date. Section 3 of the Act forbids the conversion – either in whole or in part – of a place of worship from one religious denomination to another, or even within different sects of the same religion. However, the Ram Janmabhoomi dispute in Ayodhya was explicitly exempted from the Act's purview, as the matter was already sub judice when the law was enacted.

A five-judge Constitution Bench in the 2019 Ayodhya title suit affirmed that the law was designed to protect the nation's secular fabric and imposes a positive obligation on the State to preserve the religious character of all places of worship as they stood on the day India attained independence. Although the disputed site was awarded to the child deity Ram Lalla, the top court barred the institution of similar suits concerning other religious places, in accordance with the provisions of the 1991 Act.

Tense times: The main gate of the mosque at Sambhal in Uttar Pradesh on November 27. R.V. MOORTHY

Why has it been challenged?

A slew of petitions have been filed in the apex court challenging the constitutionality of the law, including one by BJP leader and advocate Ashwini Kumar Upadhyay. The petitioners argue that by freezing the status of religious sites as they stood in 1947, the law effectively prevents Hindus from "reclaiming" their places of worship that were allegedly "invaded" by Muslim rulers and British colonialists. They further point out that destroyed temples retain their original character under Hindu personal laws and cannot be considered valid mosques under Islamic law without the establishment of a waqf.

In September 2022, a Bench led by then Chief Justice of India (CJI) U.U. Lalit directed the government to file a response on its stand within two weeks. However, two years later, the Centre has still not submitted its affidavit.

Noted academician Prof. (Dr.) Faizan Mustafa told *The Hindu* that the inordinate delay in hearing the challenge has emboldened lower courts to disregard the provisions of the 1991 law. "An authoritative pronouncement from the top court is crucial to preserving the country's social fabric. The government is duty-bound to defend the constitutionality of parliamentary laws. Similarly, the court must expedite the hearing of the challenge with a presumption in favour of the Act's constitutionality. A heavy burden lies on the petitioners to prove its unconstitutionality," he said.

Why did Justice Chandrachud's remarks stir political row now?

In August 2021, five women associated with the Vishwa Vedic Sanatan Sangh filed a petition in a Varanasi civil court seeking year-round access to pray at a shrine located behind the western wall of the Gyanvapi mosque complex. They claimed the mosque housed several Hindu deities. On April 8, 2022, a Varanasi civil judge appointed an Advocate Commissioner to conduct a videographic survey to ascertain the alleged existence of these idols. The mosque committee challenged the order citing the 1991 Act. However, the High Court and later the Supreme Court refused to halt the survey.

In May 2022, during a hearing on the maintainability of the suit, Justice D.Y. Chandrachud remarked that the 1991 Act does not preclude inquiries into the status of a place of worship as of August 15, 1947, provided there is no intent to alter or convert its character. This interpretation marked a stark departure from the stance taken in the Ayodhya verdict, also purportedly authored by the former CJI. It also broadened the scope for district courts to entertain a host of similar petitions. This oral remark has also recently sparked a political storm, with Congress leader Jairam Ramesh claiming that it has since opened a Pandora's box.

"Oral observations hold no binding authority as they are not formally recorded in the order. The legislative intent of the 1993 Act could not have been any clearer – it explicitly bars even the admission of such suits. Such claims may only be considered if, on August 15, 1947, the site was unquestionably used by multiple religious communities, for instance, as both a temple and a mosque," explained Dr. Mustafa.

THE GIST

- The 1991 Act preserves the character of a place of worship as it existed on August 15, 1947, and prohibits courts from examining whether any place of worship has been altered since that date.
- A slew of petitions have been filed in the apex court challenging the constitutionality of the law. The petitioners argue that by freezing the status of religious sites as they stood in 1947, the law effectively prevents Hindus from "reclaiming" their places of worship that were allegedly "invaded" by Muslim rulers and British colonialists.
- The Supreme Court is yet to decide the preliminary issue raised in several of these suits — whether the 1991 Act bars even the filing of pleas questioning the "original" status of a religious site or just the final alteration of its nature of worship.

Topic → The Places of Worship (Special Provisions) Act, 1991

Introduction

The Places of Worship (Special Provisions) Act, 1991, represents a pivotal piece of legislation in India aimed at preserving the sanctity of religious sites amidst India's complex socio-religious landscape.

- Aims to maintain communal harmony by preventing the conversion of places of worship.
- Upholds the status of these sites as they existed on August 15, 1947.

Historical Context

The act was born out of the necessity to quell the rising tide of religious conflicts and disputes over sites of worship.

- Historical grievances have often resulted in communal strife.
- The act seeks to establish a legal framework for the protection of religious sites.

Key Provisions of the Act

This act comprises several essential provisions designed to safeguard places of worship from being altered or converted.

- **Prohibition of Conversion:** No conversion of any place of worship is permitted after the specified date.
- **Status Quo:** The act mandates that all places of worship must remain in the same condition as they were on August 15, 1947.

Contemporary Relevance

Recent discussions have revived attention on the act, with various stakeholders expressing their views.

- **Political Reactions:** Political parties like the Congress stress the importance of implementing the act faithfully.
- **Judicial Concerns:** Recent Supreme Court observations have stirred debates about the act's interpretation and its implications for religious harmony.

Implications for Secularism in India

The act plays a crucial role in shaping India's secular identity by balancing religious rights with communal harmony.

- **Debates:** Ongoing discussions about the act's future highlight its significance in the secular framework.
- **Challenges:** The act faces challenges from various factions seeking to reinterpret its provisions.

Topic → Pardon Power: A Historical and Contemporary Overview

👑 The British monarch holds a historic prerogative of mercy, traditionally used to alter death sentences.

🇺🇸 The U.S. President is empowered by the Constitution to grant pardons for federal offenses, with the exception of impeachment cases.

⚖️ A presidential pardon offers relief from punishment but does not expunge the conviction record.

🔥 The power of pardon has been a source of controversy throughout history, with significant cases involving presidents from George Washington to Bill Clinton and Donald Trump.

⚖️ Recently, President Joe Biden pardoned his son, Hunter Biden, for tax and gun offenses, despite previous promises not to do so.

📜 Hunter Biden was convicted of illegally purchasing a gun and pleaded guilty to tax evasion, with the pardon justified by claims of unfair prosecution.

🔄 The pardon power continues to be a contentious issue, highlighting political and personal implications within the U.S. justice system.

Implications and Controversies

Political Implications: The use of pardon power often reflects political motivations and can influence public perception.

Legal and Personal Impact: While a pardon relieves punishment, it does not erase the conviction, affecting the individual's legal record and personal life.

Indian Pardoning Powers: An Overview

🇮🇳 The Indian system allows the President and Governor to grant pardons under Articles 72 and 161 of the Constitution.

⚖️ These powers include granting pardon, commutation, remission, respite, or reprieve to convicts.

 The exercise of these powers is based on the advice of the council of ministers.

⊘ A pardon absolves the offender from conviction, punishment, and associated disqualifications.

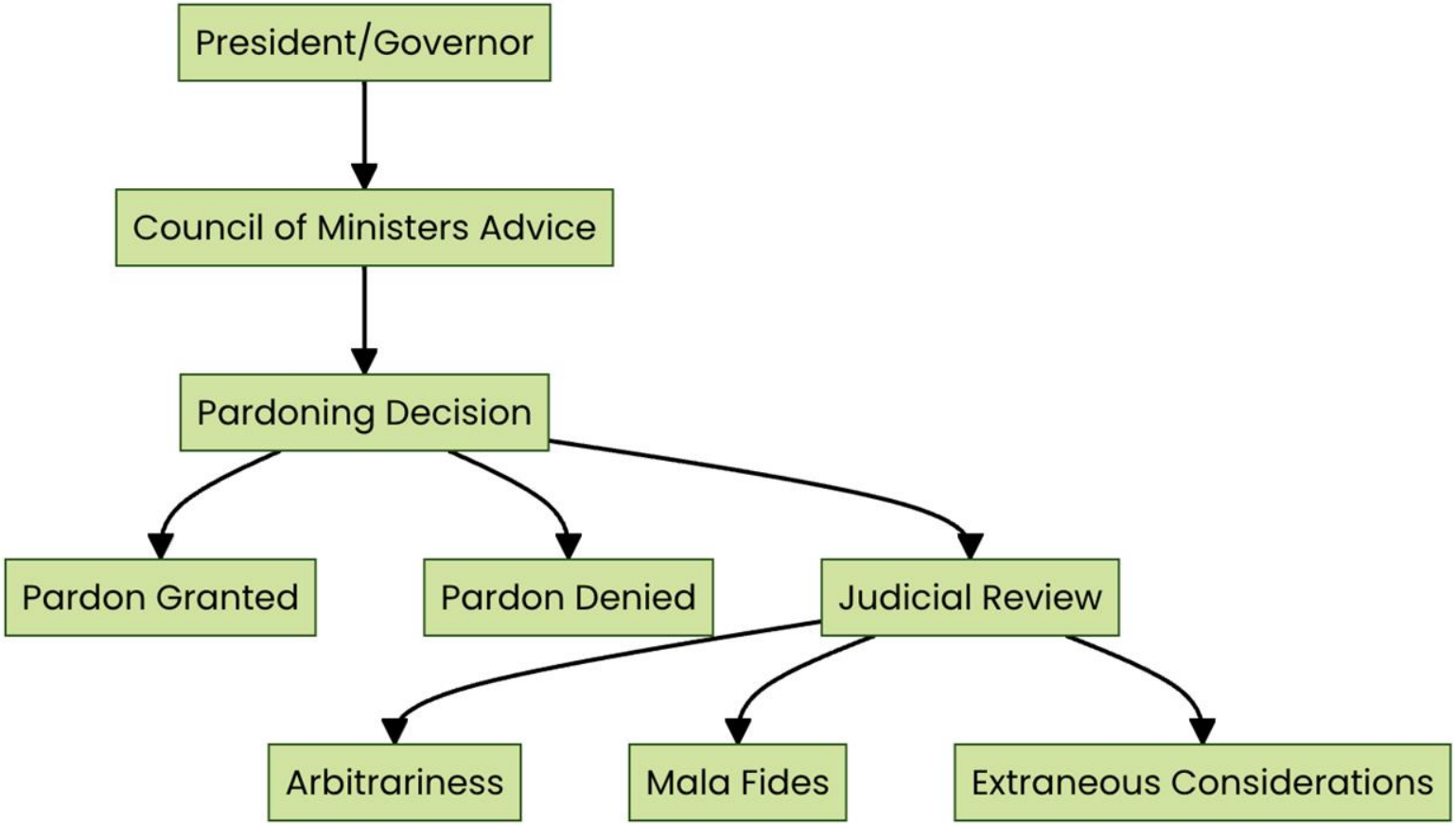
 Political controversies often arise from the acceptance, rejection, or delay of mercy petitions by ruling governments.

📜 The Supreme Court ruled in the Epuru Sudhakar case (2006) that the pardoning power is subject to judicial review.

⚠️ Judicial review can be invoked on grounds of arbitrariness, mala fides, or extraneous considerations.

Summary: The Indian system grants the President and Governor the power to pardon convicts, subject to political and judicial scrutiny

Pardoning Power Process:



`IndianConstitution` `PardoningPower` `JudicialReview` `PoliticalControversy` `SupremeCourt`

Topic → Oilfields (Regulation and Development) Amendment Bill

Introduction

The Oilfields (Regulation and Development) Amendment Bill, 2024 marks a pivotal shift in India's energy landscape. With a focus on bolstering exploration and development of oil and gas resources, this bill aims to transform the regulatory environment, ensuring a more robust framework for the petroleum industry.

As India seeks to enhance its self-sufficiency in energy production, the implications of these amendments cannot be overstated.

Objectives of the Amendment

The primary goals of the Oilfields Bill revolve around:

- **Enhancing Exploration:** Streamlining regulations to encourage increased investment in oil exploration.
- **Delinking Operations:** Separating petroleum operations from mining, simplifying the regulatory process.
- **Boosting Investments**: Creating a more inviting atmosphere for investors by reducing bureaucratic hurdles.

Key Changes Implemented

Key modifications introduced by the amendment include:

- **Simplified Licensing Process:** A more straightforward licensing procedure to facilitate quicker approvals.
- **Decreased Compliance Burden**: Reduced regulatory compliance requirements to foster innovation and efficiency.
- **Promotion of Sustainable Practices**: Encouraging environmentally friendly practices within the oil sector.

Impact on Exploration and the Industry

The repercussions of the amendment on oil exploration and the petroleum industry are profound:

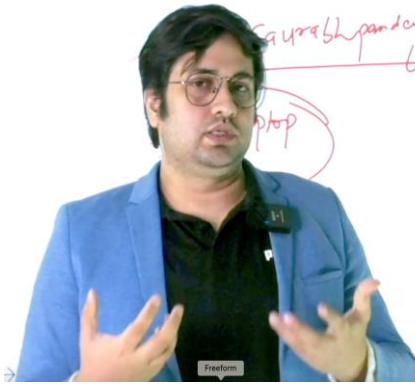
Increased Investment Opportunities: The bill is expected to attract both domestic and foreign investments, invigorating the sector.

Technological Advancements: With reduced regulations, companies can adopt new technologies more readily, enhancing exploration efforts.

Job Creation: The growth in exploration and production activities will likely lead to job creation within the sector.

Topics - MINDS MAPS included (Daily current affairs 5th December 2024

- Why Earthquake in Telangana ??
- Google Safety Engineering Centre in Hyderabad
- Ashtamudi Lake: A Biodiverse Haven in Kerala
- PROBA -3 Mission
- Frog Species Overview
- India - Nigeria
- MAINS



By saurabh Pandey

THE HINDU

Topic -- Why Earthquake in Telangana ??

- **5.3 magnitude quake, which was attributed to the Godavari fault zone, aftershocks are possible for a few days, but there is no need to panic. The fault zone is the surface where two blocks of the earth suddenly slip past one another, causing an earthquake.**
- **The location below the earth's surface where the earthquake starts is called the hypocentre, and the location directly above it on the surface of the earth is called the epicentre.**

Godavari basin, which has many geological faults and falls and has experienced minor to moderate earthquakes in the past.

The course of the river today may not be the same as it was a few hundred years ago. River courses change and as they change they leave their mark on the earth structure. Hidden courses of the past, faults can be anywhere, extending to several km on both sides of a river."

He also highlighted that the grinding of the Indian plate into the Eurasian plate does not result in quakes just in the north, along the Himalayas, but the stress of this tectonic movement also builds in the rest of the Indian plate. Sometimes these stresses may manifest as quakes and are called intraplate quakes.

Tectonic movement

- The surface of the earth, both visible and underwater, is comprised of several ‘plates’ – very large chunks of the planet’s surface that move extremely slowly. India, as a country sits on one such plate, the Indian Plate, which is moving northwards and pushing into the Eurasian Plate.
- This movement is what created the Himalayan mountain range.
- Though most of the stress along the line of collision between these two plates results in strong to severe earthquakes along this fault line, the stress from the grinding can build up extremely slowly in other parts of the Indian plate along various other geological faults which too come under stress and strain.
- Their ‘adjustments’ can result in quakes.

Topic → Google Safety Engineering Centre in Hyderabad

Overview

🏢 Google's Initiative: Hyderabad chosen for the first Google Safety Engineering Centre (GSEC) in India.

🤝 Strategic Partnership: Collaboration with the Telangana government to support GSEC's establishment.

🌏 Regional Significance: First GSEC in the Asia-Pacific, joining centers in Tokyo, Dublin, Munich, and Malaga.

Objectives and Impact

🔒 Focus Areas: Advanced cybersecurity research, AI-driven security solutions, and expert collaboration.

📈 Economic and Skill Development: Aims to enhance skills, boost employment, and improve cybersecurity in India.

🌟 Transformation Potential: Expected to attract top safety engineers and foster academic collaborations in Hyderabad.

Topic → Ashtamudi Lake: A Biodiverse Haven in Kerala

Overview

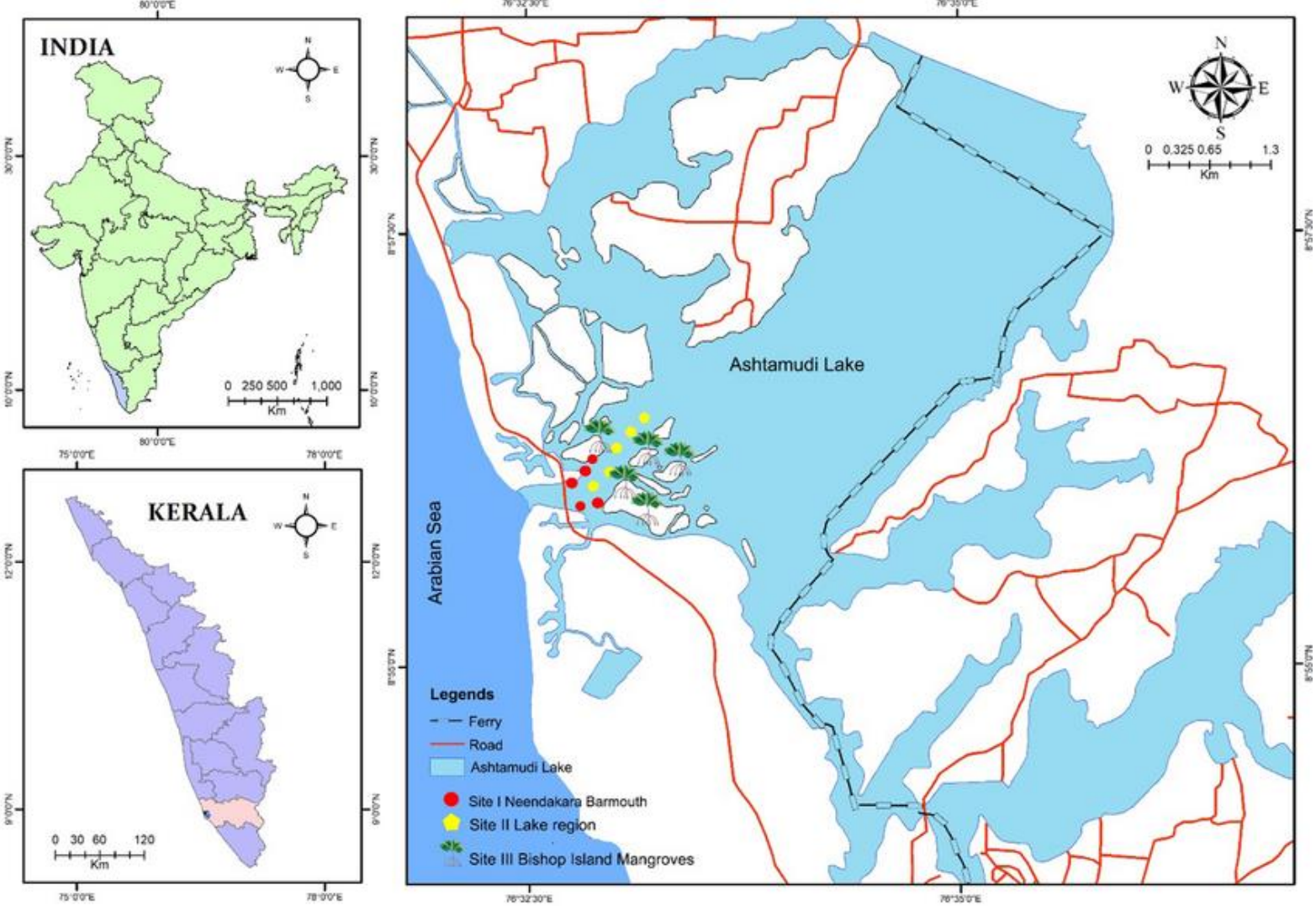
🌊 Ashtamudi Lake is a large, palm-shaped lake located in the Kollam district of Kerala, India.

□ Known for its rich biodiversity, it hosts various species of fish, birds, and aquatic plants.

🚣♂□ A popular destination for houseboat tourism and backwater cruises.

🌅 Part of the larger Ashtamudi Wetland, recognized as a Ramsar site for its ecological significance.

□ Plays a crucial role in the local economy, supporting fishing and agriculture.


INDIA
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Arabian Sea
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Legends
Ferry
Road
Ashtamudi Lake
Site I Neendakara Barmouth
Site II Lake region
Site III Bishop Island Mangroves

Economic and Ecological Significance

Economic Role: Supports local fishing and agriculture, vital for the surrounding communities.

Ecological Importance: Recognized as a Ramsar site, highlighting its global ecological value.

Tourism and Culture

Tourism: Offers houseboat tours and backwater cruises, drawing tourists worldwide.

Cultural Impact: Integral to the lifestyle and economy of local villages

Topic - PROBA -3 Mission

The Indian Space Research Organisation (ISRO) is set to launch the European Space Agency's (ESA) Proba-3 mission, an ambitious space venture aimed at studying the Sun's corona.

🚀 Mission Overview: PROBA-3 is a European Space Agency (ESA) mission designed to demonstrate formation flying technology in space.

🌌 Objective: The primary goal is to study the Sun and its impact on the Earth's environment through solar observations.

□ Satellite Configuration: The mission consists of two satellites that will fly in formation, separated by a distance of approximately 150 meters.

🔭 Instruments: PROBA-3 will carry advanced instruments for solar imaging and measurements, enhancing our understanding of solar phenomena.

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🌍 Significance: This mission aims to improve space weather forecasting and contribute to the sa of satellite operations and communications on Earth.

 Technology Demonstration: It will showcase innovative technologies for autonomous formation flying, which could be applied in future space missions

- The Proba-3 mission features two spacecraft, the Coronagraph and Occulter, which will fly in close formation, maintaining just 150 meters of distance between them.
- The Occulter will block the Sun's disk, enabling the Coronagraph to study the Sun's faint corona.
- The Occulter spacecraft weighs around 240 kg, while the Coronagraph weighs about 310 kg.
- The satellites will follow an orbital period of 19.7 hours, reaching an apogee (farthest point) of 60,530 km and a perigee (closest point) of 600 km from Earth.

Topic → Frog Species Overview

- The burrowing frog is scientifically known as `Minervarya cepi`.
- The Goan Fejervarya is referred to as `Minervarya gomantaki`.
- Both species are part of the `Minervarya` genus.
- These frogs are notable for their burrowing behavior.
- They are native to specific regions, likely including Goa.
- The classification indicates they belong to the family `Dicroglossidae`.
- Their ecological roles and conservation status may be of interest.

Summary: The text mentions two frog species, the burrowing frog (`Minervarya cepi`) and the Goan Fejervarya (`Minervarya gomantaki`), both belonging to the `Minervarya` genus

Tunisia
Marocco
Algeria
Libya
Egypt
Western Sahara
Mauritania
Mali
Niger
Chad
Sudan
Eritrea
Djibouti
Somalia
Ethiopia
Senegal
Gambia
Guinea Bissau
Guinea
Burkina Faso
Nigeria
Cote D'Ivoire
Ghana
Sierra Leone
Liberia
Togo
Benin
Cameroon
Central African Republic
Equatorial Guinea
Gabon
Congo
Democratic Republic of The Congo
Uganda
Kenya
Rwanda
Burundi
Tanzania
Angola
Zambia
Mozambique
Madagascar
Namibia
Zimbabwe
Botswana
Malawi
Swaziland
South Africa
Lesotho

Topic → India - Nigeria

IN **Modi's Visit to Nigeria**: Prime Minister Narendra Modi made a strategic stop in Nigeria on his way to the G-20 Summit, marking his first African visit in his third term and the first by an Indian PM to Nigeria in 17 years.

- **National Honor:** Modi was awarded Nigeria's second-highest national honor, the Grand Commander of the Order of the Niger, becoming only the second foreign dignitary to receive this distinction since 1969.

🌍 **India-Nigeria Relations:** Nigeria is the largest economy and democracy in Africa, playing a significant role in the African Union and regional stability, making the strengthening of ties with India crucial.

🔒 **Security Cooperation:** Modi emphasized the importance of cooperation on security issues, including counterterrorism efforts against groups like Boko Haram and potential arms purchases from India.

💼 **Strategic Partnership Areas:** Discussions with President Tinubu focused on enhancing collaboration in defense, energy, technology, trade, health, and education.

💰 **Developmental Assistance:** India has provided Nigeria with $100 million in concessional loans and capacity-building training programs, reinforcing its role as a development partner.

□ **Emerging Defense Supplier:** India is becoming a key defense supplier to Africa, with previous sales to countries like Egypt, Algeria, and Morocco, indicating a growing defense relationship

China -Nigeria

🇨🇳 **Chinese Presence:** Nigeria hosts over 200 Chinese companies, making it China's largest export mar and second-largest trading partner in Africa.

💰 **Investment in Infrastructure:** China has invested over $47 billion in 22 major infrastructure projects in Nigeria, including the Lekki Deep Sea Port, which is expected to create over 170,000 jobs.

📊 **Debt Relations:** As of March 31, 2020, Chinese loans to Nigeria amounted to $3.121 billion, representing 11.28% of Nigeria's total external debt of $27.67 billion.

📶 **Technology and Training:** Huawei has trained 2,000 Nigerian youths and 1,000 civil servants in cybersecurity and has deployed extensive telecommunications infrastructure in Nigeria.

⚒️ **Mining Sector Involvement:** China is involved in Nigeria's mining sector, with plans for the first lithium-processing plant aimed at battery production for electric vehicles.

🌍 **India-Nigeria Relations:** Despite China's growing influence, India remains a key partner, although trade has declined significantly from $14.95 billion in 2021-22 to $7.89 billion in 2023-24.

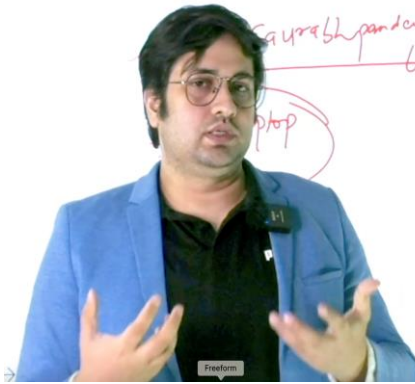
- **Bilateral Cooperation:** Enhanced cooperation between India and Nigeria is essential for both nations as leaders of the Global South, requiring sustained efforts to achieve tangible outcomes.

Summary: Nigeria's relationship with China is marked by significant investments in infrastructure and technology, while India remains a crucial partner despite declining trade

EVERYTHING IN ONE COURSE !!

Topics - MINDS MAPS included (Daily current affairs 6th December 2024

- Pulicat lake and flamingos
- Gelephu
- INDIAN PM VISIT TO THREE COUNTRIES
- Syrian Conflict Overview
- Nepal's Belt and Road Initiative Cooperation with China
- MAINS



By saurabh Pandey

THE HINDU

Winged visitors

Flamingos are back at the Pulicat Lake near Sriharikota in Andhra Pradesh. With the onset of northeast monsoon, the lake is brimming, attracting flocks of migratory birds. PTI

Topic → Pulicat Lake

🌊 Pulicat Lake is a brackish water lagoon located on the Coromandel Coast of India.

 It is the second largest lagoon in India, spanning approximately 460 square kilometers.

Pulicat lake is the second-largest brackish water lake in India located in the state of Andhra Pradesh after Chilika lake. It extends from the extreme southeastern portion of Andhra Pradesh to the adjacent portion of Tamil Nadu state.

🕊 The lake is home to a diverse range of flora and fauna, including migratory birds, making it a significant ecological site.

🔭 Pulicat Lake is a popular destination for birdwatching and eco-tourism activities.

🌿 The region surrounding the lake supports various fishing and agricultural communities.

 Pulicat Lake is part of the Pulicat Lake Bird Sanctuary, which aims to protect its unique biodiversity

About Flamingos

There are five species of flamingos divided into three genera:

- ***Phoenicopterus ruber*** is divided into two distinct and geographically separated subspecies: *P.r. ruber* and *P.r. roseus*. Some scientists classify these as two separate species.
    - ***P.r. ruber*****,** the Caribbean flamingo, is slightly smaller than P.r. roseus.
    - ***P.r. roseus*****,** the greater flamingo, is the largest of the flamingos and has deep pink wings.
- ***Phoenicopterus chilensis***, the Chilean flamingo. Chilean flamingos are slightly smaller than Caribbean flamingos and have gray legs with pink bands at the joints.
- ***Phoenicopterus minor*****,** the lesser flamingo. (Still sometimes listed in the genus Phoeniconaias). This species is the smallest of all flamingos. The color of the lesser flamingo is brighter than the greater flamingo.
- ***Phoenicoparrus jamesi*****,** the James' flamingo. This species is characterized by having all black flight feathers, including the secondary flight feathers, which are red in other species.
- ***Phoenicoparrus andinus***, the Andean flamingo. This is the only species of flamingo that has yellow legs and feet. It also has a red spot between the nostrils.

Distribution

- All flamingos are found in tropical and subtropical areas.
- Populations of Chilean flamingos are found in central Peru, both coasts of southern South America (mainly in the winter), Argentina, Uruguay, Paraguay, Peru, Bolivia, and southern Brazil. Stragglers have been reported on the Falkland Islands and Ecuador.
- The lesser flamingo is primarily an African species. Populations are found in eastern, southwestern, and western Africa. In addition, a sizable population nests in India. Stragglers can be found as far north as southern Spain.
- The James' flamingo has the most restricted range of all flamingo species. They are found in southern Peru, northeastern Chile, western Bolivia, and northwestern Argentina.
- Andean flamingos are found in southern Peru, north-central Chile, western Bolivia, and northwestern Argentina.
- The Caribbean flamingo is found throughout the Caribbean (Cuba, the Bahamas, the Yucatan, Turks and Caicos), the Galapagos Islands, and the northern part of coastal South America.
- The greater flamingo has the most widespread distribution of all flamingo species. Populations are found in northwest India, the Middle East, the western Mediterranean, and Africa. Limited numbers of this species can be found over much of northern Europe and eastward to Siberia.

Habitat

The flamingo's most characteristic habitats are large alkaline or saline lakes or estuarine lagoons that usually lack vegetation. Lakes may be far inland or near the sea.

A variety of habitats are used by flamingos: mangrove swamps, tidal flats, and sandy islands in the intertidal zone.

The presence or absence of fish may have a great influence on the use of lakes by some flamingos.

- The Chilean flamingo is scarce or absent in lakes with fish. It is present, usually in large numbers, where there are no fish with which to compete for food.
- The introduction of fish to some lakes may seriously affect the distribution of the Chilean flamingo as well as the greater and Caribbean flamingos, since they all feed primarily on invertebrates. Other flamingo species are not affected because of different food sources.

Vocalization

Flamingo vocalizations range from nasal honking to grunting or growling. Flamingos are generally very noisy birds. Variations exist in the voices of different species of flamingos.

Vocalizations play an important role in keeping flocks together as well as in ritualized displays. Specific calls are used in conjunction with certain behaviors.

Vocalizations are used in parent-chick recognition.

Visual Displays

Flamingos communicate with a broad range of visual displays

Social Structure

Flamingos are very social birds. Breeding colonies of a few individual flamingos are rare, while colonies of tens of thousands of birds are common.

Flock size ranges from 2 to 340 birds with an average of 71 birds.

Topic → Gelephu

Overview of Gelephu

Location: Southern Bhutan 🌄
Significance: Proposed 'Mindfulness City' □ ♂□
Development Plans: Infrastructure, Cooperation with India IN

Key Themes

Mindfulness City Project □
- Purpose: Attract investment, create jobs 💼
- Design: Unique urban planning focused on well-being □
- Community Impact: Concerns from displaced ethnic Nepalis ⚠□

Government Cooperation

- Involvement of Leaders 🌐
  - PM Modi of India 🇮🇳
  - Bhutan King 👑
- Discussions: Economic connectivity, hydro power plans 💧

Economic Potential

- Investment Opportunities 💰
  - Gautam Adani's interest in projects
  - Potential for tourism and sustainable development 🌍

Topic -- INDIAN PM VISIT TO THREE COUNTRIES

Nigeria-India Strategic Partnership

Overview of the Visit

Significant State Visit: Abuja as a key location
Nigeria’s Importance: Most populous nation & fourth-largest economy in Africa
Global Presence: Participation in G-20 and BRICS invitations

Nigeria is emerging as a critical player on the global stage, enhancing its strategic partnerships with countries like India.

New Areas of Cooperation

Trade & Investment: Expanding economic ties
Education: Enhancing educational exchanges
Energy: Renewable energy initiatives
Health: Joint health programs
Culture: Promoting cultural ties
People-to-People: Strengthening social connections

2,249 × 2,299

Bilateral Cooperation

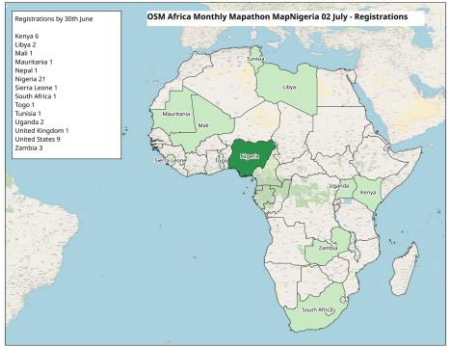
Areas of Focus

Agriculture: Collaboration for food security
Urban Transportation: Infrastructure development
Digital Transformation: Technology and innovation

India and Nigeria are committed to mutual growth in diverse sectors, ensuring a robust partnership.

Joint Commitments

Combatting Terrorism: Cooperative security efforts
Extremism & Radicalization: Joint strategies for peace



Challenges and Outcomes

Bureaucratic Delays: Issues affecting MoUs
Three MoUs Signed: Despite challenges, progress made

G-20 Summit 2023: The Centrepiece in Brazil BR

Key Highlights and Themes

Date & Location:

November 18-19, 2023, Rio de Janeiro

Participants:

19 powerful economies + 2 regional organizations

Objectives:

Mainstream perspectives of the Global South

People-centric decision-making

Priorities Outlined in the Rio Declaration:

Social Inclusion:

Launch of the Global Alliance against Hunger and Poverty

Platform for mobilizing finance and knowledge sharing

Sustainable Development:

Reiterated previous positions on sustainability

No significant progress on climate finance

Global Governance Reform:

Roadmap for effective Multilateral Development Banks

Calls for early implementation

Geopolitical Context:

Focus on peaceful resolutions amidst conflicts in Europe and West Asia

Economic development and climate change as significant issues

High-level interactions between leaders (e.g., Modi & international counterparts).

Topic → Guyana: A Strategic Partnership with India

Overview of Prime Minister Modi's Visit

Historical Significance: First Indian PM in 56 years to visit Guyana IN✈□

Population Insight: 40% of Guyana's population of Indian origin GY☪

Bilateral Cooperation: Robust programs in place for collaboration □

Key Areas of Cooperation

Energy Resources:

Guyana's role in India's energy security 💡

Defence:

Strengthening military ties and training ⚔️

Urban Development:

Infrastructure improvements and city planning 🏙️

Digital Collaboration:

Technology sharing and IT advancements 💻

Education:

Academic partnerships and scholarships 🎓

Food Security:

Agricultural cooperation and supply chain management 🌾

Pillars of Cooperation Proposed by Modi

Capacity Building:

Enhancing skills and workforce development

Agriculture & Food Security:

Sustainable practices and innovation in farming

Renewable Energy & Climate Change:

Joint initiatives for sustainable energy sources

Innovation, Technology & Trade:

Promoting startups and trade agreements

Cricket & Culture:

Cultural exchange programs and sporting events

Ocean Economy:

Marine resource management and conservation

Medicine & Health:

Healthcare partnerships and research collaboration

Impact of the Visit

Global Standing: Enhanced India's image and Modi's popularity abroad 🌟

Mutual Benefits: Optimized outcomes for both nations through signed agreements 📝

Community Engagement: Strengthening ties with Caribbean nations and leadership interactions 🌎

Topic → Syrian Conflict Overview

Main Actors and Alliances

- **Main Actors:** The three primary actors in Syria are the regime, the Syrian Democratic Forces (SDF), and Hayat Tahrir al-Sham (HTS).

IR **Regime Support:** The Syrian regime is supported by Iran, Shia militias from Iraq, and Russia.

- **SDF Composition:** The SDF is an umbrella group that includes the People's Protection Forces (YPG), the main Kurdish militia controlling Rojava (Syrian Kurdistan).

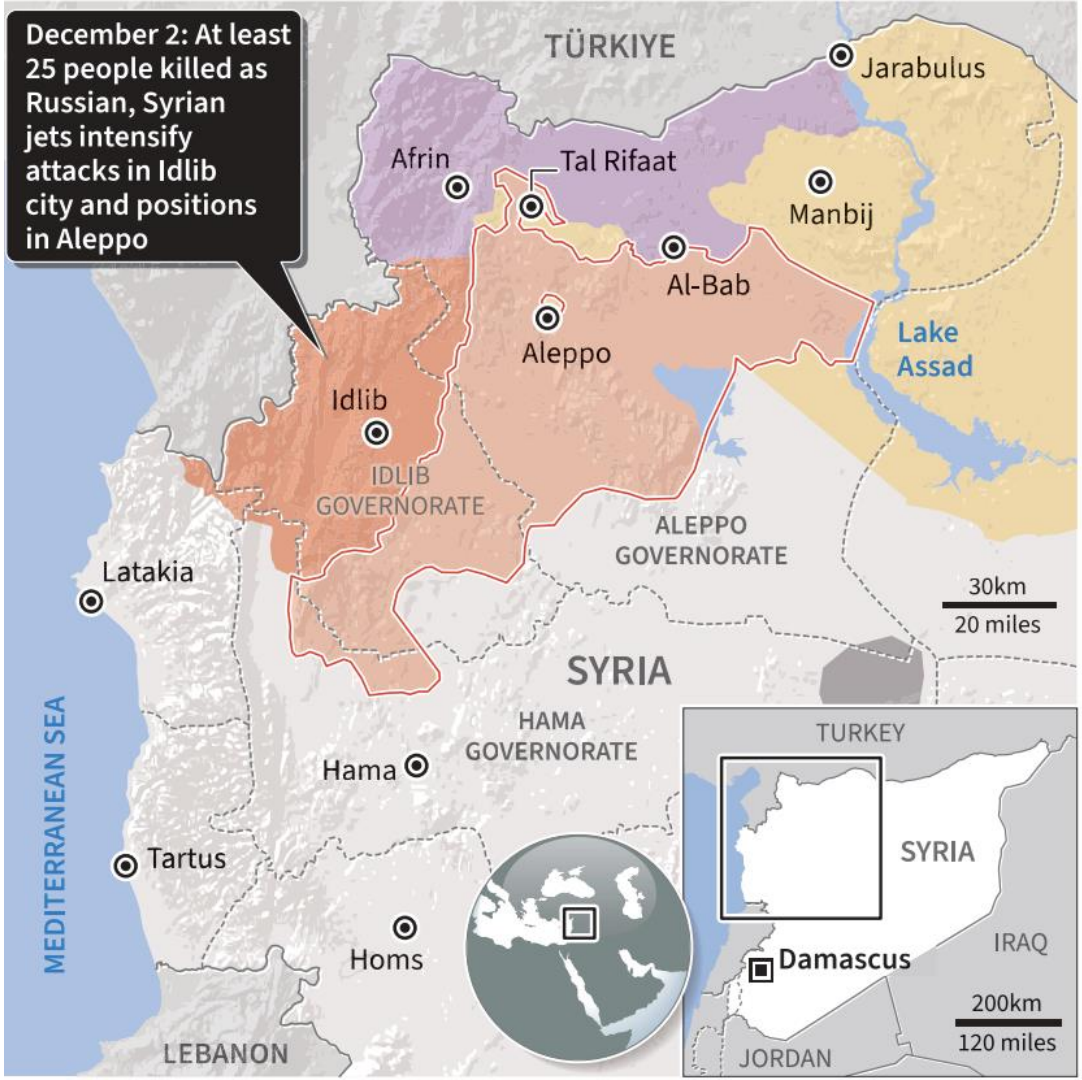
Dynamics and Leadership

- Detente: There has been a detente between the regime and the YPG, allowing for relative autonomy for the Kurds without direct conflict.

⚔️ **HTS Overview:** Hayat Tahrir al-Sham (HTS) is the main anti-government force in control of Idlib, leading ongoing offensives alongside the Turkey-backed Syrian National Army (SNA).

👤 **HTS Leadership:** HTS is led by Abu Mohammad al-Julani, a former al-Qaeda lieutenant who fought against the American occupation in Iraq.

🏴☠️ **SNA Connection:** The Syrian National Army (SNA), previously known as the Free Syrian Army, acts as a sidekick to HTS in their military operations.


December 2: At least 25 people killed as Russian, Syrian jets intensify attacks in Idlib city and positions in Aleppo
TÜRKIYE
Jarabulus
Afrin
Tal Rifaat
Manbij
Al-Bab
Aleppo
Lake Assad
Idlib
IDLIB GOVERNORATE
ALEPPO GOVERNORATE
Latakia
30km
20 miles
SYRIA
HAMA GOVERNORATE
Hama
MEDITERRANEAN SEA
Tartus
Homs
LEBANON
TURKEY
SYRIA
IRAQ
Damascus
200km
120 miles
JORDAN

Oli secures BRI deal in Beijing with support from key ally Nepali Congress

The signing of the deal paves the way for advancing Chinese investment and cooperation in Nepal under the BRI; officials say the Chinese initially sought to replace 'grant financing' with 'assistance financing', but after further negotiations, the two sides agreed on 'aid assistance financing'

Sanjeev Satgainya
KATHMANDU

From "no loans but grants only," Nepal finally settled for "aid assistance financing" as Nepali and Chinese officials on Wednesday inked a Belt and Road Initiative (BRI) cooperation framework deal in Beijing during Prime Minister K.P Sharma Oli's four-day visit to China.

The signing paves the way for advancing Chinese investment and cooperation in Nepal under the BRI, to which Kathmandu signed up for in 2017.

In the days leading up to Mr. Oli's visit to the north, there was a debate about whether Mr. Oli should sign the BRI implementation plan, a proposal Beijing had sent in 2020. A rigid stance by his coalition partner, the Nepali Congress (NC), against loans, had led to formation of a task force to revise the Chinese proposal.

Nepal subsequently revised the "BRI implementation plan" to "Framework for BRI Cooperation" emphasising "grant financing cooperation" and sent the proposal to the Chinese side for a review.

Officials said the Chinese initially sought to replace "grant financing" with "assistance financing", but after further negotiations, the two sides agreed on "aid assistance financing", leading to the inking of the deal.

As many as 10 projects have been listed under "aid assistance financing", which are related to trade, infrastructure, connectivity, technology and cultural exchange.

Close ties: Nepal's Prime Minister Khadga Prasad Sharma Oli waves with his wife Radhika Shakya (left) before his departure at the Tribhuvan International Airport in Kathmandu on December 2. AFP

"This deal is significant in two ways. First, it provides fresh momentum to Nepal-China cooperation under the BRI, seven years after Nepal signed up for the initiative," said Pradeep Gyawali, a former Foreign Minister and Deputy General Secretary of the Communist Party of Nepal (Unified Marxist-Leninist), or the CPN-UML. "Second, for the first time, two major parties have made a common position on Nepal's foreign policy conduct."

Mr. Oli and his CPN-UML and the NC held differing views on how to approach the BRI. The NC feared embracing the BRI without addressing Nepal's concerns could increase debt burden and amplify Chinese influence. The CPN-UML, however, argued that there was nothing wrong in pursuing loans.

"The fear was unwarranted. Nonetheless, signing BRI now with some revisions by incorporating the concerns of all the stakeholders is undoubtedly a step forward," said Mr. Gyawali.

Devil is in details

Analysts say the signing indicates that ground has been set to get the BRI ball rolling in Nepal, but since specifics are unclear, one has to wait to see how things unfold.

"The devil lies in the details," said Chandra Dev Bhatta, a political scientist. "We don't know yet what 'aid financing' entails. The common understanding is it could encompass both grants and loans and as described by Nepali officials, it could mean concessional loans."

Nepal has traditionally received concessional loans from multilateral agencies like the World Bank and Asian Development Bank and other bilateral development partners, with interest rates under 2% and payback periods up to 40 years.

"What we can infer from the deal also is that the Chinese cooperation can be sought on a project-by-project basis, and depending on the project, financing could involve grants or concessional loans," said Mr. Bhatta. "In that sense, the deal can be dubbed a positive development in terms of investment, cooperation and Nepal-China ties."

Even though China has promoted the BRI as an investment tool to enhance connectivity across Asia, Europe, and Africa, it does not typically involve grants.

According to Mr. Bhatta, revising the Nepal-proposed document to include "aid" can be seen as more of a success for China. Beijing had increasingly upped pressure on Nepal to move the BRI forward, especially after Nepal's Parliament ratified the Millennium Challenge Corporation, a $500 million American grant, in 2022.

"It's now up to Nepal to follow up on the deal," he said.

Relief for Oli

Mr. Oli's decision to visit China on his first bilateral trip–breaking the tradition of Nepali Prime Ministers visiting New Delhi first–with the BRI high on the agenda had raised the stakes. He risked upsetting his coalition partner, the NC and India, historically Nepal's closest ally. In a bid to assuage the NC's concerns, Mr. Oli last week said that he would not sign any loan agreements in Beijing.

Observers say by securing the BRI cooperation with the NC on board, Mr. Oli managed to save the coalition, and by extension, keep his position secured. Upon his return from China on Thursday, Mr. Oli stated that he would lead the government for 18 more months before handing over power to NC President Sher Bahadur Deuba, as per the agreement reached in July.

He also said, "We have discussed different projects under the BRI and separate agreements will be signed for each project." "This has nothing to do with loans."

In response to media queries about his visit to India, Mr. Oli said, "Now, arrangements will be made soon."

Mr. Bhatta said, geopolitically, the BRI signing is unlikely to attract significant criticism from India or the United States. "The agreement signed on Wednesday, by and large, is continuation of the 2017 framework," he said.

During his visit, Mr. Oli met with his Chinese counterpart Li Qiang and held talks with President Xi Jinping on Tuesday.

According to Chinese state media, Mr. Xi reiterated that "China is ready to help Nepal accelerate its transformation from a 'land-locked country' to a 'land-linked country-'...continue to support Nepal's economic and social development within its capacity."

Nepal, however, has not been able to translate the northern goodwill into practical cooperation. A transit deal signed with China in 2016 during Mr. Oli's previous tenure, aimed at reducing Nepal's over-reliance on India, has failed to yield tangible results.

Analysts say growing signs of thawing relations between India and China could reduce regional tensions, from which Nepal stands to benefit significantly. There, however, are concerns that BRI signing may not sit well with India, as it is widely perceived that Mr. Oli decided to make Beijing his first port of call after failing to secure an invitation from New Delhi.

Barking
Land route
"One Belt"
Venice
Madrid
Istanbul
Athens
Mediterranean Sea
Baku
Turkmenabad
Tehran
Bishkek
Kara-Balta
Almaty
Altay
Urumqi
Kashgar
Hotan
XINJIANG
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CHINA
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Myitsone Dam
Gwadar
Kolkata
Kyaukphyu
Zhanjiang
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Sea
Hambantota
Kuala
Lumpur
Malacca
Strait
Nairobi
Sea route
"One Road"
INDIAN OCEAN
2,000 km
Economic corridors
Land
Sea
China-Pakistan
Rail routes
Selected pipelines
Sources: Digital Silk Road Project;
Project Cargo Network; The Economist

Topic → Nepal's Belt and Road Initiative Cooperation with China

Overview

NP Nepal has signed a Belt and Road Initiative (BRI) cooperation framework with China during Prime Minister K.P. Sharma Oli's visit to Beijing.

The agreement marks a shift from "no loans but grants only" to a more flexible "aid assistance financing," paving the way for Chinese investment in Nepal.

📅 Initially signed in 2017, this new deal represents a significant advancement in cooperation after years of debate.

Key Developments

- Ten projects have been identified under the new financing framework, focusing on trade, infrastructure, connectivity, technology, and cultural exchange.

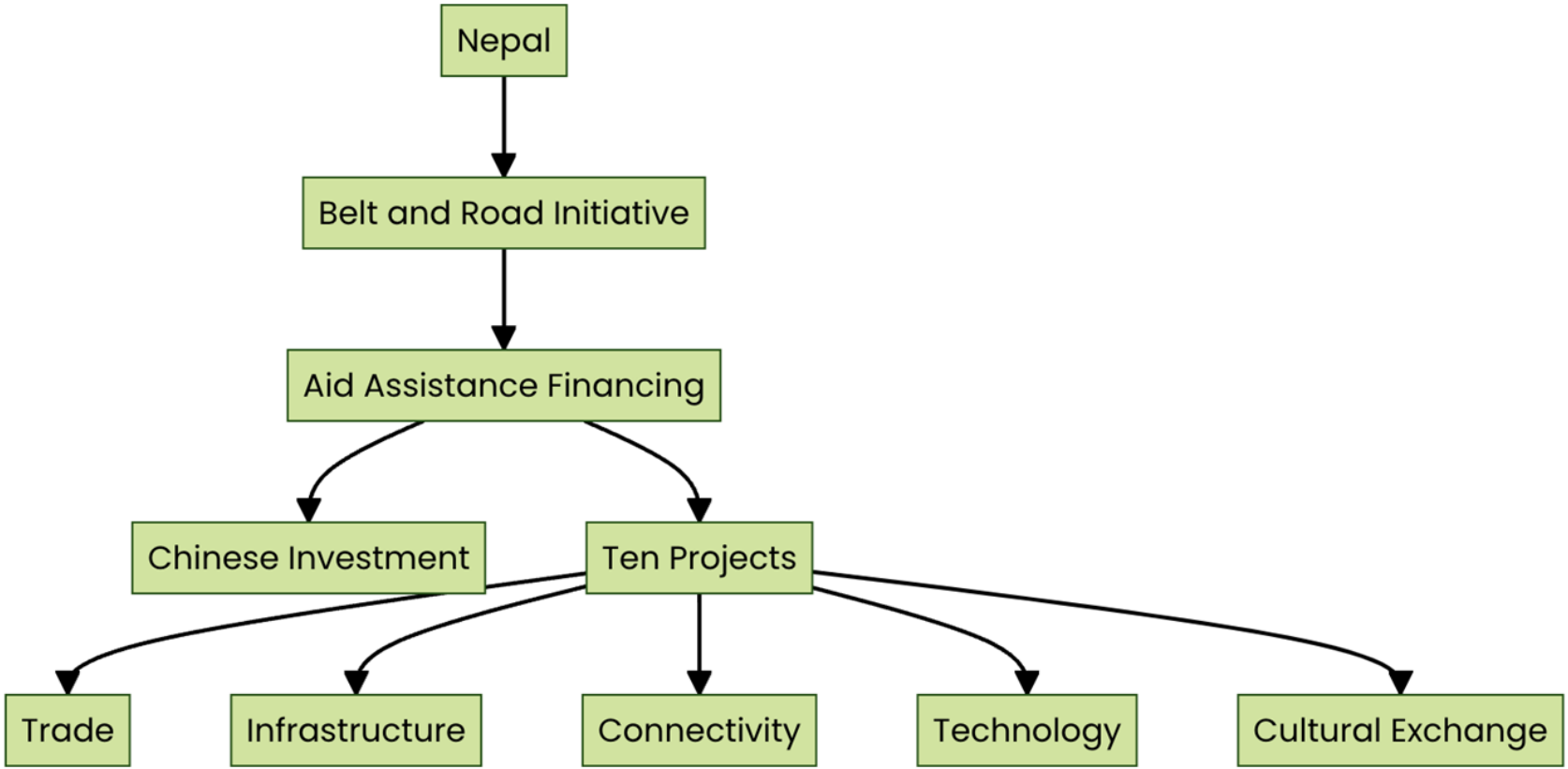
- The deal reflects a consensus among major political parties in Nepal, addressing concerns about debt and Chinese influence.

🔍 Analysts highlight that the specifics of "aid financing" remain unclear, with potential implications for both grants and concessional loans.

Implications

🌍 The agreement is viewed as a continuation of Nepal's foreign policy and is unlikely to provoke significant criticism from India or the U.S.

BRI Cooperation Framework:



Summary: Nepal and China have formalized a cooperation framework under the BRI, transitioning from a grant-only approach to a more flexible "aid assistance financing" model, which includes various projects and reflects a political consensus in Nepal.

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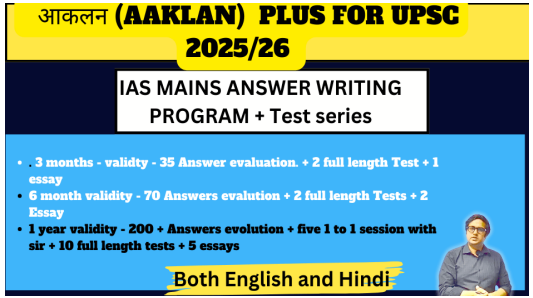
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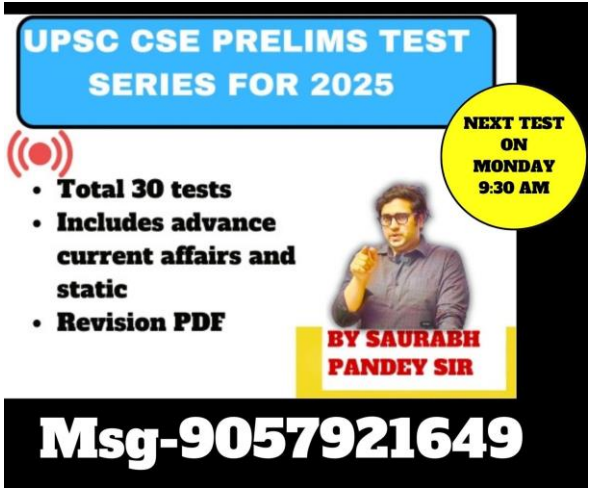
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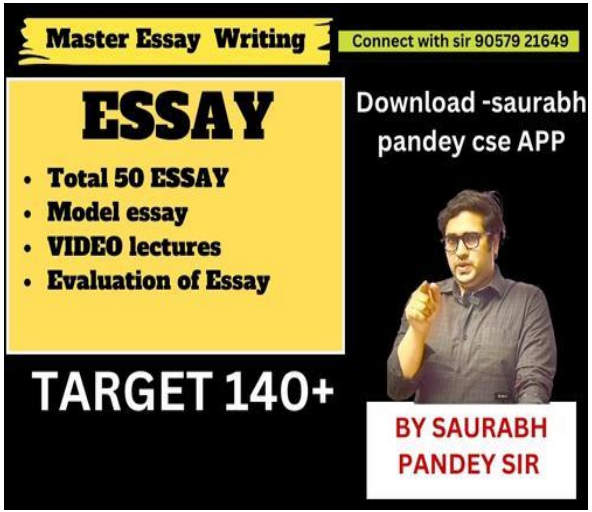
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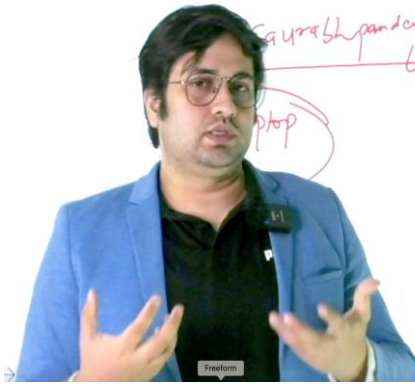
Topics - MINDS MAPS included (Daily current affairs 7th December 2024

- **Indira Gandhi Prize 2024:**
- **India Wins ISSA Good Practice Award**
- **Understanding the Reserve Bank of India's Monetary Policy Committee (MPC) Decision**
- **India’s Journey to Becoming a Global Manufacturing Hub**
- **Dedollarisation: A Shift in Global Finance.**
- **RBI Mule Hunter Initiative**
- **Wisdom: The Oldest Wild Bird**
- **MAINS**



By saurabh Pandey

THE HINDU

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BY SAURABH PANDEY SIR

Test -10 scheduled on Monday - 9:30 am

Topic → Indira Gandhi Prize 2024: Honoring Michelle Bachelet

Award Announcement

🏆 Recipient: Michelle Bachelet, former President of Chile, is the 2024 laureate of the Indira Gandhi Prize for Peace, Disarmament, and Development.

🌍 Announced by: The Indira Gandhi Memorial Trust, recognizing Bachelet's significant contributions to human rights.

International Relations

- India-Chile Relations: The prize also acknowledges her efforts in strengthening diplomatic ties between India and Chile

Employees' Provident Fund Organisation wins global award

The Hindu Bureau
NEW DELHI

India has bagged the International Social Security Association's Good Practice Award for Asia and Pacific for this year for five services provided by the Employees' Provident Fund Organisation (EPFO).

ISSA president Mohammed Azman presented the award to the EPFO at the Regional Social Security Forum held in Riyadh, Saudi Arabia, earlier this week.

The EPFO received five Certificates of Merit for running "efficient" communication channels, conduct of e-proceedings, outreach programme *Nidhi Aapke Nikat*, running multilingual call centres, and the initiative *Prayaas* for pension order delivery.

The different communication channels in use to reach stakeholders received appreciation.

E-proceedings to determine dues from defaulting employers, have also been considered for the award

"Digital and non-digital communication strategy is being adopted for efficient and timely communication," the Union Labour Ministry said in a release on Thursday.

The EPFO uses webinars, short message service and e-mails, social media, information education communication videos and camps under *Nidhi Aapke Nikat* to educate and communicate with stakeholders.

E-proceedings, such as conducting judicial proceedings to determine dues from defaulting employers, have also been considered for the award, the Ministry said.

Topic →India Wins ISSA Good Practice Award

Highlights of the Award

🏆 India secured the International Social Security Association’s Good Practice Award for Asia and Pacific

👥 The award was presented to the Employees’ Provident Fund Organisation (EPFO) by ISSA president Mohammed Azman in Riyadh, Saudi Arabia.

📜 EPFO received five Certificates of Merit for various efficient services, including communication channels and e-proceedings.

Key Initiatives

📞 The EPFO's outreach program, Nidhi Aapke Nikat, and multilingual call centers were highlighted as key initiatives.

💻 A combination of digital and non-digital communication strategies is employed for effective stakeholder engagement.

🎓 The EPFO utilizes webinars, SMS, emails, social media, and educational videos to inform stakeholders.

⚖️ E-proceedings for judicial matters related to employer dues were also recognized as part of the award criteria.

Summary

India’s EPFO received the ISSA Good Practice Award for its innovative services and effective communication strategies

Amid high inflation, RBI keeps repo rate at 6.5%

- The Monetary Policy Committee takes notes of the recent slowdown in growth momentum
- MPC downgrades growth, inflation estimates for 2024-25 to 6.6%; retail inflation projected at 4.8%
- Persistent inflation reduced the disposable income of consumers and dented consumption, says Das

Lalatendu Mishra
MUMBAI

The Monetary Policy Committee (MPC) of Reserve Bank of India (RBI) on Friday held steadfast in its battle against inflation amid weakening growth momentum, with four of its six members voting to keep policy repo rate unchanged at 6.50% for the 11th bi-monthly review in a row.

However, acknowledging that the economy is facing tight liquidity conditions that are likely to persist for a few months, it cut the Cash Reserve Ratio (CRR) for banks by 50 basis points to 4%, after a gap of nearly four years, in a bid to support growth.

While divisions within the MPC on a *status quo* on rates expanded from the 5:1 vote in October, the panel was unanimous on sticking to a 'neutral' stance and remaining unambiguously focused on a durable alignment of inflation with its 4% target, while supporting growth. Inflation had spiked to a 14-month high of 6.2% in October, the last available price rise number.

"The MPC took note of the recent slowdown in the growth momentum, which translates into a downward revision in the growth forecast for the current year. Going forward into the second half of this year and the next year, the MPC assessed the growth outlook to be resilient, but warranting close monitoring," RBI Governor Shaktikanta Das said in his statement.

While noting the RBI's mandate is to ensure price stability while supporting growth, Mr. Das said persistently high inflation reduced the disposable income of consumers and dented private consumption which negatively impacted the real GDP growth.

Real GDP growth in the July to September quarter fell to a seven-quarter low of 5.4%, compared to RBI's 7% projection.

The MPC has now downgraded the growth forecast for 2024-25 to 6.6% from 7.2%. Similarly, with inflation increasing sharply in September and October led by an unanticipated increase in food prices, the retail inflation for 2024-25 has now been projected at 4.8% compared to the 4.5% average projected till October.

"Food inflation pressures are likely to linger in the third quarter of this financial year, and start easing only from Q4 of 2024-25, backed by seasonal correction in vegetable prices, kharif harvest arrivals, likely good rabi output and adequate cereal buffer stocks," Mr. Das said.

Balancing act

The RBI on Friday tried to find a balance between inflation management and supporting economic growth

- The RBI kept the repo rate **unchanged at 6.5%** for a record 11th meeting in a row
- The Cash Reserve Ratio — the proportion of deposits that banks must set aside with the central bank — has been cut by **50 basis points to 4%**
- The cut will infuse **₹1.16 lakh crore** into the banking system and will soften short-term interest rates and enhance capacity of banks to extend credit

Adverse weather events

The Governor also said the increasing incidence of adverse weather events, heightened geo-political uncertainties and financial market volatility posed upside risks to inflation.

"The MPC believes that only with durable price stability can strong foundations be secured for high growth. The MPC remains committed to restoring the inflation growth balance in the overall interest of the economy," he said.

To ease the potential liquidity stress in the system as more cash could be required to pay direct taxes and GST, the RBI has decided to reduce the cash reserve ratio (CRR) of all banks to 4% of net demand and time liabilities (NDTL) in two equal tranches of 25 bps each with effect from the fortnight beginning December 14, 2024 and December 28, 2024.

"This reduction in the CRR is consistent with the neutral policy stance and would release primary liquidity of about ₹1.16 lakh crore to the banking system," he said.

Interest rate ceiling

To attract more capital inflows, the RBI has decided to increase the interest rate ceiling on FCNR(B) deposits. Accordingly, effective from Friday, banks are permitted to raise fresh FCNR (B) deposits of 1 year to less than 3 years maturity at rates not exceeding the ceiling of overnight Alternative Reference Rate (ARR) plus 400 bps as against 250 bps at present. Similarly, for deposits of 3 to 5 years maturity, the ceiling has been increased to overnight ARR plus 500 bps as against 350 bps at present. This relaxation will be available till March 31, 2025.

In his closing remarks, the Governor said since the last policy, inflation had been on the upside, while there had been a moderation in growth. "Accordingly, the MPC has adopted a prudent and cautious approach in this meeting to wait for better visibility on the growth and inflation outlook."

STAYING THE COURSE
» PAGE 6

Topic →Understanding the Reserve Bank of India's Monetary Policy Committee (MPC) Decision

Introduction to the MPC's Latest Review

- The Reserve Bank of India (RBI) has been in the spotlight with its Monetary Policy Committee (MPC) decisions.
- The MPC decided to maintain the benchmark interest rate at 6.50% for the eleventh consecutive time.
- This decision reflects the RBI's stance on managing inflation and supporting economic growth in a challenging environment

The Status Quo on Interest Rates

- Maintaining the interest rate at 6.50% is a signal to the market about the RBI's approach to economic stability.
- This rate affects everything from loan rates to consumer spending, making it pivotal in the economic landscape.

The Current Economic Landscape

Inflation Trends in India

After a period of calm, retail inflation spiked, particularly in food prices.
This rise has left many wondering about the future economic trajectory.

The Role of Food Prices in Inflation

Food prices have been the main driver of inflation, impacting household spending power

The MPC's Voting Dynamics

Changes in Voting Patterns

The MPC's voting shifted from 5:1 to 4:2, indicating growing concerns about the economic outlook.

The Shift from 5:1 to 4:2

This change reflects differing opinions on tackling current economic challenges.

The Impact of Inflation on Growth

GDP Growth Projections

The RBI projected a growth rate of 7%, but the actual figure was 5.4%.

The Government's Stance on Economic Growth

The government downplays the growth blip, but ministers are calling for interest rate cuts.

The RBI's Mandate and Challenges

Balancing Price Stability and Growth

The RBI's mandate involves maintaining price stability while supporting growth.

The Importance of Monitoring Inflation and Growth

Close monitoring of inflation and growth trajectories is crucial for economic stability.

Future Projections and Expectations

Revised Projections for GDP and Inflation

The RBI revised GDP growth to 6.6% and inflation to 4.8%.

Potential Government Interventions

Government actions, like rolling back import duties, could help control prices and spur consumption.

Conclusion

The RBI's decision to maintain the interest rate at 6.50% reflects a cautious approach in a volatile economic environment.

The interplay between inflation and growth will require careful monitoring and strategic interventions

Building on the revival of the manufacturing sector

Chandrajit Banerjee

Director General, The Confederation of Indian Industry

India's journey to becoming a global manufacturing hub has gained momentum with the government's strategic policy initiatives, particularly the Production Linked Incentive (PLI) scheme. This scheme has been instrumental in transforming the manufacturing landscape in sectors such as mobile manufacturing, electronics, pharmaceuticals, automobile, and textiles, among others, through enhanced production, exports and job creation.

The scheme's impressive performance has been mirrored by the results of the Annual Survey of Industries (ASI) for 2022-23, released recently, which reveals a positive correlation between PLI scheme incentives and sectoral performance. In the ASI data, manufacturing output registered a robust growth rate of 21.5%, while gross value added (GVA) grew by 7.3%. This expansion comes on the back of the PLI scheme's success, showcasing that many sectors benefiting from the scheme have performed particularly well. Basic metal manufacturing, coke and refined petroleum products, food products, chemicals and chemical products, and motor vehicles – many of which are covered under the PLI scheme – collectively contributed 58% to the total manufacturing output and registered an output growth of 24.5% in 2022-23.

Recovery of the manufacturing sector

ASI surveys are a vital source of data on the registered, organised manufacturing sector in the economy. They include factories with 10 or more workers using power, and those with 20 or more workers, without power. The results of the ASI 2022-23 show a healthy double-digit expansion in the growth rate of manufacturing sector output – at 21.5% – despite a high base of 2021-22 which saw a sharp rebound as the economy emerged from the COVID-19 pandemic-induced slump. The impressive growth in output and value added in 2022-23, as compared to the pre-pandemic period, indicates that the manufacturing sector is slowly but steadily turning the corner after the disruptions in recent years.

The performance of the manufacturing sector shows that the stage is set for India to become a global manufacturing powerhouse. However, strong reforms are needed to fully capitalise on the manufacturing potential.

The success of the PLI scheme underscores the need to expand its scope beyond the traditional industries where manufacturing activity is concentrated. Extending PLI incentives to labour-intensive sectors such as apparel, leather, footwear and furniture, as well as sunrise industries such as aerospace, space technology and MRO could unlock new growth frontiers. There are also sectors with high import dependency but untapped domestic capabilities such as capital goods. This can help in reducing vulnerability to global demand fluctuations and supply chain disruptions. Promoting green manufacturing and incentivising research and development in advanced manufacturing technologies can further enhance India's manufacturing competitiveness.

The striking gap between manufacturing output growth (21.5%) and GVA growth (7.3%) – as the ASI data show – is largely driven by soaring input prices, which surged by 24.4% in 2022-23. This divergence suggests that while production volumes are rising, industries are grappling with elevated input prices, which have eroded their value addition. With bulk of the inputs being imported, it is pivotal to bring down their landing costs in the country. To bring this to fruition, a more streamlined import regime that simplifies tariffs into a three-tier system, with 0 - 2.5% for raw materials, 2.5% - 5% for intermediates, and 5% - 7.5% for finished goods, could help mitigate these input costs, enhance competitiveness, and improve India's integration into global value chains.

> Strong reforms are needed for India to fully capitalise on its manufacturing potential

A concentration of industrial activity

The regional imbalance in manufacturing activity, with Maharashtra, Gujarat, Tamil Nadu, Karnataka, and Uttar Pradesh, collectively accounting for over 54% of total manufacturing GVA and 55% of employment, highlights the concentration of industrial activity in a few States. This regional imbalance not only hinders equitable development across the country but also limits the sector's overall growth potential. For India to fully capitalise on its manufacturing capacity, it is essential for States to be an active participant in India's growth story by implementing the fundamental factor market reforms in areas such as land, labour and power in addition to developing infrastructure, and promoting investments.

Focus must move to MSMEs and women

For manufacturing to serve as a true catalyst for inclusive growth, special attention must be given to micro, small and medium enterprises (MSME) and increasing women's participation in the workforce. MSMEs contribute around 45% of India's manufacturing GDP and employ about 60 million people. Tailoring PLI incentives to accommodate MSMEs, by lowering capital investment thresholds and reducing production targets, would empower these enterprises to scale up, innovate and integrate more effectively into value chains.

Enhancing female workforce participation is an untapped opportunity for boosting manufacturing growth. The World Bank's latest South Asia Development Update estimates that India's manufacturing output could rise by 9% if more women join the workforce. Developing supportive infrastructure such as hostels, dormitories, and childcare facilities near factories could significantly boost women's participation in manufacturing, driving output and inclusive development.

To transform the Indian economy into a developed economy by 2047, the manufacturing sector ought to play a critical role. As in the CII's own estimations, its share in the GVA has a potential to rise from the current 17% to over 25% by 2030-31, and to 27% by 2047-48 if sustained efforts to boost domestic manufacturing capabilities and domestic value addition continue. Apart from boosting its competitiveness by improving ease of doing business and bringing down cost of doing business, seizing the current moment by leveraging on the slew of policy measures will be imperative for the manufacturing sector.

Topic → India’s Journey to Becoming a Global Manufacturing Hub

Introduction to the Manufacturing Landscape

The manufacturing sector is pivotal to India's economy.
Recent government initiatives have revitalized this sector, focusing on growth and development

The Role of the Government

The government sees manufacturing as a key driver of economic growth.
Strategic policies aim to enhance production, boost exports, and create jobs.

Strategic Policy Initiatives

The PLI scheme is a standout initiative, incentivizing increased production and fostering competitiveness

The Production Linked Incentive (PLI) Scheme

Designed to encourage investment in manufacturing.
Offers financial incentives based on incremental sales.

Overview of the PLI Scheme

Launched in 2020, targeting sectors like electronics, pharmaceuticals, and automobiles.

Impact on Key Sectors

Significant impact on production and job creation.

Mobile Manufacturing and Electronics

Surge in production with companies like Apple and Samsung expanding operations.

Pharmaceuticals and Automobiles

Increased production of essential medicines and revival in the automobile industry.

Textiles and Beyond

Growth in textiles, crucial for job creation and export earnings.

Performance Metrics from the Annual Survey of Industries (ASI)

ASI provides insights into manufacturing performance.
Latest data shows impressive growth rates.

Manufacturing Output Growth

2022-23 saw a robust growth rate of 21.5%.

Gross Value Added (GVA) Insights

GVA grew by 7.3%, highlighting challenges with input costs.

Challenges and Opportunities

Rising input prices and global supply chain disruptions are challenges.

Input Prices and Their Impact

Input prices surged by 24.4% in 2022-23, affecting value addition.

Streamlining Import Regimes

Simplifying tariffs could reduce costs and enhance competitiveness

Regional Imbalances in Manufacturing

Industrial activity is concentrated in a few states, posing a challenge for equitable growth.

Concentration of Industrial Activity

States like Maharashtra, Gujarat, and Tamil Nadu dominate manufacturing output

Focus on MSMEs and Women

MSMEs and increased female workforce participation are crucial for inclusive growth.

Empowering Micro, Small, and Medium Enterprises

MSMEs contribute 45% of manufacturing GDP.

Enhancing Female Workforce Participation

Increasing women's participation could boost manufacturing output by 9%.

Conclusion

India is on its way to becoming a global manufacturing hub.
Strategic initiatives like the PLI scheme are pivotal.
Addressing inclusivity and regional imbalances is key to unlocking full potential

No plans for de-dollarisation: Das

RBI Governor says the BRICS currency is just an idea floated by one member of the bloc, and no decision has been taken on it; his remarks assume significance in the context of Donald Trump's threat to slap 100% tariffs for pursuing such plans

Lalatendu Mishra
MUMBAI

India has no plans for de-dollarisation, RBI Governor Shaktikanta Das said in response to a question on U.S. President-elect Donald Trump's threat to slap 100% tariffs on BRICS nations planning a common currency to challenge the hegemony of U.S. dollar in global trade.

"The BRICS currency was an idea raised by one of the members of the BRICS countries and it was discussed," Mr. Das said. "No decision has been taken in the matter. The geographical spread of the countries is a factor which has to be kept in mind unlike the Eurozone which has a single currency and geographical continuity. BRICS countries are spread all over," he added.

Not on the table: De-dollarisation is certainly not our objective. It is not on the table at all, says Das.PTI

"So far as India is concerned, there is no step which we have taken to de-dollarise. Allwe have done is we have entered into agreements with a couple of countries to do local currency-denominated trade to de-risk India trade."

"Dependence on one currency can be problematic at times because of appreciation or depreciation. So, as part of de-risking our trade, that is a step which has been taken. De-dollarisation is certainly not our objective. It is not on the table at all. Our effort is basically to de-risk our trade. Nobody is talking or thinking about de-dollarisation," he added.

To a question if the rupee could come under pressure due to possible tariff wars hurting exports, the Governor said, "If the tariff war happens... hypothetically, if it happens, it will not be an isolated event. There will be other events around it, like, for instance, perhaps, China may react by devaluing the currency or there might be retaliatory tariffs."

"So, at this point, it is very difficult to say what will be our unilateral move, and will it affect. Let us wait for the general equilibrium," he added.

He said India's forex reserves were quite robust now and quite adequate.

"We are confident of dealing with any spillovers. As per requirement, we will take action. At the moment we have no concern at all," he said answering to a query on whether the interest rate ceiling on FCNR (B) deposits has been increased to build a buffer.

Topic → Dedollarisation: A Shift in Global Finance

Understanding Dedollarisation

💵 **Definition:** Dedollarisation is the process of reducing reliance on the US dollar in international trade and finance.

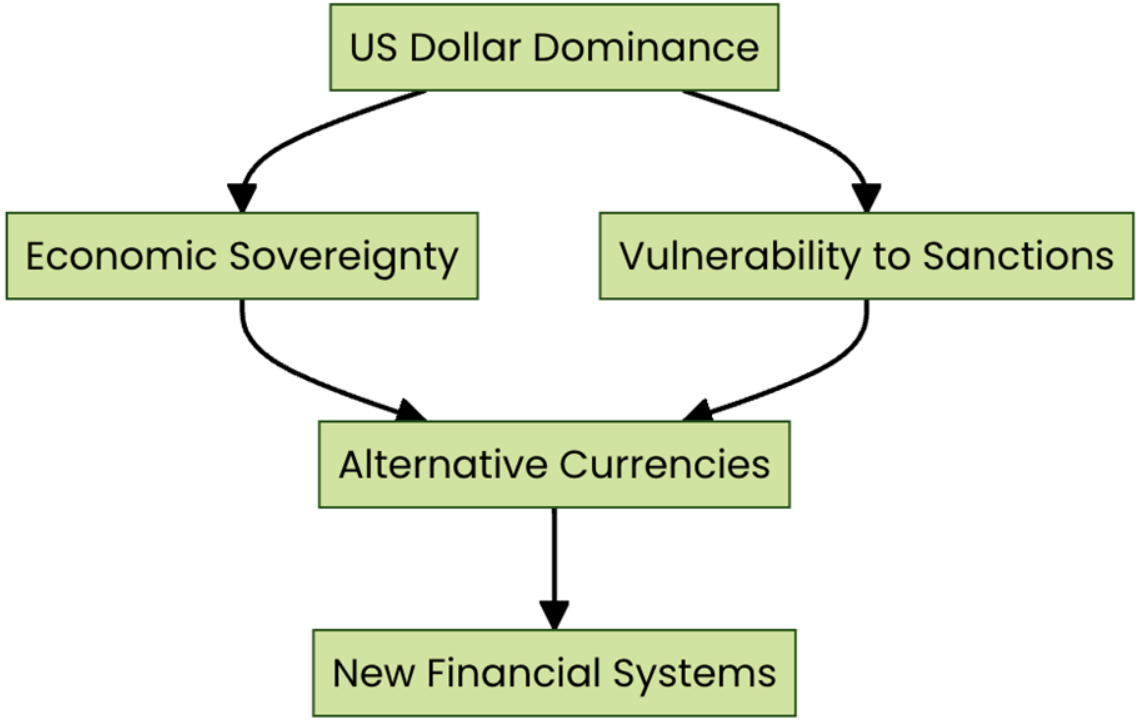
🌍 **Global Impact:** This shift can alter global economic dynamics, potentially redistributing power from the US to other currencies and economies.

Motivations Behind Dedollarisation

📉 **Reasons for Dedollarisation:** Countries aim to enhance economic sovereignty, reduce vulnerability to US sanctions, and promote their own currencies.

🔄 **Alternative Currencies:** Nations may adopt currencies like the euro, yuan, or cryptocurrencies as substitutes for the dollar

Dedollarisation Process:



Trends and Geopolitical Factors

📊 **Trends:** There is a growing interest among countries to diversify their foreign exchange reserves away from the dollar.

🏦 **Financial Systems**: Dedollarisation can lead to the development of new financial systems and trade agreements that bypass the dollar.

⚖️ **Geopolitical Factors:** Political tensions and economic sanctions often drive countries to seek alternatives to the US dollar

Summary: Dedollarisation is the process of decreasing dependence on the US dollar in global trade and finance, driven by various economic and geopolitical factors

RBI's MuleHunter to prevent digital fraud

Lalatendu Mishra
MUMBAI

The Reserve Bank of India (RBI) has introduced an Artificial Intelligence (AI) and Machine Learning (ML) based MuleHunter AITM to prevent and mitigate digital frauds through the use of mule accounts.

Developed by the Reserve Bank Innovation Hub (RBIH), Bengaluru, this public infrastructure facility will help banks to deal with the issue of mule bank accounts expeditiously and cut digital frauds, said RBI Governor Shaktikanta Das.

Elaborating, Deputy Governor T. Rabi Sankar said, "The MuleHunter is basically an infrastructure level set-up which will use the databases from all banks, all other payment system operators. Its AI engine will be trained to be able to identify frauds much more effectively in the financial system.

"If you look at frauds, the number of frauds are increasing, the amount involved in frauds are increasing although the number of frauds per transaction is coming down over the years. But the number is enough for us to be concerned about it."

Topic →RBI Mule Hunter Initiative

🦉 **The term "RBI Mule Hunter"** likely refers to a specific initiative or program related to the Reserve Bank of India (RBI).

🔍 The phrase suggests a focus on identifying and addressing issues related to "mules," which in financial contexts often refers to individuals used to facilitate illegal transactions.

📈 The initiative may aim to enhance the integrity of the banking system by targeting money laundering and fraud.

⚖️ It could involve collaboration with law enforcement agencies to track and apprehend those involved in financial crimes.

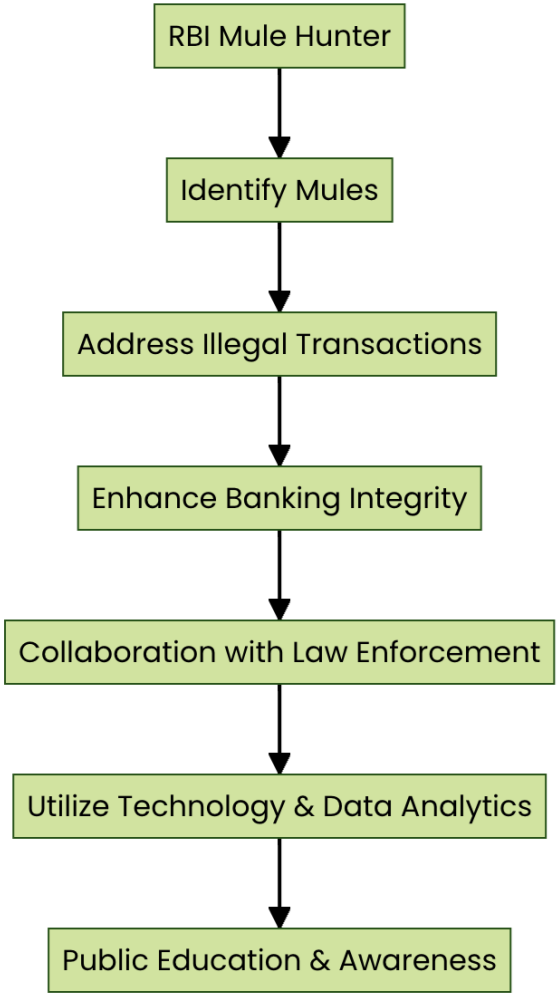
💻 The program might utilize advanced technology and data analytics to identify suspicious activities and patterns.

📚 Education and awareness campaigns may be part of the initiative to inform the public about the risks of becoming involved in such schemes.

🔒 Overall, the "RBI Mule Hunter" initiative underscores the RBI's commitment to maintaining a secure and trustworthy financial environment.

Summary: The "RBI Mule Hunter" initiative focuses on combating financial crimes by identifying and addressing the role of mules in illegal transactions

Conceptual Flow:



Topic → Wisdom: The Oldest Wild Bird

Key Highlights

- **Oldest Wild Bird:** Wisdom, a Laysan albatross, is the oldest known wild bird at approximately 74 years old.

- **First Egg in Four Years:** She laid her first egg in four years, estimated to be her 60th egg overall.

🌊 **Location:** Wisdom returned to Midway Atoll National Wildlife Refuge in the Hawaiian Archipelago to lay her egg.

Mating Behavior: Laysan albatrosses mate for life; however, Wisdom's mate Akeakamai has not been seen for several years, leading her to interact with another male.

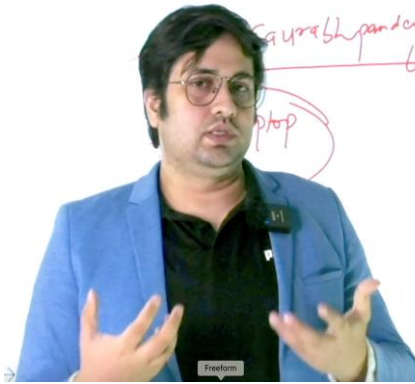
🐣 **Incubation Period:** Albatross parents incubate their eggs for about seven months, with chicks flying out to sea five to six months after hatching.

🐟 **Diet:** The diet of Laysan albatrosses primarily consists of squid and fish eggs.

📅 **Lifespan:** The typical lifespan of a Laysan albatross is around 68 years, with Wisdom surpassing this average.

Topics - MINDS MAPS included (Daily current affairs 9th & 8th December 2024

- **The Indian Star Tortoise: A Unique Marvel of Nature**
- **Stegosaurus Fossil Discovery: 'Apex'**
- **The Indian Economy and GHG Emissions**
- **The Unemployment Challenge in India**
- **Warren Buffett's Wealth Philosophy**
- **H5N1 Virus Mutation**
- **Methane Conversion Innovation**
- **Coffee Wilt Disease: Genetic Insights**
- **Hummingbird Nectar Extraction: A Closer Look**
- **Mains**



By saurabh Pandey

THE HINDU

Topic → The Indian Star Tortoise: A Unique Marvel of Nature

Introduction to the Indian Star Tortoise

Have you ever laid eyes on the Indian star tortoise? If not, you're missing out on one of nature's most stunning creations! With its obsidian shell and striking sun-yellow star patterns, this tortoise is not just a pretty face; it's a hardy herbivore that has captured the hearts of many. However, owning one as a pet is illegal in India and raises ethical concerns, as these beautiful creatures are vulnerable in the wild.

Physical Characteristics

The Obsidian Shell and Star Patterns

The Indian star tortoise (Geochelone elegans) is a sight to behold. Its shell, resembling polished obsidian, is adorned with intricate star-like patterns that are as unique as fingerprints. These patterns not only serve as a visual delight but also play a role in camouflage, helping the tortoise blend into its arid surroundings.

Habitat and Distribution

Natural Habitat in India and Sri Lanka

Endemic to the Indian subcontinent, these tortoises thrive in the arid pockets of northwest India, bordering Pakistan, as well as in South India and Sri Lanka. They prefer dry, open grasslands and savannahs, where they can graze on a variety of vegetation.

The Global Demand and Illegal Trade

Despite their natural beauty, the Indian star tortoise has become a victim of the exotic pet trade. The increasing demand for these tortoises has led to their entanglement in one of the largest global wildlife trafficking networks. It's not uncommon to find them in homes as far away as Canada and the U.S., far from their natural habitats.

Legal Status and Conservation Efforts

CITES and Indian Wildlife Protection Act

The Indian star tortoise is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and is protected under Schedule I of the Wildlife (Protection) Act of 1972 in India. This means they receive the highest level of protection under Indian law, yet illegal smuggling continues to be a significant issue.

Challenges in Conservation

Despite the legal protections, officials have seized hundreds of tortoises being smuggled through airports and borders.

Genetic Diversity and Research Findings

Distinct Genetic Groups

Recent research conducted by the Wildlife Institute of India and Panjab University has revealed two genetically distinct groups of Indian star tortoises: the northwestern and southern populations. This discovery is crucial for developing effective conservation strategies.

Implications for Conservation Strategies

The genetic divergences observed in these tortoises can inform where and how to release and conserve rescued individuals.

The Historical Journey of the Indian Star Tortoise

Evolutionary Background

Millions of years ago, the ancestors of the Indian star tortoise spread across the Indian subcontinent after it split from the Gondwana supercontinent. As the land evolved, so did the tortoises, adapting to the changing environments.

Adaptation to Changing Environments

Over time, the subcontinent's climate shifted, leading to the growth of savannahs and open grasslands. This change came at the expense of humid forests, which became restricted to certain areas. The separation of these habitats paralleled the genetic divergence of the tortoises into northern and southern groups about 2 million years ago.

Conclusion

The Indian star tortoise is not just a beautiful creature; it represents the delicate balance of nature and the urgent need for conservation efforts. While they may be popular as exotic pets, the reality is that they belong in the wild, where they can thrive in their natural habitats. As we learn more about their genetic diversity and the challenges they face, it's crucial to advocate for their protection and ensure that future generations can appreciate their beauty.

On display: A stegosaurus fossil nicknamed 'Apex' was unveiled to the media at the American Museum of Natural History in New York, on December 5. Billionaire Kenneth C. Griffin, who bought the fossil for $44.6 million, has loaned it to the museum for four years. AFP

Topic → Stegosaurus Fossil Discovery: 'Apex'

Key Highlights

- A fossil of a stegosaurus has been discovered.
- 🔍 The fossil has been given the nickname ‘Apex’.
- 🏺 The discovery contributes to the understanding of stegosaurus species.
- 🌍 Stegosaurus lived during the Late Jurassic period.
- 📚 Fossils like ‘Apex’ help paleontologists study dinosaur behavior and ecology.
- The fossil may provide insights into the evolutionary history of dinosaurs.
- 🏆 ‘Apex’ could be significant for educational and scientific purposes.

Significance of 'Apex'

Educational Value: Enhances knowledge of stegosaurus species.
Scientific Contribution: Offers insights into dinosaur behavior and ecology.
Evolutionary Insights: May provide clues about the evolutionary history of dinosaurs.

The issue of India's economic growth versus emissions

SAURABH PANDEY
CSE
FROM BASICS TO UPSC BRILLIANCE

The Indian economy has consistently showcased its robust growth over the past few decades. But higher economic growth is believed to have come with increasing environmental pressure, notably through higher greenhouse gas (GHG) emissions. However, India's Economic Survey (2023-24) claims that India has decoupled its economic growth from GHG emissions, as between 2005 and 2019, India's GDP grew at a compound annual growth rate (CAGR) of 7%, while emissions rose at a CAGR of just 4%. This raises a crucial question: has India really decoupled its economic growth from GHG emissions? And, what does this mean for sustainable development?

Badri Narayanan Gopalakrishnan

Visiting Senior Fellow, Centre for Social and Economic Progress (CSEP)

Shifali Goyal

Research Associate, Centre for Social and Economic Progress (CSEP)

A look at the claim made in the Economic Survey (2023-24), of India having decoupled its economic growth from greenhouse gas emissions

What it means

Decoupling refers to breaking the link between economic growth and environmental degradation. Historically, economic growth is found to be positively related with environmental degradation, as this growth is believed to be a driver of GHG emissions. However, with the growing climate crisis, the imperative to reduce emissions while ensuring continued economic growth has gained global traction.

Decoupling has largely been classified into two types: absolute decoupling and relative decoupling. Absolute decoupling occurs when the economy grows, while emissions decrease. This is the ideal form of decoupling, where countries grow economically without increasing environmental harm. However, relative decoupling happens when both GDP and emissions grow, but the rate of GDP growth surpasses the rate of emissions growth. While this signifies progress, at the same time, it acknowledges that emissions continue to rise.

Decoupling of economic growth and GHG emissions is important. On one hand, it offers a path to sustainable growth and development, a way for nations to grow and improve living standards without exacerbating climate change. On the other, it comes as a response to rising demand for degrowth and sparks the ongoing debate between green growth and degrowth. Proponents of green growth argue that it is possible to maintain or even increase economic growth while reducing environmental harm. In contrast, degrowth advocates suggest that economic growth itself is the primary driver of ecological degradation and should be curbed in favour of reducing resource consumption. But proponents of degrowth overlook the fact that countries, in addition to tackling rising GHG emissions and the climate change, are also required to tackle low standards of living, energy poverty and ensure a decent life, which could be taken care of through economic growth.

The claim

The claim of India's decoupling made in the Economic Survey comes from comparing GDP and emissions growth rates between 2005 and 2019. The Survey does not specify whether this represents absolute or relative decoupling. Using various decoupling indicators discussed in OECD (2002), we examine the status of the economy-wide and sector-wise decoupling status for India. Since the 1990s, with significant trade liberalisation, India has been experiencing steady and stable economic growth. Hence, we are examining how GDP and emission generation are growing in India with respect to the levels of 1990. While there has been no absolute decoupling in India, since 1990, GDP in India has grown at a much higher pace than the GHG emissions in the country, indicating economy-wide relative decoupling. Since, the agriculture and manufacturing sectors are among the major contributors of emission generation in India, it is also important to understand whether these sectors have also achieved decoupling or not, which has been assessed by comparing rate of growth of GVA of the respective sector with the rate of growth of GHGs emitted by the sector. From 1990, India's GDP has grown six-fold, while GHG emissions have only tripled.

Efforts must continue

From the data, it seems that India may have achieved relative decoupling, where emissions are still rising but at a slower pace than the economy. This achievement, while commendable, falls short of the ultimate goal of absolute decoupling, where economic growth can continue even as emissions fall. While most countries fall short of achieving absolute decoupling and still experience rising emissions as GDP increases, many countries have at least managed to achieve a declining rate of growth of emissions. Given that India is a developing country which has not even peaked its emissions yet, emissions are expected to increase with economic growth. Hence, achieving absolute decoupling is not going to happen anytime soon. While India's relative decoupling is a step in the right direction, the path to absolute decoupling is still a long and complex journey. Efforts must still be taken and it will be a significant challenge. This remains a necessary target if India is to meet its long-term climate commitments. Policies and measures that support renewable energy, emission mitigation, and sustainable development will be crucial in ensuring that economic growth and environmental preservation can coexist, ensuring a prosperous and sustainable future for India.

The views expressed are personal

Topic → The Indian Economy and GHG Emissions

Introduction

The Indian economy has been on a rollercoaster ride of growth over the past few decades. But with this growth comes a hefty price tag—environmental pressure, particularly in the form of greenhouse gas (GHG) emissions. The recent Economic Survey (2023-24) claims that India has managed to decouple its economic growth from GHG emissions. But is this really the case? Let’s dive into this intriguing topic and explore what it means for sustainable development.

Understanding Decoupling

What is Decoupling?

Decoupling is a fancy term that refers to breaking the link between economic growth and environmental degradation. Traditionally, economic growth has been a double-edged sword, often leading to increased emissions. But as the climate crisis looms larger, the need to reduce emissions while keeping the economy humming has become a hot topic.

Types of Decoupling

Absolute Decoupling

Absolute decoupling is the holy grail of economic growth. It occurs when the economy grows while emissions decrease. Imagine a world where we can have our cake and eat it too—growing economically without harming the environment.

Relative Decoupling

On the flip side, we have relative decoupling. This happens when both GDP and emissions grow, but GDP grows faster than emissions. While this is a step in the right direction, it still means that emissions are on the rise.

The Current State of India's Economy

Economic Growth vs. GHG Emissions

Between 2005 and 2019, India’s GDP grew at a compound annual growth rate (CAGR) of 7%, while emissions only rose at a CAGR of 4%. This raises eyebrows and questions: has India really managed to decouple its economic growth from GHG emissions?

The Economic Survey (2023-24) Claims

The Economic Survey claims that India has achieved this decoupling, but it doesn’t specify whether it’s absolute or relative. So, what’s the real story?

The Importance of Decoupling

Sustainable Growth and Development

Decoupling is crucial for sustainable growth. It offers a pathway for nations to improve living standards without exacerbating climate change. It’s like walking a tightrope—balancing economic growth while keeping the environment intact.

The Debate: Green Growth vs. Degrowth

This brings us to a heated debate: green growth versus degrowth. Proponents of green growth argue that we can maintain or even increase economic growth while reducing environmental harm. On the other hand, degrowth advocates believe that economic growth is the root cause of ecological degradation and should be curtailed. But let’s not forget that economic growth can also help tackle issues like energy poverty and low living standards.

Analyzing India's Decoupling Claim

Historical Context

The claim of decoupling in India is based on comparing GDP and emissions growth rates from 2005 to 2019. Since the 1990s, India has seen steady economic growth, but has it really achieved absolute decoupling? The data suggests otherwise.

Sector-wise Analysis

When we look at the agriculture and manufacturing sectors—major contributors to emissions—it’s essential to assess whether these sectors have also achieved decoupling. Since 1990, India’s GDP has grown six-fold, while GHG emissions have only tripled. This indicates relative decoupling, but not absolute.

The Path Forward

Challenges Ahead

While India’s relative decoupling is commendable, the journey to absolute decoupling is fraught with challenges. As a developing country, India’s emissions are expected to rise with economic growth, making absolute decoupling a distant goal.

Policy Recommendations

To ensure that economic growth and environmental preservation can coexist, India needs robust policies that support renewable energy, emission mitigation, and sustainable development. It’s a tall order, but necessary for a prosperous future.

Conclusion

In conclusion, while India may have achieved relative decoupling, the road to absolute decoupling is long and complex. The country must continue to strive for policies that promote sustainable growth while addressing the pressing issue of climate change.

Gamify India's skilling initiatives

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The problem of unemployment has become a contentious issue in economic policy discussions in India in recent times. Economic Survey 2023-24 estimated that India needs to create 78.5 lakh new jobs in the non-farm sector annually until 2030 to meet the demands of the rising workforce. One of the policy prescriptions often suggested to overcome the unemployment challenge is to close the growing gap between the skill sets of job seekers and the skill requirements of the industry.

India's skilling challenge

Over time, India has established a comprehensive institutional and policy framework for training and skilling. However, the success of this is somewhat limited. The Periodic Labour Force Survey 2022-23 identified that only 21% of the Indian youth aged 15-29 years had received vocational/technical training through formal and informal sources. The share of youth who had received formal vocational/technical training was 4.4% in 2022-23. The Chief Economic Advisor, V. Anantha Nageswaran, recently stated that only 51% of India's graduates are employable. These facts raise concerns regarding the reach, quality, and industry relevance of existing skilling programmes. Incidentally, one of the focus areas of the Prime Minister's package for employment and skilling announced in the 2024-25 Budget was improving the outcome and quality of skilling and aligning the training content and design to the skill needs of the industry.

The enormity of India's skilling challenge is further aggravated by the need to equip the workforce with skills and knowledge that meet the requirements of industry 4.0 (I4.0), which entails integrating advanced technologies such as artificial intelligence, robotics, the internet of things, and big data to do smart manufacturing. Over two-thirds of Indian manufacturers are expected to embrace digital transformation by 2025. Government policy support has been given to prepare the industry for I4.0 through the SAMARTH Udyog Bharat 4.0 initiative. But according to estimates, only 1.5% of Indian engineers possess the skills for new-age jobs. Sixty percent of the Indian MSME workforce lacks the new-age digital skills. So, it becomes crucial to skill and upskill our workforce according to I4.0 needs.

> Gamified and simulation-based learning and training modules can potentially improve the quality and outcome of workforce training

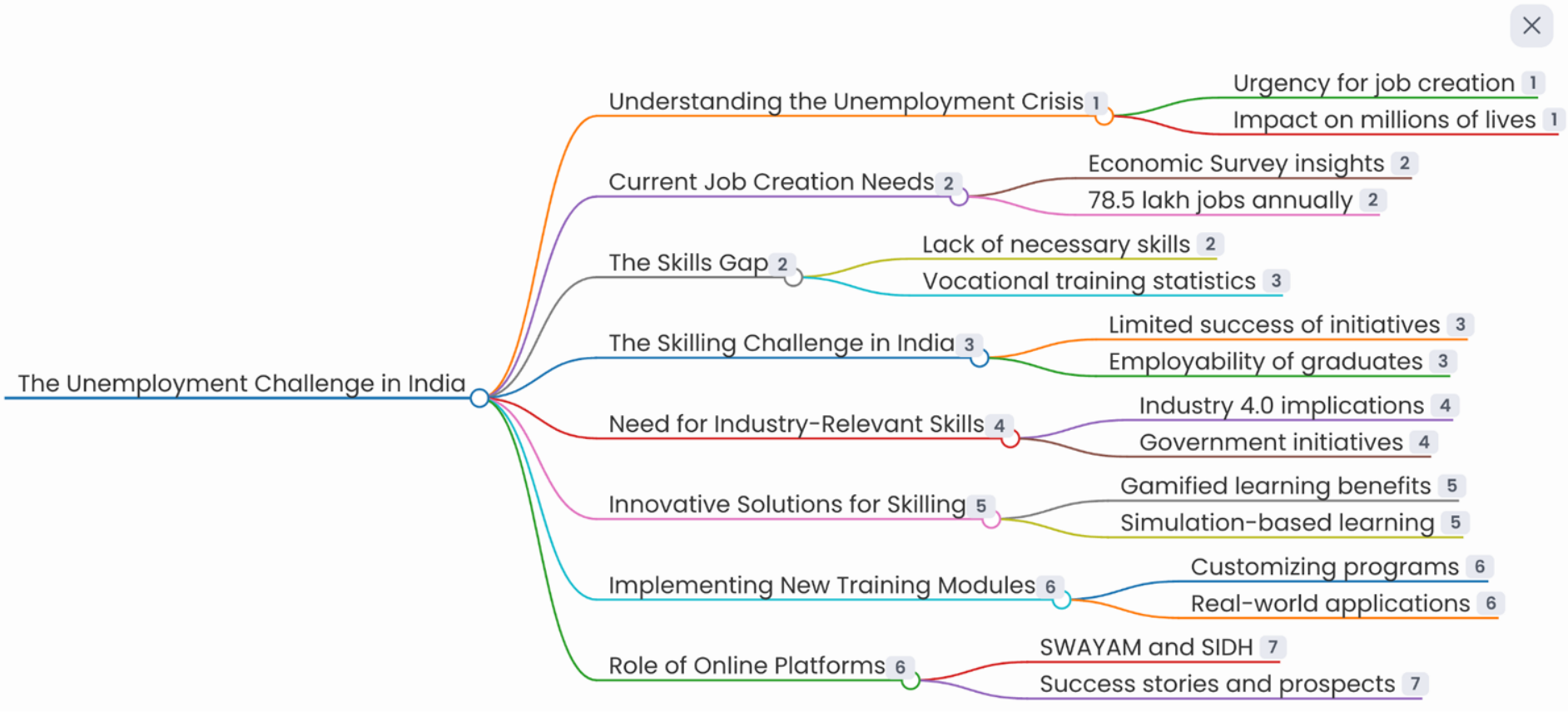
A new initiative

India could consider incorporating gamified and simulation-based learning and training modules. While gamified learning incorporates game elements into skill training, simulation-based learning uses virtual environments that mimic real-world scenarios, allowing learners to practice and apply skills in a safe and controlled setting. Using game mechanics makes skill training interactive and enjoyable, leading to higher participant engagement and knowledge retention than traditional learning methods. Also, the rewards and recognition through points and badges can motivate learners to complete training tasks and strive for excellence. Gamified systems often provide instant feedback to help trainees understand their progress and areas for improvement. Features such as 'Leaderboards and challenges' can foster a sense of competition, thereby encouraging trainees to perform better. Clear goals and milestones in gamified learning help trainees stay focused.

Simulation-based learning provides hands-on experience in a controlled environment and allows trainees to experiment, make mistakes, and learn from them without bothering about real-world consequences. Simulations also help trainees understand complex systems and develop critical thinking, problem-solving, and practical skills. Also, the immersive nature of the simulations allows learners to retain the knowledge gained for longer. Singapore and Germany have adopted gamified and simulation-based learning into their education, vocational, and skill training systems.

Adopting such a module in government skilling programmes can potentially improve the quality and outcome of workforce training. The module can be customised by identifying areas where skill sets are lacking. Trainees can be presented with challenges during training that will be adjusted based on their progress. The platform can feature training modules that simulate actual professional circumstances, enabling trainees to apply their knowledge practically. Simulations can assess the trainee's decision-making abilities and demonstrate the outcomes resulting from their decisions. At a decentralised level, the module can be extended to education institutes of higher learning by providing the students with a platform to work on real-world projects. Students can be given opportunities to intern on live projects and demonstrate their skills, and industry can use this talent pool while hiring.

The SWAYAM and Skill India Digital Hub (SIDH), the two online platforms for skill education and training initiated by the Indian government, can host the gamified and simulation training module. The SWAYAM platform hosts more than 4,000 courses. Since its inception, over 40 million participants have enrolled in the platform and a lion's share (93.45%) of successful course completions in the platform were under the engineering and physical sciences stream. As of June 2024, 7.63 lakh candidates were enrolled in SIDH's 752 online courses. The platform offers 7.37 lakh minutes of digital content, making it a potentially rich resource for learners. The response to SWAYAM and SIDH demonstrates the huge demand for technical education and training in India and further strengthens the idea of offering gamified and simulation-based skill training on such platforms.


The Unemployment Challenge in India
Understanding the Unemployment Crisis 1
Urgency for job creation 1
Impact on millions of lives 1
Current Job Creation Needs 2
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78.5 lakh jobs annually 2
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The Skilling Challenge in India 3
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Gamified learning benefits 5
Simulation-based learning 5
Implementing New Training Modules 6
Customizing programs 6
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SWAYAM and SIDH 7
Success stories and prospects 7

Topic → The Unemployment Challenge in India

Unemployment in India has become a hot topic, sparking debates among policymakers and economists alike. With the Economic Survey 2023-24 estimating that India needs to create a staggering 78.5 lakh new jobs in the non-farm sector every year until 2030, the urgency to address this issue is palpable.

: Understanding the Unemployment Crisis

The unemployment crisis isn’t just a statistic; it’s a reality affecting millions of lives. As the workforce continues to grow, the need for jobs becomes more pressing. But why is it that despite various initiatives, the unemployment rate remains high?

: **Current Job Creation Needs**

The Economic Survey highlights a critical need for job creation. With a rising workforce, the demand for employment opportunities is skyrocketing. But how do we meet this demand?

: **The Economic Survey 2023-24 Insights**

According to the Economic Survey, the creation of 78.5 lakh jobs annually is essential to keep pace with the growing workforce. This figure isn’t just a number; it represents the hopes and dreams of countless individuals seeking stable employment.

: The Skills Gap

One of the primary reasons for the unemployment crisis is the skills gap. While there are jobs available, many job seekers lack the necessary skills to fill these positions.

: **The Skilling Challenge in India**

India has made strides in establishing a framework for training and skilling, but the success of these initiatives has been limited.

: **Statistics on Vocational Training**

The Periodic Labour Force Survey 2022-23 revealed that only 21% of Indian youth aged 15-29 have received vocational or technical training. Even more alarming is that only 4.4% received formal training. This raises serious questions about the effectiveness of current skilling programs.

: **Employability of Graduates**

The Chief Economic Advisor, V. Anantha Nageswaran, pointed out that only 51% of graduates in India are employable. This statistic is a wake-up call, highlighting the urgent need for reform in our education and training systems.

The Need for Industry-Relevant Skills

As industries evolve, so do their skill requirements. The challenge lies in equipping the workforce with the skills needed for the future.

Industry 4.0 and Its Implications

The advent of Industry 4.0 (I4.0) brings with it a demand for advanced skills, including artificial intelligence, robotics, and big data. Over two-thirds of Indian manufacturers are expected to embrace digital transformation by 2025.

Government Initiatives for I4.0

The government has launched initiatives like SAMARTH Udyog Bharat 4.0 to prepare industries for this transformation. However, the reality is stark: only 1.5% of Indian engineers possess the skills for new-age jobs.

: Innovative Solutions for Skilling

To tackle the skilling challenge, innovative solutions are needed. Enter gamified and simulation-based learning.

: Gamified Learning

Gamified learning incorporates game elements into skill training, making it interactive and enjoyable. This approach can significantly enhance engagement and knowledge retention.

Benefits of Gamified Learning

By using game mechanics, learners are motivated to complete tasks and strive for excellence. Features like leaderboards and instant feedback can foster a sense of competition and improvement.

Simulation-Based Learning

Simulation-based learning allows trainees to practice skills in a controlled environment, mimicking real-world scenarios. This hands-on experience is invaluable.

Advantages of Simulation Training

Simulations help learners understand complex systems and develop critical thinking and problem-solving skills. The immersive nature of simulations aids in long-term knowledge retention.

Implementing New Training Modules

The next step is to implement these innovative training modules effectively.

Customizing Training Programs

Training programs can be customized to address specific skill gaps, ensuring that learners receive relevant and practical training.

Real-World Applications

By presenting trainees with real-world challenges, they can apply their knowledge practically, preparing them for the workforce.

The Role of Online Platforms

Online platforms like SWAYAM and Skill India Digital Hub (SIDH) can play a crucial role in delivering these training modules.

SWAYAM and Skill India Digital Hub

SWAYAM hosts over 4,000 courses, with millions of participants enrolled. The demand for technical education is evident, and these platforms can facilitate gamified and simulation-based training.

Success Stories and Future Prospects

The success of SWAYAM and SIDH demonstrates the potential for innovative training methods to meet the needs of the workforce.

Conclusion

In conclusion, addressing the unemployment crisis in India requires a multifaceted approach. By bridging the skills gap through innovative training methods like gamified and simulation-based learning, we can equip our workforce for the future. The time to act is now, and with the right strategies in place, we can turn the tide on unemployment.

Topic → Warren Buffett's Wealth Philosophy

Key Points

- **Warren Buffett's Wealth 💰**
  - Net worth: ~$121 billion
  - Pledge to give away wealth
  - Transfer to foundations: $870 million
- **Philosophy on Wealth □**
  - Wealth as a tool for *equal opportunity*
  - Importance of addressing wealth concentration
  - Criticism of generational wealth accumulation

Luck and Opportunity ☘

- Concept of Luck Egalitarianism
- Wealth attributed to circumstances of birth
- Inequality driven by policy, not just luck

Charity and Wealth Distribution □

- Private wealth distribution through charity
- Historical context of inequality post-WWII
- Critique of neoliberal policies

Policy Solutions 📜

- Need for state intervention
- Taxation and redistribution as advocated by Thomas Piketty
- Importance of fair wages and competitive market practices

Topic --H5N1 Virus Mutation

A study by Scripps Research focused on the H5N1 virus and its mutations.

🐄 The virus has recently infected dairy cows in the U.S., leading to mild human cases.

🔬 A specific mutation (glutamic acid to leucine) at residue 226 of the virus hemagglutinin was identified.

□ This mutation may enhance the virus's ability to attach to human cells.

⚠□ Increased attachment could raise the risk of human-to-human transmission.

□ The virus retains its specificity for avian receptors despite the mutation.

📈 The findings highlight potential public health concerns regarding the H5N1 virus.

Summary: A mutation in the H5N1 virus could increase its ability to infect humans, raising concerns about transmission risks.

Topic → Methane Conversion Innovation

Key Developments

🌍 Methane Impact: Although less abundant than carbon dioxide, methane has a significant effect on global warming due to its potent heat-trapping capabilities.

🔬 Catalyst Innovation: Engineers at MIT have developed a novel catalyst that transforms methane into valuable polymers.

♻️ Environmental Benefits: This conversion process offers a promising solution for reducing greenhouse gas emissions.

⏱️ Operational Efficiency: The catalyst functions efficiently at room temperature and standard atmospheric pressure.

🏭 Implementation Potential: The technology is suitable for deployment at methane production sites, including power plants and cattle barns.

🌱 Environmental Focus: The initiative aims to tackle environmental issues associated with methane emissions.

🚀 Sustainable Progress: This breakthrough marks a crucial advancement in sustainable management of greenhouse gases

Topic →Coffee Wilt Disease: Genetic Insights

🔬 Researchers analyzed the genomes of 13 historic strains of coffee wilt disease.

☕ The pathogen responsible for the disease is Fusarium xylarioides.

🌱 F. xylarioides consists of at least four distinct lineages.

🔄 The strains have acquired DNA segments from another fungal pathogen, F. oxysporum.

⚙️ This genetic exchange has improved F. xylarioides's ability to infect coffee plants.

📊 The study focused on multiple disease outbreaks to understand pathogen adaptation.

🌍 The findings highlight the evolutionary dynamics between fungal pathogens and their hosts.

Summary: Researchers found that Fusarium xylarioides, the pathogen causing coffee wilt disease, has multiple lineages and has adapted through genetic exchange with another pathogen, enhancing its infectivity

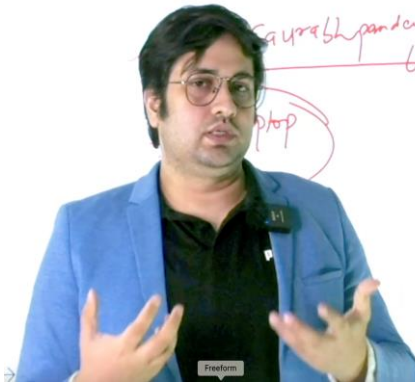
Topic → Hummingbird Nectar Extraction: A Closer Look

- Hummingbird bills resemble drinking straws but function differently in nectar extraction.
- New research reveals that the comparison to straws is misleading regarding water or nectar intake.
- Hummingbirds perform a coordinated movement of their bills and tongues to quickly draw up nectar.
- Researchers analyzed footage and micro-CT scans to understand the mechanics of hummingbird drinking.
- The drinking process involves four key movements: opening the bill tip, closing it after nectar intake, keeping the midsection shut while opening the base, and extending the tongue again.
- ⚡ Hummingbirds can extract nectar at lightning speeds due to their intricate bill movements.
- ✿ The study enhances our understanding of hummingbird feeding behavior and biomechanics.

Summary: Hummingbirds use a complex series of bill and tongue movements to rapidly extract nectar, challenging the straw-like comparison of their bills

Topics - MINDS MAPS included (Daily current affairs 10th December 2024

- Supreme Court's Stance on West Bengal's OBC Policy
- Fundamental particles
- Global Drying Trends and Impacts
- Food insecurity and energy poverty.
- Right to Disconnect in India: An Overview
- New Merchant Shipping Bill
- Los Escobazos:
- Mains



By saurabh Pandey

THE HINDU

Topic → Supreme Court's Stance on West Bengal's OBC Policy

Key Developments

- Supreme Court's Position: The court emphasized that reservations should not be based on religion during a hearing on West Bengal's OBC policy.

- ⚖️ Appeal by West Bengal: The state challenged a Calcutta High Court ruling that categorized the inclusion of certain Muslim communities in the OBC list as religious.

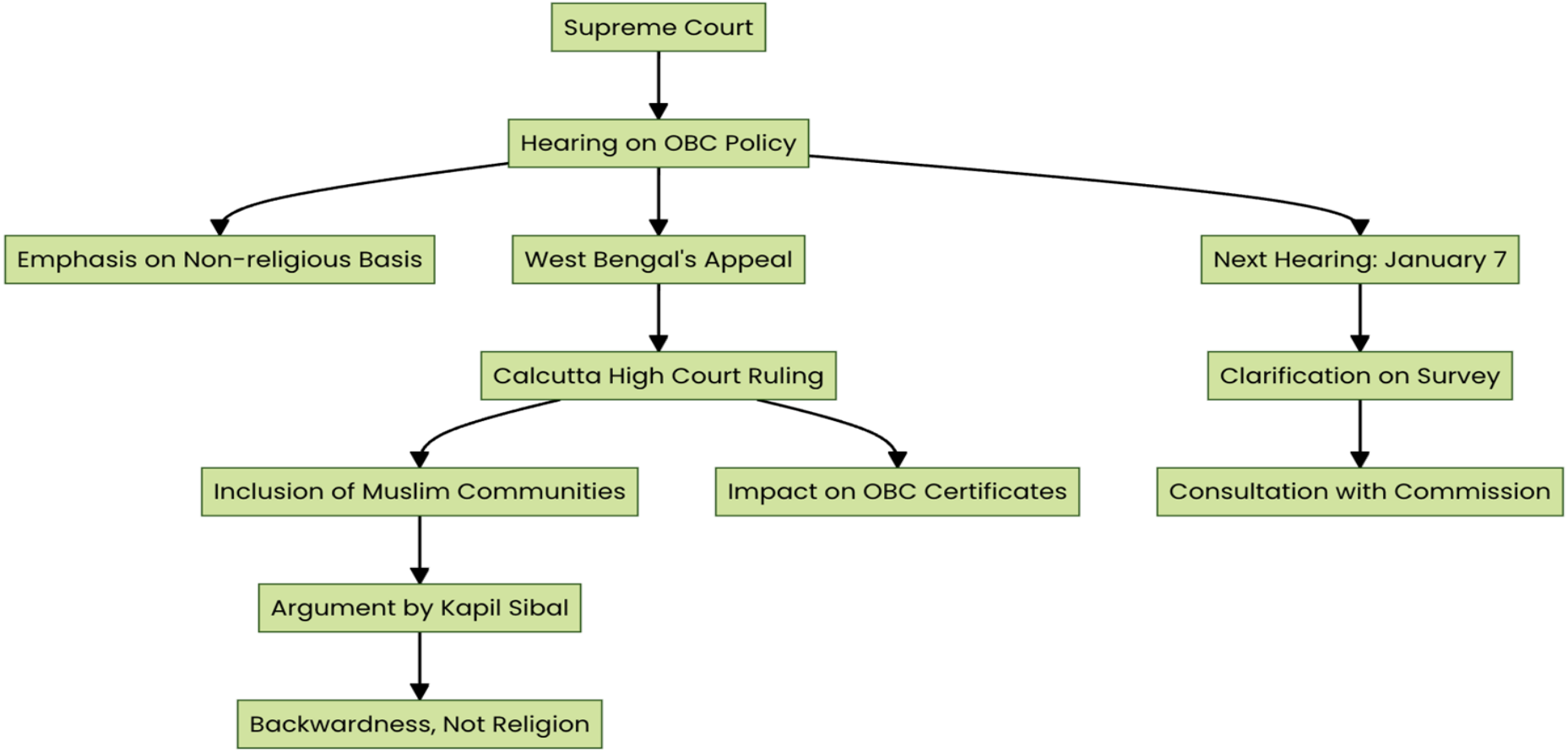
- 📜 High Court's Findings: The selection of 77 Muslim classes as backward was seen as an affront to the Muslim community.

- 👩‍⚖️ Argument by Kapil Sibal: He contended that the inclusion was based on backwardness, not religion.

🔍 Consultation Details: The court requested information on consultations with the West Bengal Backward Classes Commission before designating these communities as OBCs.

📉 Impact of High Court Judgment: Affected five lakh OBC certificates issued since 2010, but clarified it would not impact those already employed using these certificates.

Logical Flow of the Case:



Summary: The Supreme Court is scrutinizing West Bengal's OBC policy, focusing on ensuring reservations are not religion-based, following a High Court decision against the inclusion of certain Muslim communities.

Topic → Fundamental particles

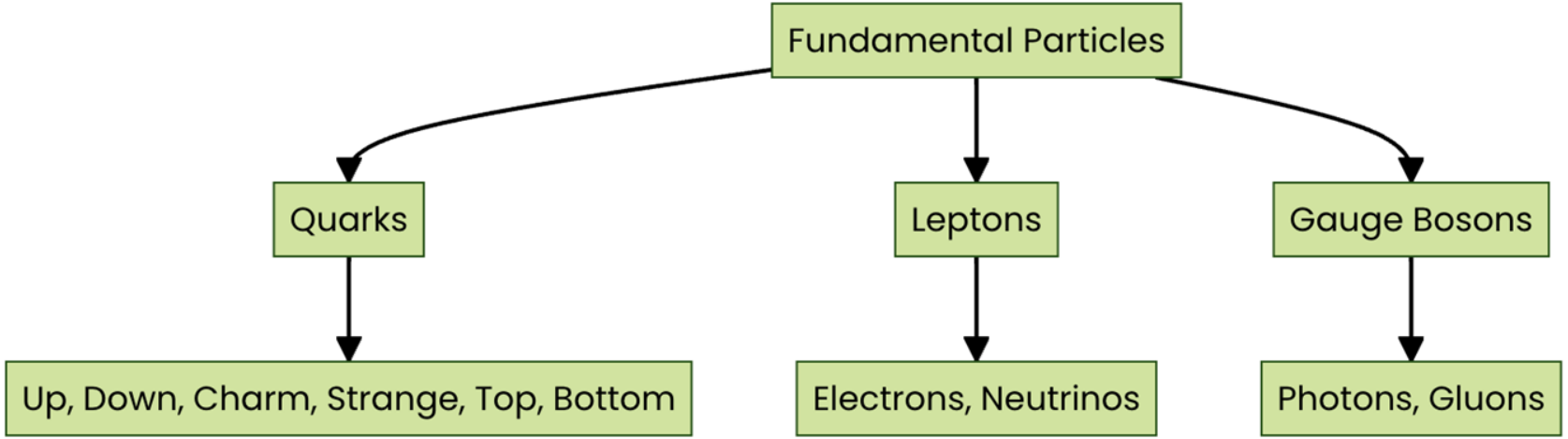
Fundamental particles are the building blocks of matter, which include quarks, leptons, and gauge bosons. They form the foundation of everything we see around us. Here's a quick breakdown of the different types:

Quarks: These particles combine to form protons and neutrons. There are six types (flavors) of quarks: up, down, charm, strange, top, and bottom.

Leptons: This group includes electrons and neutrinos. Electrons are vital for chemical reactions, while neutrinos are elusive and interact very weakly with matter.

Gauge Bosons: These particles are responsible for mediating the forces between fundamental particles. Examples include photons for electromagnetic force and gluons for the strong force.

Figure 1.1: Fundamental Particles Overview:



Standard Model of Elementary Particles

	three generations of matter (fermions)			interactions / force carriers (bosons)	
	I	II	III		
mass / charge / spin	≈2.16 MeV/c² / ⅔ / ½	≈1.273 GeV/c² / ⅔ / ½	≈172.57 GeV/c² / ⅔ / ½	0 / 0 / 1	≈125.2 GeV/c² / 0 / 0
	u up	c charm	t top	g gluon	H higgs
QUARKS	≈4.7 MeV/c² / −⅓ / ½	≈93.5 MeV/c² / −⅓ / ½	≈4.183 GeV/c² / −⅓ / ½	0 / 0 / 1	
	d down	s strange	b bottom	γ photon	
LEPTONS	≈0.511 MeV/c² / −1 / ½	≈105.66 MeV/c² / −1 / ½	≈1.77693 GeV/c² / −1 / ½	≈91.188 GeV/c² / 0 / 1	
	e electron	μ muon	τ tau	Z Z boson	
	<0.8 eV/c² / 0 / ½	<0.17 MeV/c² / 0 / ½	<18.2 MeV/c² / 0 / ½	≈80.3692 GeV/c² / ±1 / 1	
	ν_e electron neutrino	ν_μ muon neutrino	ν_τ tau neutrino	W W boson	

GAUGE BOSONS
VECTOR BOSONS

SCALAR BOSONS

The Enigma of Antimatter

Antimatter is the mysterious counterpart to matter, consisting of antiparticles that have the same mass but opposite charge. For instance, the antimatter equivalent of an electron is a positron. Some intriguing points about antimatter include:

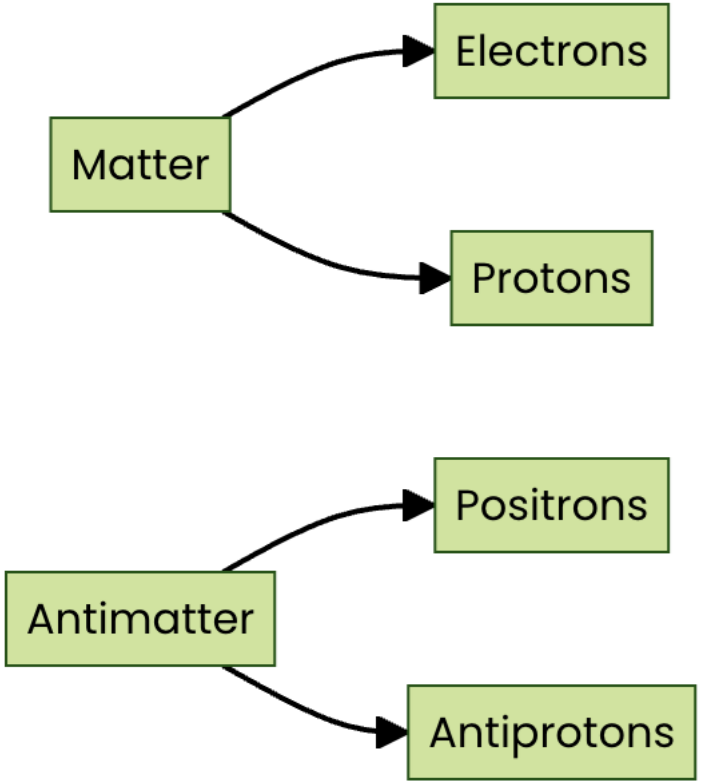
- **Production:** Antimatter is not naturally abundant and is produced in minute quantities in high-energy processes.
- **Applications:** Its potential in medical imaging (like PET scans) and theoretical propulsion systems (like antimatter engines) is tantalizing.
- **Research:** The search for antimatter helps scientists understand why our universe is dominated by matter rather than antimatter.

Latest Discoveries in Particle Physics

Recent breakthroughs in the field of particle physics continue to unveil the mysteries of fundamental particles and antimatter. Noteworthy findings include:

- **Quantum Entanglement:** A recent study confirmed that quantum entanglement persists among top quarks, crucial for understanding the interactions within our universe.
- **Heaviest Antimatter Observation:** A new observation of heavier antimatter particles provides valuable data for dark matter research

Figure 2.1: Antimatter vs Matter:



Topic → Global Drying Trends and Impacts

🌍 Global Drying Trends

Over three-quarters of the world's land has experienced drier conditions from 1970 to 2020.

These conditions are worsening the survival of plant and animal life.

□ Climate Change Impact

Human-caused climate change, deforestation, and water scarcity are turning once-fertile lands into deserts.

There is no return to previous conditions for these lands.

🗓 Future Projections

By the end of the century, nearly five billion people could be affected by drying conditions.

This is a significant increase from a quarter of the global population today.

🌾 Agricultural Risks

Drier land threatens farming productivity.

This leads to food insecurity and reduced availability of food for livestock.

🌍 Migration Concerns

Increased aridity is causing more migration.
Erratic rainfall and land degradation hinder economic development in affected regions.

💰 Funding Disputes

Negotiations at the UN summit focus on whether wealthy nations should fund global drought responses.
This includes better forecasting and water management systems.

📅 Ongoing Discussions

The UN summit in Riyadh is addressing urgent strategies to combat droughts and land degradation.
Talks are set to conclude on Friday.

Summary: A UN report highlights the alarming trend of global land drying due to climate change, threatening ecosystems, agriculture, and human populations, while nations discuss funding and strategies to combat these issues.

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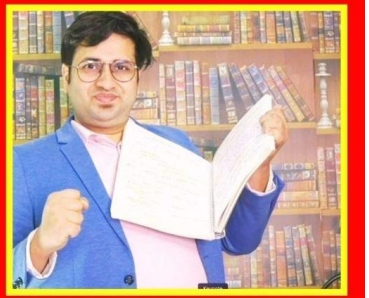

In energy-dependent world, the issue of food security

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Amit Mitra

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"Addressing food insecurity and energy poverty is central to achieving global stability, but tackling these issues independently is no longer sufficient," warns the World Bank in its latest report on climate and development. The intertwined crises of food and energy security are defining the trajectory of the 21st century, casting a long shadow over global stability. Both systems are under siege – food production is strained by climate change, population growth, and inequality, while energy systems face geopolitical tensions, outdated infrastructure, and the slow transition from fossil fuels. Yet, their interconnectedness presents an even greater challenge: agriculture, a lifeline for humanity, is both a significant energy consumer and a contributor to climate change. As the world teeters on the edge of multiple tipping points, can we truly address one without confronting the other?

Dependency on carbon-intensive energy

Agriculture consumes nearly 70% of global freshwater resources and is responsible for over 20% of greenhouse gas emissions. Its dependence on fossil fuels – for mechanisation, irrigation, fertilizer production, and transportation –has created a vicious cycle of environmental degradation. This reliance also exposes food systems to energy price shocks, threatening global stability. Rising temperatures and erratic weather patterns further disrupt agricultural output, putting the livelihoods of 2.5 billion people at risk. Between 2020 and 2023, nearly 11.8% of the global population faced severe food insecurity, a figure projected to rise to 956 million by 2028.

Renewable energy investments reached $500 billion in 2022, but fossil fuel consumption remains robust due to short-term economic and geopolitical pressures. Nations such as the United States, Brazil, and Guyana continue to expand oil and gas production, prioritising exports and domestic energy security. This ongoing dependency on carbon-intensive energy exacerbates the vulnerability of global food systems, particularly in regions with limited access to reliable energy. Energy poverty reveals sharp global inequities. Low-income countries account for a small fraction of global energy demand but suffer disproportionately from supply disruptions. Extreme weather events frequently damage energy infrastructure in regions where power grids are already unreliable. In rural areas, energy deficits hinder agricultural productivity, leading to higher food prices and deepening poverty. In sub-Saharan Africa, per-hectare fertilizer usage remains far below the global average, contributing to food insecurity despite $1.9 billion spent on fertilizer imports by the top 10 African importing countries in 2021 – more than double the amount in 2016.

Agriculture's reliance on fossil fuels further highlights its vulnerability. Natural gas, critical for fertilizer production, is both a feedstock and an energy source, with 80% of it used for ammonia synthesis and 20% powering the process. Volatility in natural gas prices directly impacts fertilizer costs and global food prices. Geopolitical actions, such as China's 2021 ban on phosphate fertilizer exports, disrupt agricultural supply chains. India, which imports 60% of its diammonium phosphate (DAP) fertilizers, experienced significant delays during critical cropping seasons, exposing its vulnerability to external shocks.

Renewable energy offers a glimmer of hope, but its deployment remains uneven. High-income countries installed 83% of new renewable capacity in 2022, leaving low-income nations reliant on outdated, carbon-intensive systems. While solar-powered irrigation and biomass energy solutions could transform agriculture, high costs and inadequate infrastructure limit their reach. The transition risks bypassing those who need it most.

> There is a need to reimagine agriculture, with the twin crises of food and energy insecurity set to challenge global priorities

Demands on agriculture

Meanwhile, agriculture is being increasingly burdened with competing demands. Beyond feeding a growing population, it is expected to support the global energy transition by producing biofuels. This dual role often pits food security against energy needs, as biofuel production requires vast land and water resources. In a world where nearly 12% of the population faces hunger, is prioritising energy over food morally defensible? The financial costs of addressing food and energy insecurity are substantial yet achievable. The World Food Security Outlook estimates that ensuring basic caloric needs for the world's most vulnerable populations will require $90 billion annually until 2030. Tackling malnutrition among women and children demands an additional $11 billion per year, while transforming global food systems could cost $300 billion-$400 billion annually – just 0.5% of global GDP. However, for low-income nations, these costs are staggering, with food insecurity expenses in some cases surpassing 95% of GDP.

The implications of inaction are dire. Food insecurity is projected to cost the global economy trillions in lost productivity and adverse health outcomes. Climate-induced energy disruptions threaten to destabilise entire regions, driving social unrest and mass migration. For example, Africa's mineral wealth, essential for renewable technologies, is often extracted without benefiting local economies, perpetuating cycles of poverty and underdevelopment.

Need for inclusivity

Despite record investments in renewables, fossil fuel expansions continue unabated. Every delay compounds the human, environmental, and economic costs, narrowing opportunities for a resilient future. Clean energy solutions must address structural barriers to inclusivity, ensuring that the most vulnerable communities are not left behind.

Ultimately, the twin crises of food and energy insecurity challenge global priorities. The solutions are within reach, but they require a fundamental shift in perspective. Agriculture must be reimagined as both a source of sustenance and a cornerstone of sustainable development. Failure to act will create the risk of pushing millions into hunger and undermining global climate goals. As the clock ticks, the question remains: will the world rise to meet the moment?

The views expressed are personal

Topic → Food insecurity and energy poverty.

The World Bank recently highlighted that tackling these two intertwined crises is crucial for achieving global stability.

The Interconnected Crises of Food and Energy Security

The Current State of Food Production

Food production is facing a perfect storm. Climate change, population growth, and inequality are all putting immense pressure on our food systems.

Climate Change and Agriculture

Agriculture is a significant energy consumer, and it’s also a major contributor to climate change. It’s a double-edged sword.

As temperatures rise and weather patterns become more erratic, agricultural output is disrupted, putting the livelihoods of billions at risk.

Geopolitical Tensions in Energy Supply

On the energy front, geopolitical tensions and outdated infrastructure are making things even messier. Countries are scrambling to secure their energy supplies, often at the expense of global stability.

Dependency on Carbon-Intensive Energy

Agriculture's Heavy Footprint

agriculture consumes nearly 70% of the world’s freshwater resources and is responsible for over 20% of greenhouse gas emissions

That’s a hefty price to pay for our food. The reliance on fossil fuels for everything from mechanization to transportation creates a vicious cycle of environmental degradation.

The Vicious Cycle of Energy Price Shocks

This dependency also makes food systems vulnerable to energy price shocks. When energy prices spike, food prices follow suit, and that’s a recipe for disaster.

The Impact of Energy Poverty

Energy poverty is a stark reality for many low-income countries. They account for a tiny fraction of global energy demand but suffer disproportionately from supply disruptions. It’s like being stuck in a traffic jam while everyone else zooms by.

The Struggles of Low-Income Countries

In rural areas, energy deficits hinder agricultural productivity, leading to higher food prices and deepening poverty.

For instance, in sub-Saharan Africa, fertilizer usage is far below the global average, contributing to food insecurity.

Renewable Energy: A Path Forward?

The Uneven Deployment of Renewables

Renewable energy investments are on the rise, but the deployment is uneven. High-income countries installed 83% of new renewable capacity in 2022, leaving low-income nations in the dust.

The Promise of Solar and Biomass

While solar-powered irrigation and biomass energy solutions could revolutionize agriculture, high costs and inadequate infrastructure limit their reach. It’s like having a shiny new toy but not being able to play with it.

Competing Demands on Agriculture

Agriculture is being asked to do double duty—feeding a growing population while also supporting the global energy transition through biofuels. This often pits food security against energy needs, raising ethical questions about priorities.

The Economic Burden of Food Insecurity

The financial costs of addressing food and energy insecurity are substantial but achievable. The World Food Security Outlook estimates that ensuring basic caloric needs for vulnerable populations will require $90 billion annually until 2030.

The Need for Inclusivity in Solutions

Despite record investments in renewables, fossil fuel expansions continue. Every delay compounds the human, environmental, and economic costs. Clean energy solutions must address structural barriers to inclusivity, ensuring that vulnerable communities are not left behind.

Conclusion

The twin crises of food and energy insecurity are challenging global priorities. The solutions are within reach, but they require a fundamental shift in perspective. Agriculture must be reimagined as both a source of sustenance and a cornerstone of sustainable development. The clock is ticking—will the world rise to meet the moment?

Topic → Right to Disconnect in India: An Overview

Key Aspects of Workplace Rights in India

- IN **Lack of Specific Laws:** India does not have specific laws that recognize the right to disconnect from work.
- 📜 **Constitutional Mandates:** The Indian Constitution and Directive Principles emphasize the right to work in a conducive and healthy environment.

Article 38 of the Constitution mandates that “the State shall strive to promote the welfare of the people”. Article 39(e) of the Directive Principles of State Policy directs the state to direct its policy towards securing the strength and health of its workers. The Supreme Court, in Vishakha v State of Rajasthan (1997), ruled that sexual harassment at the workplace violates fundamental rights, recognised the right to dignity at the workplace, and issued guidelines to ensure that there is a safe working environment for women and gender equality. In Ravindra Kumar Dhariwal and Ors v. Union of India (2021), the Court read Article 14 to include ideas of inclusive equality to reasonably accommodate persons with disabilities

⚖️ **Supreme Court Rulings**: The Supreme Court has ruled that sexual harassment at the workplace violates fundamental rights and has issued guidelines for a safe working environment.

♿ **Inclusive Equality:** The Court has recognized the need for inclusive equality, accommodating individuals with disabilities in the workplace.

🛑 **Workplace Dignity:** Judicial pronouncements highlight the importance of dignity at work, yet violations of this right remain common in Indian workplaces.

□ **Mental Health Sensitivity**: Employers are directed to be sensitive to mental health concerns, but accountability for breaches of working hours is still lacking.

⊘ **Common Violations:** Despite legal frameworks, violations of dignity and mental health concerns are prevalent in Indian workplaces.

Summary: India lacks specific laws for the right to disconnect from work, but judicial rulings emphasize workplace dignity and mental health, despite ongoing violations

Topic → The Need for a New Merchant Shipping Bill

Why a New Bill?

- **Outdated legislation:** The Merchant Shipping Act, 1958 and Coasting Vessels Act, 1838 no longer meet contemporary needs. 📜
- **Regulatory gaps:** Significant issues in offshore sector regulation, with nearly 50% of Indian-flagged vessels affected. ⚓
- **Lack of training framework:** Absence of legal structure to effectively regulate private sector participation in maritime training. 🏫
- **Seafarers' welfare:** Current provisions limit welfare to Indian-flagged ships, neglecting 85% of Indian seafarers on foreign-flagged vessels. 🚢
- **International compliance:** Existing Acts lack provisions for implementing international conventions India has signed. 🌍
- **Modernization issues:** The current Act hinders transition to a regulator-facilitator model for better business ease. ⚙️

Key Features of the Merchant Shipping Bill

Ease of Registration:

- Ownership threshold reduced from 100% to 51% for Indian citizens/entities. 🏢
- Allows LLPs, NRIs, and OCIs to own Indian vessels.
- Foreign entities permitted to hold shares, ensuring majority ownership remains with Indians. 🌍
- Temporary registration for vessels destined for demolition to support ship recycling. ♻️

Enlarged Scope of Vessels:

- Expands definitions to include a wide range of vessels (submersibles, barges, etc.) for better oversight. 🚤
- Addresses operational and safety risks in the offshore sector. ⚠️
- Enhances coastal security by regulating all types of vessels post-26/11 Mumbai attacks. 🔒

Indian Government's Initiatives to Combat Marine Pollution

Key Measures and Initiatives

🌊 The Indian Government is actively working to reduce marine pollution from shipping activities.

⚓ Key measures include reducing the sulphur content in marine fuel from 3.5% to below 0.5%.

⊘ A ban on single-use plastics has been enforced on Indian ships.

 The 'Swachh Sagar' online portal has been launched for the proper disposal of ship-generated waste at Indian ports.

🌍 The International Maritime Organization (IMO) has established conventions to combat marine pollution, including MARPOL and the Bunker Convention.

📜 A new Bill has been introduced to fully incorporate these international conventions into Indian law.

🌱 This initiative aligns India’s maritime regulations with global standards, promoting sustainable shipping practices.

Provisions for Seafarers and Maritime Training

Overview

Growth of Indian Seafarers:

Increased from 116,000 (2015-16) to 285,000 today.

85% serve on foreign-flagged vessels.

Lack of Welfare Provisions:

Existing Act does not address welfare and safety.

Proposed Bill aims to extend welfare measures to Indian seafarers on foreign vessels.

Importance of Maritime Training

Government Responsibility:

Education and training of mercantile marine under Union Government.

Regulatory Gaps:

Historically government-run institutions, now private sector involvement.

Over 160 maritime training institutes lack proper oversight

Coastal Shipping

Key Highlights

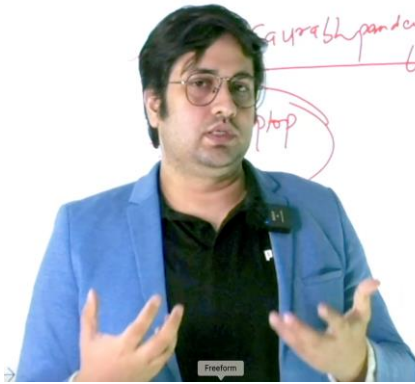
- 🚢 Coastal Shipping Focus: Separation of technical ship regulations from commercial use to streamline the regulatory framework.
- 📜 Coastal Shipping Bill, 2024: Incorporates licensing, permissions, and coastal planning to enhance operations.
- 🌊 Sagarmala Program: Aligns with initiatives to promote coastal shipping through dedicated berths and improved connectivity.
- 🏗 Infrastructure Development: Calls for simultaneous infrastructure and regulatory improvements.
- 🤝 Bipartisan Support: Advocates for initiatives that transcend party politics for effective implementation.
- 💼 Investment and Safety: Aims to attract investment, enhance safety, combat pollution, and support seafarer welfare.
- 🔓 Unlocking Potential: Designed to unlock the full potential of India’s maritime sector.

The torchbearers

People sing during the *Los Escobazos* (the brooms) festival in Jarandilla de la Vera, Caceres, Spain on Saturday night. The festival, celebrated on the eve of a Catholic feast, is believed to have originated with shepherds using blazing brooms to light their way. REUTERS

Topics - MINDS MAPS included (Daily current affairs 11th December 2024

- What are PVTGs?
- Madhav Gadgil: Champion of the Earth
- PM POSHAN:
- Longevity Research and AI Innovation
- Human Evolution Origin
- Two distinct hominin species
- India's Space Programme Goals
- Introduction to Judicial Ethics
- World Solar Report 2024 Overview ☀️
- Mains



By saurabh Pandey

THE HINDU

‘Mindless splurge’: Odisha govt.’s decision to seek external loan for PVTG development faces scrutiny

Satyasundar Barik
BHUBANESWAR

The Odisha government is planning to secure a ₹734.86-crore external loan from the International Fund for Agricultural Development (IFAD), a global financial institution, to implement Phase II of the Odisha Particularly Vulnerable Tribal Groups (PVTGs) Empowerment and Livelihood Improvement Programme (OPELIP-II), the proposal of which is expected to be placed before the State Cabinet for approval soon.

Tribal experts, however, have raised concerns over the move, questioning the rationale behind taking an international loan at a time when the Centre has already launched the Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN) with ample financial outlay. With a substantial allocation of ₹24,104 crore for the 2023-24 to 2025-26 period, PM-JANMAN aims to ensure the holistic development of PVTGs in 18 States and Union Territories. Odisha, home to 13 of the 75 PVTGs identified across India, is likely to receive a significant portion of these funds.

Women of the Bonda tribe, classified as a PVTG, in Odisha’s Malkangiri district. FILE PHOTO

Sources in the State ST & SC Development, Minorities and Backward Classes Welfare Development Department said there was a move to implement Phase II of the programme at a cost of around ₹2,422 crore with a loan component of ₹734 crore from IFAD.

Actual outcome

Tribal rights experts questioned the haste in securing an international loan when NITI Aayog sought to know the proposed outputs of OPELIP-II and the actual outcomes achieved during the previous phase, along with the details of fund utilisation.

OPELIP-I was implemented with IFAD assistance from March 18, 2016 to March 3, 2024 at a project outlay of ₹795.41 crore. Of this, ₹312.37 crore was the share of the donor agency and State funding was ₹483.04 crore. Though the Phase-I project came to an end on March 31, 2024, the project closure report is yet to be submitted.

A senior officer on condition of anonymity said there had never been a fund crunch for development of PVTGs as the communities are given first priority in all welfare programmes. In addition, PM-JANMAN now covers concrete houses, drinking water supply, road infrastructure, electricity, education hostel, health care etc.

Jitu Jakesika, an activist working for the rights of Dongria Kondhs, a PVTG in Rayagada district, said, “Officials and NGOs exploited the OPELIP initiative to serve their own financial interests. The programme, intended to uplift PVTGs, failed to create a meaningful impact on their lives.”

Laxmidhar Singh, another tribal rights activist, said assessment of PVTG development has not been carried out and mindless pumping of development funds would only lead to splurge.

Understanding PVTGs

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Notes

Topic → What are PVTGs?

In simple terms, they are tribal communities that face more challenges than other Scheduled Tribes. The government created a specific list of these groups to focus on improving their living standards and preserving their way of life.

Historical Context

The journey to recognize PVTGs began with the Dhebar Commission in 1960-61. This commission identified disparities among Scheduled Tribes, leading to the creation of the “Primitive Tribal Groups” (PTG) category. Fast forward to 2006, and this category was renamed to PVTGs, reflecting a more nuanced understanding of their needs.

The Dhebar Commission's Role

The Dhebar Commission played a pivotal role in highlighting the inequalities faced by various tribal groups. By categorizing them, it laid the groundwork for targeted interventions that would eventually lead to the establishment of the PVTG list.

Characteristics of PVTGs

Now, let’s dive into some defining characteristics of PVTGs that set them apart from other tribal communities.

Pre-Agricultural Practices

One of the most fascinating aspects of PVTGs is their preservation of pre-agricultural practices. Many of these communities still rely on hunting and gathering, showcasing a lifestyle that has remained largely unchanged for centuries. It’s like stepping back in time!

Low Literacy Levels

Unfortunately, PVTGs often have lower literacy rates compared to other tribal groups. This lack of education can hinder their ability to access resources and opportunities, making it even more crucial for the government to step in and provide support.

Small Population Size

PVTGs typically have small populations, which can lead to physical isolation. This isolation not only makes it difficult for them to access basic services but also puts their cultural practices at risk of fading away.

Simple Technology

When it comes to technology, PVTGs tend to use simpler tools and methods. Their slower rate of change means they often stick to traditional ways of living, which can be both a strength and a challenge in today's fast-paced world.

Government Initiatives for PVTGs

The Indian government has recognized the need for targeted initiatives to uplift PVTGs.

The PVTG List

Currently, there are 75 PVTG communities identified across 18 states and the Union Territory of Andaman and Nicobar Islands. This list serves as a crucial tool for policymakers to focus their efforts where they are needed most

The Importance of Cultural Preservation

Preserving the culture and heritage of PVTGs is not just about maintaining traditions; it’s about ensuring their identity survives in a modern world.

Retaining Heritage

The government’s initiatives aim to retain the rich cultural heritage of these communities while providing them with the tools to thrive. It’s a delicate balance between modernization and tradition.

Habitat Level Development

Habitat level development is another key focus area. By improving living conditions and access to resources, the government aims to empower PVTGs without compromising their way of life.

Conclusion

In conclusion, Particularly Vulnerable Tribal Groups are a vital part of India’s cultural landscape. While they face numerous challenges, the government’s efforts to uplift these communities are a step in the right direction. By focusing on their unique needs and preserving their heritage, we can ensure that these communities not only survive but thrive in the years to come.

Ecologist Madhav Gadgil gets Champions of the Earth award

The United Nations on Tuesday recognised ecologist Madhav Gadgil with the annual Champions of the Earth award, the UN's highest environmental honour, for his seminal work in the Western Ghats. Mr. Gadgil, the only Indian on the list of this year's award recipients, chaired the government-constituted Western Ghats Ecology Expert Panel to study the impact of population pressure, climate change, and development activities on the ecologically fragile region in India. The panel recommended in 2011 that the entire hill range be declared an Ecologically Sensitive Area (ESA) and divided it into three Ecologically Sensitive Zones. PTI

Topic → Madhav Gadgil: Champion of the Earth

Recognition and Achievements

🌍 United Nations Honor: Madhav Gadgil was awarded the Champions of the Earth award for his significant contributions to environmental conservation.

🏆 Highest Environmental Honor: This award is the UN's highest environmental accolade, recognizing outstanding efforts in protecting the environment.

IN Unique Recognition: Gadgil is the only Indian recipient among this year's award winners.

Contributions to Environmental Conservation

🏛 **Leadership Role:** Chaired the Western Ghats Ecology Expert Panel, established by the government to assess environmental impacts in the region.

🌿 **2011 Recommendations:** Proposed declaring the entire Western Ghats as an Ecologically Sensitive Area (ESA).

🗺 **Zoning Proposal:** Suggested dividing the Western Ghats into three Ecologically Sensitive Zones for better management and protection.

🌱 **Addressing Critical Issues:** Focused on population pressure, climate change, and development activities affecting the fragile ecosystem

About Champions of the Earth Award

Overview

🏆 The Champions of the Earth award is a prestigious recognition by the United Nations.
🌍 It honors individuals, groups, and organizations for significant contributions to environmental protection and sustainable development.
🌱 The award aims to inspire others to take action towards a healthier planet.

Selection Criteria

🌟 Recipients are selected based on their innovative solutions and leadership in addressing environmental challenges.
🌐 The award is part of the UN Environment Programme (UNEP) initiatives.

Historical Context

- 🎉 It has been awarded annually since its inception in 2005.
- 🌿 The award highlights the importance of collaboration and collective efforts in environmental conservation.

Summary

The Champions of the Earth award is a UN initiative recognizing outstanding contributions to environmental sustainability since 2005

Topic → PM POSHAN: Pradhan Mantri Poshan Shakti Nirman Yojana

Overview

📚 **Program Name:** PM POSHAN stands for Pradhan Mantri Poshan Shakti Nirman Yojana.

🎯 **Objective:** Aims to provide nutritious meals to school children to improve their health and educational outcomes.

🍎🧒 **Target Group:** Focuses on children in primary and upper primary schools across India.

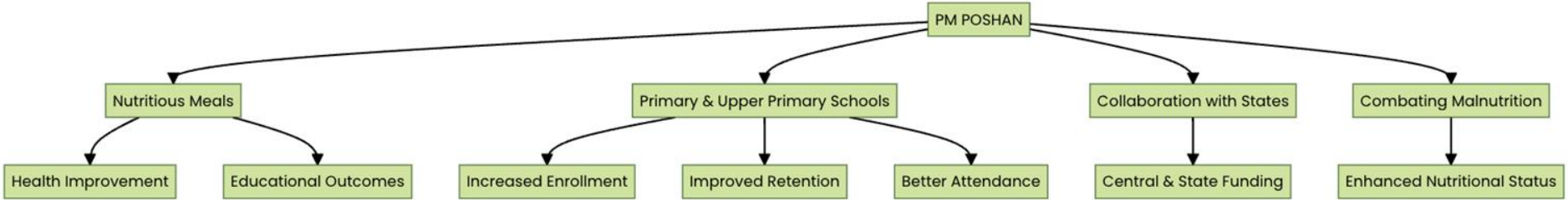
🏛️ **Implementation:** The program is implemented in collaboration with state governments and local bodies.

💰 **Funding:** The initiative is funded by the central government, with contributions from state governments.

📈 **Expected Outcomes:** Seeks to enhance enrollment, retention, and attendance in schools while combating malnutrition.

🌍 **Broader Impact:** Contributes to the overall goal of improving the nutritional status of children in India

Program Structure and Impact:



Summary

- **PM POSHAN** is a government initiative aimed at providing nutritious meals to school children in India to enhance their health and educational performance.

Topic → Longevity Research and AI Innovation

Longevity Research

The pursuit of extending life has been a long-standing goal in medicine.
Stakeholders: Kings, researchers, and pharmaceutical companies are involved.

AI Platform Development

Researchers at the Indraprastha Institute of Information Technology, Delhi developed **AgeXtend**.
This AI-based tool is designed to identify molecules that promote healthy aging.

🔬 Extensive Screening

Over a two-year period, more than 1.1 billion compounds were screened.
This marks the largest study on anti-aging properties to date.

Promising Candidates

The platform identified several candidates with anti-aging properties.
Less than 1% of the screened compounds showed potential.

Mechanism Explanation

`AgeXtend` predicts anti-aging properties and explains the mechanisms behind these predictions.
This guides further research.

Open Source Availability

The research team has made their code and data available as open source.
Companies are charged for access, while researchers and students can access it freely.

Python Package

A Python package for **`AgeXtend`** is available for download via `pip`.
This facilitates its use in research.

Topic -- Human Evolution Origin

🌍 Human Evolution Origin: Homo sapiens evolved in Africa over millennia before migrating globally.

 Mitochondrial DNA Studies: Scientists study mitochondrial DNA mutations to understand human migration patterns.

 Coastal Dispersion Theory: Some studies suggest early humans migrated along coastal routes, particularly in tropical regions.

 Archaeological Discrepancies: Archaeological evidence in India contradicts the coastal migration model, showing inland sites instead.

 🔬 Research Findings: Genetic studies from Orang Asli people and ancient remains in Japan support coastal migration, but archaeological evidence does not.

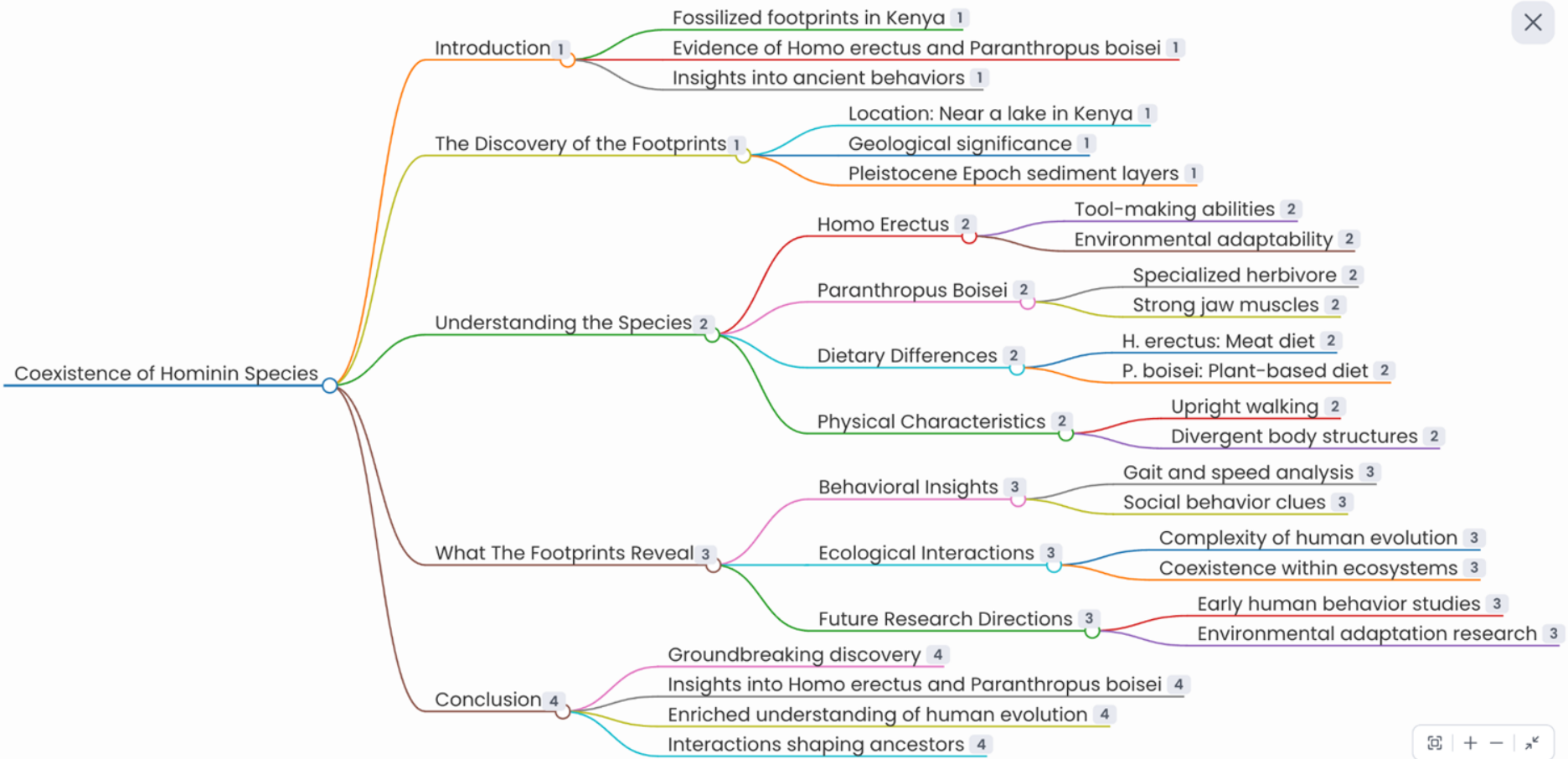
🏃♂️ Inland Dispersal Model: Some researchers advocate for the inland dispersal model, suggesting human ancestors took terrestrial routes.

🔍 Ongoing Debate: There is a significant disagreement among scientists regarding the timing and routes of human migration.

The recent study conducted by scientists from the Max Planck Institute and other prestigious institutions sheds new light on early human life in Saurashtra.

By examining the Bhadar and Aji river basins, they uncovered artefacts dating back 56,000 to 48,000 years, revealing advanced tool-making techniques of the Middle Palaeolithic era.

- Crucially, the absence of Late Palaeolithic tools challenges the long-held coastal migration theory proposed by Paul Mellars.
- This compelling evidence suggests that our ancestors likely moved inland, expanding their presence across the Indian subcontinent.
- As experts call for further precise dating, it is imperative to reconsider our understanding of human migration patterns. This study is not just an academic exercise; it is a pivotal moment in unraveling the complexities of our past.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Topic -- Two distinct hominin species

Introduction

The recent discovery of fossilized footprints in Kenya has unveiled a stunning chapter in the story of human evolution. Dating back 1.5 million years, these ancient tracks provide the first solid proof that two distinct hominin species, **Homo erectus and Paranthropus boisei, coexisted in the same environment**. As researchers delve into the implications of this find, we gain a deeper understanding of the behaviors and interactions of our ancient relatives.

The Discovery of the Footprints

The footprints were unearthed near a lake in modern-day Kenya, an area rich in geological history. Researchers stumbled upon this extraordinary find while investigating the Pleistocene Epoch's sediment layers, which are known for preserving ancient life

Understanding the Species

Homo erectus

Homo erectus, a direct ancestor of modern humans, is known for its advanced tool-making abilities and adaptability to various environments. This species showed remarkable resilience and innovation.

Paranthropus boisei

In contrast, Paranthropus boisei was a specialized herbivore with strong jaw muscles, adapted to consume tough vegetation. This species occupied a different ecological niche, focusing on a diet rich in fibrous plants.

- **Dietary Differences:** While H. erectus hunted for meat, P. boisei thrived on a plant-based diet, showcasing the diversity of early hominin adaptations.
- **Physical Characteristics:** H. erectus walked upright, just like P. boisei, but their body structures reflected their divergent lifestyles.

What the Footprints Reveal

The footprints left by these ancient species offer a treasure trove of information about their daily lives and interactions.

- **Behavioral Insights:** Researchers can glean details about gait, speed, and social behavior from the footprints, which bones alone cannot reveal.
- **Ecological Interactions:** The discovery emphasizes the complexity of human evolution, highlighting how multiple species can coexist and interact within the same ecosystem.
- **Future Research Directions:** This find opens new avenues for research into early human behavior and environmental adaptation.

Conclusion

The discovery of these fossilized footprints in Kenya is nothing short of groundbreaking.

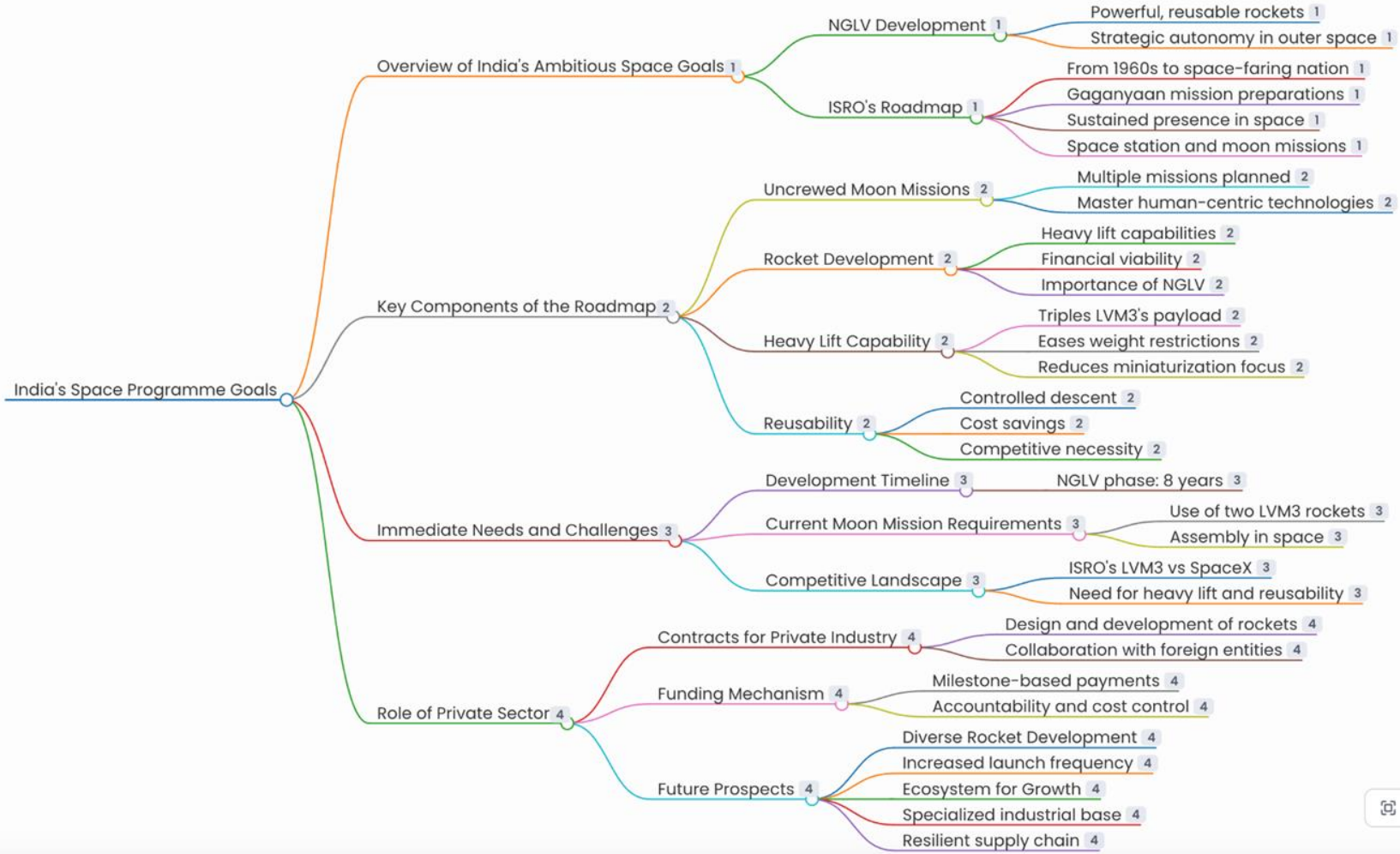
As we piece together the puzzle of early human existence, we gain invaluable insights into the lives of Homo erectus and Paranthropus boisei.

The coexistence of these species not only enriches our understanding of human evolution but also underscores the intricate web of interactions that shaped our ancestors.

This image, provided by the Alaska Volcano Observatory, shows the summit of Mount Spurr in Alaska on October 24. AP

Topic → Mount Spurr: A Geological Marvel

- **Location**: Mount Spurr is located in Alaska, USA.
- **Type:** It is a stratovolcano, characterized by its conical shape and explosive eruptions.
- **Eruptions:** Mount Spurr has had several eruptions, with significant activity recorded in 1953 and 1992.
- **Geological Significance**: The volcano is part of the Aleutian Range, which is known for its volcanic activity due to tectonic plate interactions.
- **Wildlife**: The surrounding area is home to diverse wildlife, including various bird species and mammals.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Topic → India's Space Programme Goals

Overview of India's Ambitious Space Goals

NGLV (Next Generation Launch Vehicle) Development 🚀

Powerful, reusable rockets

Strategic autonomy in outer space

ISRO's Roadmap

From 1960s to a space-faring nation

Gaganyaan mission preparations

Sustained presence in space

Plans for a space station and moon missions

Key Components of the Roadmap

Uncrewed Missions to the Moon 🌕

- Multiple missions planned
- Master human-centric space technologies

Rocket Development ⚙️🚀

- Heavy lift capabilities
- Financial viability for human-spaceflight

Importance of NGLV

Heavy Lift Capability 🎁

- Triples LVM3's payload capacity
- Eases weight and volume restrictions
- Reduces focus on miniaturization

Reusability ♻️🚀

- Keeps fuel for controlled descent
- Significant cost savings
- Competitive necessity

Immediate Needs and Challenges

Development Timeline

NGLV development phase: 8 years

Current Moon Mission Requirements

Use of two LVM3 rockets

Assembly in space for mission

Competitive Landscape

Comparative Launch Capacities

ISRO's LVM3 vs SpaceX's Falcon 9 & Starship

Need for heavy lift and reusable rockets

Role of Private Sector

Contracts for Private Industry

- Encourage design and development of rockets
- Collaboration with foreign entities

Funding Mechanism

- Milestone-based payments
- Ensures accountability and reduces cost overruns

Future Prospects

Diverse Rocket Development

- Multiple NGLV-like rockets
- Increased launch frequency

Ecosystem for Growth

- Specialized industrial base for outer space activities
- Resilient supply chain for transportation services

The code of conduct judges need to follow

Judiciary draws its power from two fountains, public acceptance of the authority of the judiciary and the integrity of the judiciary. The Bangalore Principles of Judicial Conduct 2002 presents a framework to regulate judicial conduct

LETTER & SPIRIT

Krishnadas Rajagopal

The comments made by Allahabad High Court judge, Justice Shekhar Kumar Yadav, against the Muslim community at an event organised by the legal cell of the Vishwa Hindu Parishad in the High Court premises on December 8, has drawn public flak.

Justice Yadav has said that the country would function as per the wishes of the majority living in Hindustan. He remarked that while children of one community are taught kindness and tolerance, it would be difficult to expect the same from children of "another community" especially when they witness animal slaughter. On the push for the Uniform Civil Code, Justice Yadav has said that Hindus revere women as goddesses even as members of the "other community" practice polygamy, Halala or triple talaq. The Supreme Court, in a statement, said it has taken note of the newspaper reports on Justice Yadav's speech. It said details have been asked from the Allahabad High Court and that the "matter is under consideration".

In light of Justice Yadav's remarks, the All India Lawyers Union have written to the Chief Justice of India (CJI) Sanjiv Khanna, saying the judge's comments lean away from democracy and towards a "Hindutva Rashtra". The Campaign for Judicial Accountability and Reforms led by advocate Prashant Bhushan, in its letter to the CJI, has alleged that Justice Yadav's participation in a "right-wing event" and his communally-charged statements were a brazen violation of his oath of office. Supreme Court Bar Association president, senior advocate Kapil Sibal, has reportedly called for the impeachment of the High Court judge.

ISTOCKPHOTO

On judicial ethics

Judiciary draws its power from two fountains, public acceptance of the authority of the judiciary and the integrity of the judiciary. Experience gained over time has led the judiciary to codify the best conventions of judicial conduct, both in and out of court. The 'Restatement of Values of Judicial Life' is the primary code of ethics governing judicial behaviour adopted by the Supreme Court on May 7, 1997.

The very first rule of the code is that the behaviour of a judge must "reaffirm the people's faith in the impartiality of the judiciary". It underscored that "any act of a judge of the Supreme Court or a High Court, whether in official or personal capacity, which erodes the credibility of this perception has to be avoided". Justice Yadav seemed to have missed the last rule of the code which mandated that "a judge must at all times be conscious that he is under the public gaze". The Bangalore Principles of Judicial Conduct 2002 presents a framework to regulate judicial conduct. It requires a judge to ensure that his or her conduct, both in and out of court, maintains and enhances the confidence of the public, the legal profession and litigants in the impartiality of the judge and of the judiciary. While the 2002 document recognises a judge's entitlement to freedom of expression, it mandates that he or she "shall always conduct himself or herself in such a manner as to preserve the dignity of the judicial office and the impartiality and independence of the judiciary". More importantly, the charter requires a judge to be "aware of and understand" the diversity in society and treat all equally.

How is a judge impeached?

The Constitution mandates that judges of the Supreme Court and High Courts can be removed by an order of the President after a successful process of impeachment on the grounds of "proved misbehaviour or incapacity". The motion of removal of a constitutional court judge must be supported by a special majority of the total membership of the House and of at least two-thirds of the members of the House present and voting. Except on a removal motion, the Constitution prohibits the legislature from discussing allegations of misconduct of judges in any other context. However, the Supreme Court has also evolved an in-house procedure to give judges facing serious allegations a window to take voluntary retirement, sparing themselves and the judicial institution the public embarrassment of an impeachment.

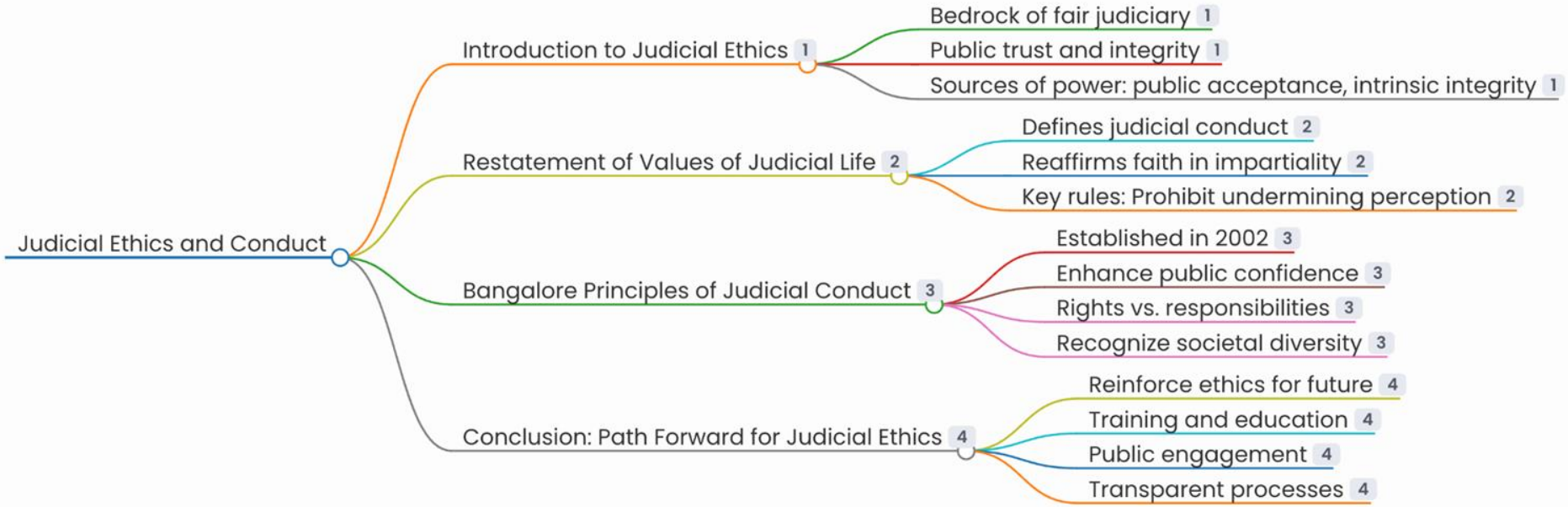
The procedure was formally adopted in 1999, and was put out in the public domain by the Supreme Court in 2014. The procedure allows a complaint against a High Court judge to be addressed to the President, the CJI or the Chief Justice of the High Court concerned. If a complaint is received by the High Court Chief Justice, depending on the seriousness of the grievance, a response can be sought from the judge concerned. On receiving the response, and if a deeper probe is called for, the Chief Justice could forward the complaint and the statement of the judge to the CJI.

The President, on receiving a complaint, refers it to the CJI. The CJI, either on receiving a complaint directly or referred to by the President, can forward it to the Chief Justice of the High Court concerned, who would follow the same procedure of collecting a statement from the judge concerned and returning it to the CJI if the allegations were serious enough to require an investigation. The CJI can then appoint a fact-finding committee of two Chief Justices from other High Courts and a High Court judge to inquire into the allegations.

If the committee reports sufficient material to remove the judge, the CJI can ask the latter to retire. In case, the judge refuses to do so, the CJI can intimate the President and PM about the allegations along with the committee report, clearing the way for impeachment.

THE GIST

- The comments made by Allahabad High Court judge, Justice Shekhar Kumar Yadav, against the Muslim community at an event organised by the Vishwa Hindu Parishad on December 8, has drawn public flak. Justice Yadav has said that the country would function as per the wishes of the majority living in Hindustan.
- The 'Restatement of Values of Judicial Life' is the primary code of ethics governing judicial behaviour adopted by the Supreme Court on May 7, 1997. The very first rule of the code is that the behaviour of a judge must "reaffirm the people's faith in the impartiality of the judiciary".
- The Constitution mandates that judges of the Supreme Court and High Courts can be removed by an order of the President after a successful process of impeachment on the grounds of "proved misbehaviour or incapacity".


Judicial Ethics and Conduct
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Bedrock of fair judiciary 1
Public trust and integrity 1
Sources of power: public acceptance, intrinsic integrity 1
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Topics->> Introduction to Judicial Ethics

Judicial ethics form the bedrock of a fair and impartial judiciary. These principles guide judges in their conduct, ensuring they uphold the integrity of the legal system. The judiciary derives its power from two paramount sources: the public's acceptance of its authority and its intrinsic integrity.

Public Trust: A judge’s behavior significantly influences public confidence in the judicial system. The key question remains: how can judges maintain this trust?

Guiding Framework: Over the years, the judiciary has meticulously codified ethical standards, culminating in the 'Restatement of Values of Judicial Life,' adopted by the Supreme Court on May 7, 1997.

Figure 1.1: The Framework of Judicial Ethics:

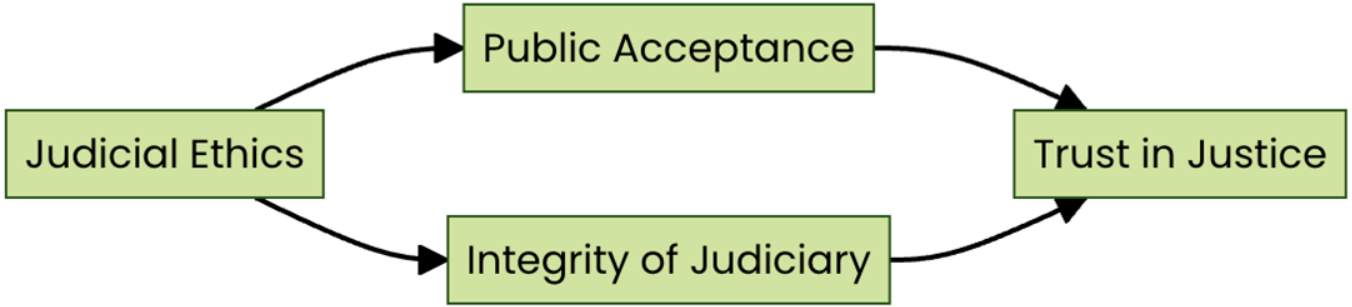


Figure 1.2: Key Principles of Judicial Conduct:

Principle	Description
Impartiality	Judges must remain neutral and fair.
Integrity	Conduct must reflect honesty and moral uprightness.
Transparency	Decisions and processes should be clear and understandable.

The ‘Restatement of Values of Judicial Life’

The 'Restatement of Values of Judicial Life' is pivotal in defining judicial conduct. This document emphasizes that the foremost responsibility of judges is to "reaffirm the people's faith in the impartiality of the judiciary."

Key Rules:

- Any act by a judge, whether in an official or personal capacity, that undermines this perception is strictly prohibited.
- Judges must be acutely aware of their public image, as their actions are continually scrutinized.

This framework not only sets standards but also serves as a reminder of the weighty responsibilities borne by those who uphold the law.

The Bangalore Principles of Judicial Conduct

In 2002, the Bangalore Principles of Judicial Conduct were established to provide a comprehensive framework for judges worldwide. This document mandates that judges must ensure their conduct enhances public confidence in the judiciary.

- **Rights vs. Responsibilities:** While judges are entitled to freedom of expression, they must conduct themselves in a manner that upholds the dignity of their office.
- **Understanding Diversity:** Judges are required to recognize and appreciate the diversity of society, ensuring equitable treatment for all individuals.

This duality of rights and responsibilities is crucial for maintaining the delicate balance of justice

Conclusion: The Path Forward for Judicial Ethics

Reinforcing judicial ethics is paramount for the future of the judiciary. Here are some suggestions to enhance judicial integrity:

- **Training and Education:** Regular training programs on ethical standards should be mandatory for judges.
- **Public Engagement:** Active engagement with the community can bolster public trust.
- **Transparent Processes:** Establishing clear procedures for addressing ethical breaches is essential.

By prioritizing these measures, the judiciary can better navigate the complexities of modern society and maintain its integrity

Topic → World Solar Report 2024 Overview ☀️

Key Insights from the Report

Global Capacity Surge: Increased from 1.22 GW in 2000 to 1,419 GW in 2023, with a CAGR of about 36%.
Renewable Dominance: Solar capacity represents 75% of all renewable capacity additions globally.

New Solar Technologies 🌱

Quantum Dot Solar Cells: Achieved 18.1% efficiency; enhances solar energy capture.
Self-Healing Panels: Extend lifespan and reduce maintenance.
Solar-Powered Phyto-Mining: Uses plants for sustainable metal extraction.
Building Integrated PV (BIPV): Transparent solar panels for light transmission.
Recycling Initiatives: Focus on circular economy practices to minimize environmental impact.

Cost Reductions Impact 💰

Decreasing Auction Prices: Utility-scale solar PV costs averaged $40/MWh in 2024.

India's Leadership: Achieved an auction price of $34/MWh.

Investment Surge: Expected to surpass $500 billion in 2024.

Global Market Dynamics 🌍

China's Dominance: 43% of global installed solar capacity (609 GW).

Market Shares:

- U.S.: 10% (137.73 GW)
- Japan, Germany, India: 5-6% each.
- Emerging Markets: Brazil, Australia, Italy, Spain each around 2%.

Manufacturing Growth: Nearly doubled capacity for wafers, cells, and modules in 2023.

Socio Economic Impact 📈

Job Creation: Employment in solar PV sector rose to 7.1 million in 2023.
Agricultural Innovations: Solar-powered irrigation systems transforming farming.
Growth of Solar Pump Market: Expected CAGR of 5.8% from 2021 to 2027.
Pay-As-You-Go Models: Facilitating access to solar systems.

Future Directions 🚀

Technology and Finance Transfer: Essential for developing countries to ensure inclusive growth in solar energy adoption.

Wild goose chase

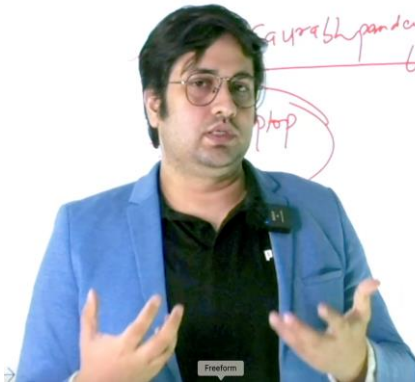
Cleaning up: A veterinary technician with the New England Wildlife Center tries to capture an oil-covered goose along the Muddy River in Brookline, Massachusetts, U.S, on Monday, as wildlife rescuers tended to dozens of birds that were soaked in oil after an apparent spill. AP

Mapping

- **The Muddy River is a series of brooks and ponds that runs through sections of Boston's Emerald Necklace, including along the south boundary of Brookline, Massachusetts**

Topics - MINDS MAPS included (Daily current affairs 12th December 2024

- Gene Therapy for Severe Haemophilia A in India
- PROVISIONS IN CONSTITUTION TO REMOVE RAJYA SABHA CHAIRMAN
- ILO's Social Dialogue Report Overview
- WHO South East Asia Region Malaria Report 2024
- How Rockets Affect the Environment
- James Webb Space Telescope and Hubble space telescope
- The Vaikom Struggle: A Turning Point in India’s Social Reforms
- The Controversy Surrounding Adhai Din Ka Jhonpra: A Historical Perspective
- Japan's LNG Contracts and the Shift in Energy Dynamics
- Pollution in caspian sea
- Mains



By saurabh Pandey

THE HINDU

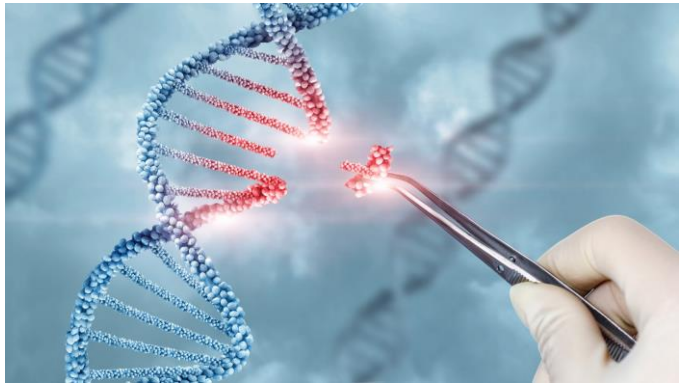
Topic →Gene Therapy for Severe Haemophilia A in India

Overview of Gene Therapy

Condition: Severe Haemophilia A

Faulty gene causing severe bleeding episodes

Affects 40,000 to 100,000 patients in India



Recent Success:

Study conducted in Tamil Nadu

5 patients showed no bleeding episodes over 14 months

Research Publication: Results reported in NEJM

Lead Researcher: Alok Srivastava, CSCR, Vellore

Support: Union Department of Biotechnology

Typical Treatment: Frequent injections of clotting factor

Gene Therapy Advantage: One-time solution for long-term management

Mechanism of Gene Therapy

Target: Factor VIII deficiency

Absence of blood-clotting factor

Method:

Gene introduced to teach body to produce Factor VIII

Safer approach than using adenovirus vector

Future Implications: Potential for pediatric treatments

Cost Estimation: $300,000 over 10 years per patient

Current Treatment:

Repeated Factor VIII replacement

Monoclonal antibodies

New Treatment: Roctavian, FDA approved in 2023

Effectiveness: Reduction of bleeding incidents from 5.4 to 2.6 per year

Challenges and Opportunities

Cost of Treatment: High cost may limit accessibility

Resource Constraints: Conducting research in developing regions

Expert Commentary:

Johny Mahlangu describes the study as "ground-breaking"

Establishes feasibility of gene therapy in resource-limited settings

Topic → PROVISIONS IN CONSTITUTION TO REMOVE RAJYA SABHA CHAIRMAN

- The process for the removal of the Vice President, which is different from the **President's impeachment (Article 61),** is detailed and involves specific steps under **Articles 67(b), 92 and 100 of the Indian Constitution**.
- The resolution to remove the Chairman has to be introduced in the Rajya Sabha, and requires at **least 14 days of notice before it is moved.**
- So, on Tuesday, a notice was submitted, and the motion to remove the Rajya Sabha Chairman can be tabled only after 14 days.

- The motion, after being tabled, requires the support of an absolute majority (more than half of the total votes) of the total membership of the Rajya Sabha and not just a majority of the MPs present and voting.
- Just not the Rajya Sabha, **the Lok Sabha also has a say in the matter of the removal of the Chairman of the Upper House**.
- Once the resolution is passed by the Rajya Sabha, it must then be approved by the Lok Sabha. **The House of the People must pass the resolution with a simple majority of members present and voting.**
- Only after both Houses of Parliament approve the resolution does the Chairman lose his position.
- Thus, **the Vice President retains his office until the entire removal process, involving both Houses of Parliament,** is completed. And, as soon as the motion to remove the Rajya Sabha Chairman passes in both houses of the Parliament, he loses the post and also that of the Vice President of India.

Topic →ILO's Social Dialogue Report Overview

Key Highlights

📜 **Fundamental Work Principles: The report emphasizes the importance of upholding fundamental work principles, particularly `freedom of association` and `collective bargaining rights`.**

📉 **Decline in Compliance: There has been a 7% decrease in compliance with these rights from 2015 to 2022, attributed to increased violations of civil liberties and bargaining rights.**

□ **Call to Action: Member countries are urged to enhance resources and technical capacities for effective participation in `peak-level social dialogue` (PLSD).**

- **PLSD Collaboration:** Involves collaboration among government representatives, employers, and workers' organizations to negotiate and consult on labor and social policies.

🌍 **Economic and Social Impact:** Social dialogue is highlighted as a means to support economic development, promote social progress, and facilitate low-carbon and digital transitions.

⚖️ **Bipartite and Tripartite Processes:** The significance of both bipartite (social partners only) and tripartite (including government) processes in achieving collective agreements and policy discussions is noted.

🌐 **Context of Instability:** Released during a time of economic and geopolitical instability, the report stresses the need for social dialogue to address challenges posed by technological, climate, and demographic changes.

Topic → WHO South East Asia Region Malaria Report 2024

Key Highlights

🌍 **Regional Contribution:** The WHO South East Asia Region accounts for approximately 1.5% of global malaria cases, with India contributing to about half of these cases in 2023.

📉 **Reduction in Deaths:** Malaria deaths in the region decreased by 82.9%, from 35,000 in 2000 to 6,000 in 2023. India and Indonesia were responsible for 88% of these deaths.

📊 **Decrease in Cases:** The region saw a significant reduction in estimated malaria cases, dropping from 22.8 million in 2000 to 4 million in 2023, marking a decrease of 82.4%.

🇮🇳 **India's Progress:** India achieved a remarkable 93% decrease in malaria case incidence since 2000, with 17.7 million fewer estimated cases.

⊘ **Zero Cases:** In 2023, Timor-Leste and Bhutan reported zero indigenous malaria ca showcasing successful control efforts.

📈 **Country Trends**: Between 2022 and 2023, four countries (Bangladesh, India, Indonesia, and Nepal) reduced their malaria cases, while three countries (DPR Korea, Thailand, and Myanmar) experienced increases.

🌐 **Global Context:** Globally, there were an estimated 263 million malaria cases and 597,000 deaths in 2023, with a notable increase of 11 million cases compared to 2022.

Summary: The WHO's 2024 report highlights significant progress in malaria control in the South East Asia Region, particularly in India, while global malaria remains a serious health threat.

- How Rockets Affect The Environment
  - Introduction 1
    - Environmental impact of rocket launches 1
    - Emissions: CO2 and water vapor 1
    - Increasing commercial space ventures 1
  - Emissions from Rocket Launches 1
    - Black Carbon 2
      - Absorbs sunlight, amplifies warming 2
    - Rocket Propellants 2
      - Chlorine-based chemicals 2
      - Ozone layer depletion 2
  - Satellite Lifecycle 3
    - Satellite Ash 3
      - Alters climate patterns 3
    - Production Costs 3
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    - Collision risks 5
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Topic → How Rockets Affect the Environment

Introduction

While space exploration is undeniably thrilling, it’s essential to consider the environmental impact of these rocket launches. Every time a rocket blasts off, it releases a cocktail of emissions into our atmosphere, and the consequences can be far-reaching. Let’s dive into how rockets affect the environment and what we can do about it.

Emissions from Rocket Launches

Carbon Dioxide and Water Vapor

When rockets launch, they emit carbon dioxide (CO2) and water vapor, both of which contribute to greenhouse gas emissions. While we often think of cars and factories as the primary culprits of CO2 emissions, rockets are becoming a significant player in this game. As commercial space ventures increase, the cumulative impact of these emissions is set to worsen.

The Impact of Black Carbon

This substance absorbs sunlight 500 times more effectively than CO_2, amplifying global warming. Imagine a sponge soaking up water; that’s what black carbon does with heat. As more rockets launch, the amount of black carbon in our atmosphere could rise, further exacerbating climate change.

‘

Rocket Propellants and Ozone Depletion

Chlorine-Based Chemicals

Many rocket propellants contain chlorine-based chemicals, which are notorious for depleting the ozone layer. The ozone layer is our planet's protective shield against harmful ultraviolet (UV) radiation. When rockets release these chemicals at high altitudes, they disrupt atmospheric circulation and increase UV exposure on the ground. This not only affects human health but also has broader implications for global climate patterns.

The Lifecycle of Satellites

Satellite Ash and Its Effects

Once satellites complete their missions, they often burn up in the atmosphere, releasing what’s known as “satellite ash.” This metallic residue can linger in the middle layers of the atmosphere, potentially altering climate patterns. It’s a reminder that even after their operational life, satellites can continue to impact our environment.

The Environmental Cost of Satellite Production

Energy-Intensive Manufacturing

The production of satellites is no walk in the park either. It involves energy-intensive processes that require metals and composite materials, which have their own significant carbon footprints. So, while satellites help us monitor climate change, their creation contributes to the very problem they aim to address.

The Rise of Space Mining

As we look to the future, space mining is on the horizon. Extracting valuable minerals from asteroids could lead to increased industrial activity both in space and on Earth. While this may sound exciting, it raises questions about the environmental impact of such endeavors.

Dangers of Orbital Debris

What is Orbital Debris?

Orbital debris, often referred to as space junk, includes defunct satellites, spent rocket stages, and fragments from collisions. As of September 2024, there have been around 6,740 rocket launches, resulting in approximately 19,590 satellites in orbit. With around 13,230 still floating in space, the risk of collision is growing.

Collision Risks and Their Consequences

Most space junk travels at speeds of up to 29 km/hr. At such velocities, even a tiny piece of debris can cause catastrophic damage to functional satellites. This not only threatens communication and navigation systems but also complicates our ability to monitor climate parameters from space.

Barriers to Space Sustainability

The Need for Regulation

To ensure that space remains accessible and activities are environmentally sustainable, regulation is crucial. Without clear guidelines, the unchecked growth of emissions and debris could harm our climate and hinder future exploration.

International Cooperation

International bodies like the Committee on the Peaceful Use of Outer Space (COPUOS) must work together to create enforceable standards. This cooperation is vital to address the environmental impacts of space activities and ensure that space remains a shared resource.

Achieving Sustainability in Space Exploration

Innovative Solutions and Their Challenges

Achieving sustainability in space exploration requires innovative solutions. Reusable rockets, like those developed by SpaceX, can reduce waste and costs. However, they often come with increased fuel consumption and limited applicability for high-orbit missions. Transitioning to cleaner fuels, designing biodegradable satellites, and developing autonomous debris removal technologies are all steps in the right direction, but they come with their own set of challenges.

Conclusion

As we continue to explore the cosmos, it’s essential to consider the environmental impact of our actions. The choices we make today will shape the future of space exploration and our planet. By prioritizing sustainability and international cooperation, we can ensure that our quest for knowledge doesn’t come at the expense of our environment.

Topic → James Webb Space Telescope and Hubble space telescope

🔭 **Comparison of Telescopes:** The James Webb Space Telescope (JWST) and the Hubble Space Telescope (HST) are both significant astronomical observatories but serve different purposes and operate in different wavelengths.

🌈 **Wavelengths:** JWST primarily observes infrared light, allowing it to see through dust clouds and study cooler objects in space, while HST observes mainly in the visible and ultraviolet spectra.

🚀 **Launch Dates**: HST was launched in 1990, while JWST was launched much later, in December 2021.

📍 **Location:** HST orbits Earth at an altitude of about 547 kilometers (340 miles), whereas JWST is positioned at the second Lagrange point (L2), approximately 1.5 million kilometers (about 930,000 miles) from Earth.

🔍 **Scientific Goals:** JWST aims to study the formation of stars and galaxies, the atmospheres of exoplanets, and the early universe, while HST has contributed to a wide range of astronomical discoveries, including the expansion of the universe and the existence of dark energy.

- **Technology:** JWST features a larger primary mirror (6.5 meters) compared to HST (2.4 meters), enhancing its light-gathering capability and resolution.

- **Future of Astronomy:** Both telescopes complement each other, with JWST expected to provide deeper insights into cosmic phenomena that HST has observed.

Summary: The James Webb Space Telescope and Hubble Space Telescope differ in design, capabilities, and scientific objectives, with JWST focusing on infrared observations and HST on visible and ultraviolet light.

Neutrinos: The Ghostly Particles

Neutrinos, often dubbed as "ghost particles," are fundamental to understanding the universe's fabric. Here's why:

- **Abundance**: They are produced in vast quantities during stellar processes and nuclear reactions.
- **Interaction**: Neutrinos barely interact with matter, which makes them elusive and difficult to detect.
- **Cosmological Significance**: Their study can unravel mysteries related to dark matter and energy.

Dark Matter: The Invisible Force

Dark matter constitutes about 27% of the universe yet remains largely mysterious.

- **Detection**: Although invisible, its presence is inferred through gravitational effects on visible matter.
- **Composition**: The exact nature of dark matter particles is still unknown, posing significant questions for physicists.
- **Role in Structure Formation**: Dark matter influences the formation of galaxies and large-scale structures.

Figure 2.1 Dark Matter Distribution:

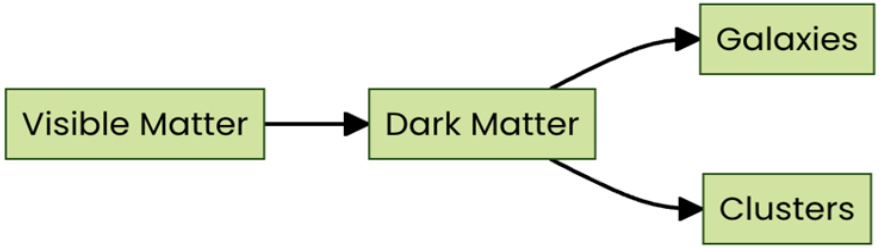

Figure 2.2 Dark Matter Candidates:

Candidate Type	Description
WIMPs	Weakly Interacting Massive Particles
Axions	Hypothetical particles proposed as dark matter
Sterile Neutrinos	A type of neutrino that doesn't interact through standard forces

Dark Energy: The Universe's Accelerating Force

Dark energy is a mysterious force driving the accelerated expansion of the universe.

- **Cosmological Constant**: Proposed by Einstein, this concept is central to the understanding of dark energy.
- **Impact on Universe**: It affects the fate of the cosmos, suggesting a future dominated by dark energy.
- **Current Research**: Observations from telescopes continue to refine our understanding of dark energy's role.

Vaikom — two States, two leaders and a tale of reform

Manuraj Shunmuga-sundaram

an advocate practising before the Madras High Court and Spokesperson of the Dravida Munnetra Kazhagam (DMK)

A little over a 100 years ago was a landmark socio-political moment like no other. The Vaikom Struggle, which culminated in the lifting of the barriers to the entry of backward caste Hindus to the local temple in the erstwhile Travancore princely state, would be the first of many mass movements that brought political attention to religious reform. Since then, the Dravidian Movement founded by Periyar E.V. Ramasamy and its self-respect principles have enabled wider reforms within the Hindu religion and paved the way for a more egalitarian society. What is less understood is that this was made possible only due to the insertion of a key clause in the Constitution by Dr. B.R. Ambedkar. Celebrating the centenary of Vaikom is not just a tribute to Periyar's persistence and B.R. Ambedkar's acumen but also a re-assertion of the strong reformist tendencies that continue to pervade through modern-day politik in South India.

The evolution of a mass movement

The Vaikom Struggle was fought against the prohibition of backward caste Hindus from walking on the streets adjacent to the Vaikom Mahadeva temple. When leaders of Kerala State Congress Committee and other social activist leaders began agitating against the injustice, they faced a clamp down by the administration. With the entry of Periyar in 1924, it slowly became a mass movement, bringing people from all classes within its fold. In November 1925, when the restrictions to walk on the streets finally lifted, the long arc of political movement began tilting towards social justice. In the decade that followed, movements erupted in other parts of the country, with B.R. Ambedkar leading protests to enter the Ambadevi Temple and Kalaram Mandir, where Dalits were denied entry.

However, the trajectory of reform in South India was progressing at a faster pace with the Legislative Assembly introducing a Bill to allow temple entry in 1932, followed by the Travancore Temple Entry Proclamation in 1936, the Malabar Temple Entry Bill 1938. There was also the entry of backward castes in the Madurai Meenakshi Sundareswarar Temple and the Thanjavur Brihadeeswara Temple in 1939. The Madras Temple Entry Authorization Act 1947 enabled Hindus of all castes to enter and offer worship in all temples within the then Madras Presidency.

Though many of these reforms took place prior to the adoption of the Constitution of India, the Constituent Assembly took great care in delimiting the right to freedom of religion. During discussions on December 7, 1948, B.R. Ambedkar included the prefix 'subject to public order, morality and health' restricting the extent of the fundamental right and thereby enabling state intervention when necessary.

These seven words went on to form the legal and legitimate basis for reforms within the fold of religion, thereby enabling constitutional courts to intercede when there was a contestation of fundamental rights, namely between those of equality and religion.

> The Vaikom Struggle was a landmark socio-political moment like no other

State and the issue of regulation

The larger issue has always been whether temples, and religion at large, can be regulated by the state. If this is allowed, some argue, then the government will lose its secular character. There can be nothing further from the truth or logic. The intervention of the State to regulate temples, which are public spaces, is to ensure equality and access. A long history, beginning with the enactment of the Madras Hindu Religious Endowments Act 1927 to the present-day Tamil Nadu Hindu Religious and Charitable Endowments Act 1959, would make it apparent the legislative intent to manage religious affairs in consonance with public order and morality. This position has been confirmed through various judgments beginning from *The Commissioner, Hindu Religious Endowments, Madras vs Sri Lakshmindra Thirtha Swamiar of Sri Shirur Mutt* 1954 (Shirur Mutt case), where the Supreme Court of India upheld the proposition that the state can manage the secular affairs of the temple and propounded the test of essential religious practice.

Since then, successive governments in Tamil Nadu, beginning in 1970, have enacted laws to enable backward caste Hindus to be appointed as *archakas* (priests), which some have regarded as a contentious act of interference in religious affairs. In such instances, the Court has upheld the right of the State to manage secular matters in temples while carving out a special category of 'Agamic temples'.

Change and resistance

Over the last few years, Governments of Kerala and Tamil Nadu have appointed hundreds of trained *archakas*, Odhuvaars and Bhattacharyas from non-Brahmin castes. These have been met with resistance within and outside the courts of law. These reforms challenge orthodox religious beliefs and entrenched social diktats. Nevertheless, the push for reforms is stronger than before. One hundred years after Vaikom and over 75 years since the Constituent Assembly debate on this issue, there is a compelling moral consensus that is emerging. While the Governments of Tamil Nadu and Kerala have collaborated to commemorate the centenary of the Vaikom Struggle on December 12, 2024, they are also celebrating a historic event that brought together two States. They are paying tribute to the start of a social reform trajectory that was made possible due to the coming together of two of the greatest leaders.

The Vaikom Struggle: A Turning Point In India's Social Reforms

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  - Monumental event in Indian history 1
  - Fight against caste-based discrimination 1
  - Local agitation to mass movement 1
  - Quest for social justice 1
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  - Rigid caste hierarchies 2
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Topic → The Vaikom Struggle: A Turning Point in India’s Social Reforms

Introduction

The Vaikom Struggle, a monumental event in the annals of Indian history, encapsulates the relentless fight against caste-based discrimination.

It began as a local agitation against the prohibition of backward caste Hindus from traversing the streets adjacent to the Vaikom Mahadeva temple.

However, it transcended its origins, evolving into a mass movement that united diverse communities in a quest for social justice.

The Origins of the Vaikom Struggle

The roots of the Vaikom Struggle can be traced back to the rigid caste hierarchies that permeated Indian society. In the early 20th century, backward caste Hindus were denied access to certain public spaces, including the streets around the revered Vaikom temple. This blatant discrimination sparked outrage among social reformers.

Key Figures: The movement saw the emergence of notable leaders, including K.

Kelappan and Periyar E.V. Ramasamy. Their relentless advocacy for equality galvanized support from various sections of society.

Community Involvement: The struggle witnessed participation from all strata of society, including women, students, and workers, showcasing a collective yearning for change.

The Role of Leaders and the Mass Movement

The entry of Periyar in 1924 marked a significant turning point in the struggle. His ideology of rationalism and social justice resonated deeply with the masses, propelling the movement forward.

Mobilization of Support: Periyar’s fiery speeches and writings attracted widespread attention, drawing individuals from various backgrounds into the fold of the movement.

Unity Across Classes: The Vaikom Struggle became a symbol of unity among diverse castes, showcasing that the fight for rights transcended social barriers

Topic → The Controversy Surrounding Adhai Din Ka Jhonpra: A Historic Perspective

Introduction:

Adhai Din Ka Jhonpra

Nestled in Ajmer, this 12th-century mosque has become a center of controversy as demands for its restoration to pre-Islamic heritage intensify.

The implications of these demands ripple through cultural discourse, stirring sentiments among various communities.

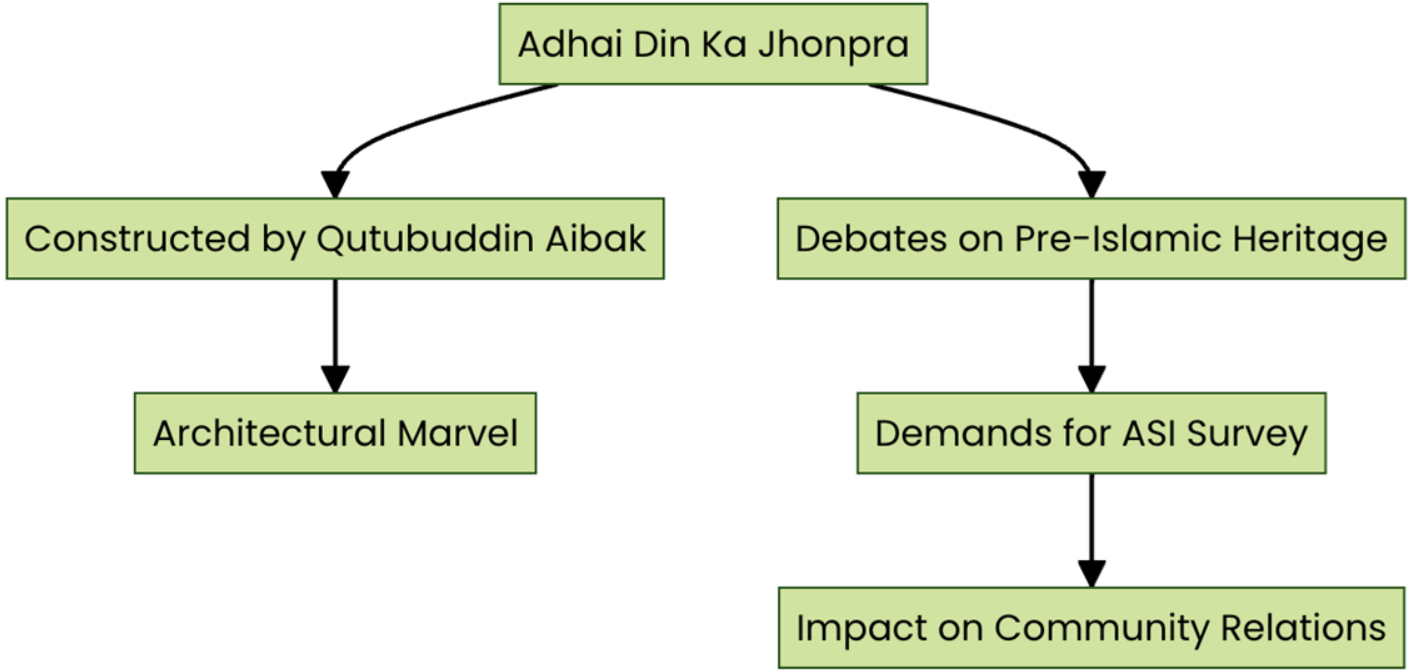
Historical Context:

The origins of Adhai Din Ka Jhonpra are steeped in mystery and debate.

Constructed by Qutubuddin Aibak in approximately 1200 AD, the mosque features exquisite carved pillars and intricate designs, marking it as an architectural marvel of its time.

Claims have surfaced suggesting that before it became a mosque, the site was a Sanskrit college and possibly a temple.

Historian Har Bilas Sarda argued in his work, *Ajmer: Historical and Descriptive*, that a Jain temple was erected here in celebration of the Jain festival in 660 AD, only to be demolished by Afghan invaders in 1192.


Adhai Din Ka Jhonpra
Constructed by Qutubuddin Aibak
Debates on Pre-Islamic Heritage
Architectural Marvel
Demands for ASI Survey
Impact on Community Relations

Rival LNG supplies, depleting fields give Japan an exit from Russian gas

Since Russia's 2022 invasion of Ukraine triggered fresh sanctions, Japanese buyers have increased reliance on allies such as the U.S. and Australia; new supplies from Alaska and Canada, only a few days further away than Sakhalin and with much lesser geopolitical risk, can benefit from this trend

NEWS ANALYSIS

Reuters
TOKYO

As Japan's long-term contracts to secure liquefied natural gas (LNG) from Russia's Sakhalin-2 project near expiration, rival producers see an opportunity to fill the supply gap, even as Tokyo looks to switch to cleaner energy, industry insiders say.

The country's declining demand for gas plus geopolitical pressure on Tokyo to curb its reliance on fuels from Russia mean Japanese buyers may not want to renew all of their contracts with a supplier long favoured for its proximity and reliability.

Japan, the world's second biggest liquefied natural gas (LNG) buyer, depends on Russia for 9% of its LNG, or 6 million metric tons per year, 5 million of which come from the long-term contracts at Sakhalin-2 run by the Kremlin-controlled Gazprom .

The project also has strong ties with Japanese industry, with trading giants Mitsui and Mitsubishi owning a combined 22.5% in the project.

Sakhalin-2's big advantage over rivals is that it is located just a few days away from Japan by sea. By comparison, shipments from Australia, Canada and the U.S. are more than a week away.

Fragile supply: Japan depends on Russia for 9% of its LNG, or 6 million metric tons per year. REUTERS

But with Japan's western allies seeking to isolate Moscow over its war on Ukraine, Sakhalin-2 is out of favour, though the project is exempt from U.S. sanctions.

"Maintaining the same level of supply from Russia may prove challenging due to the agreement among G7 members to reduce reliance on Russian energy," an official at Japan's industry ministry said, adding that final decisions rest with buyers.

> Maintaining same level of supply from Russia may prove to be challenging due to the G7 pact to cut reliance on Russian energy
> Official at Japan's industry ministry

At the same time, with Japan's sluggish power demand and its push towards cleaner energy, the need for LNG is all set to fall. Tokyo wants gas to make up 20% of the country's power generation by 2030, down from 33% last year, and renewables to grow to 38% from 26% over the same period.

"There is a lot of renewable energy produced in our region, so the question of whether to renew the contract or not will depend on future renewable energy capacity," an executive at one of the Sakhalin-2 buyers from Japan told Reuters.

Japan's long-term pacts for Sakhalin-2 will expire between 2026 and 2033, starting with top power generator JERA's 0.5 million ton annual supply agreement.

Rival supply

Since Russia's 2022 invasion of Ukraine triggered fresh sanctions, Japanese buyers have increased reliance on allies such as the United States and Australia, as well as Malaysia and Oman, securing equity in LNG projects and long-term supply.

Rivals to Russian LNG are looking to build on that trend. Supplies from new projects in Alaska and western Canada are well-positioned, only a few days further away than Sakhalin and with much lesser geopolitical risk.

U.S. Senator Dan Sullivan of Alaska has visited Japan and South Korea four times in the last two years to pitch the yet-to-be-developed Alaska LNG project to Asian buyers, meeting in August with Japanese government officials including then-Prime Minister Fumio Kishida.

"This remarkable resource is a strategic asset, not just for the U.S. and Alaska, but for our allies in Asia. It will help us immensely in fending off an aggressive CCP (Chinese Communist Party) and get our allies in Japan and Korea off of Russian gas," he told Reuters by email.

President-elect Donald Trump, meanwhile, is preparing to approve export permits for new LNG projects that had been halted under the current Biden administration, sources told Reuters.

In May, the Business Council of Canada, an advocacy group, opened a new office in Japan.

"One of the top markets we are looking at is LNG," said special adviser Heather Exner-Pirot, citing the opportunity to displace Russian supplies as Canada prepares to start LNG exports, including to Japan, next year through the Shell-led LNG Canada project.

Two smaller LNG projects are due to start operating in 2027 and 2028.

Canadian gas companies are in talks with Japanese firms to supply more LNG, with production set to begin not far behind the expiration of the Sakhalin-2 contracts, an industry source said.

While those LNG developers court Japan, there is uncertainty over new Russian contracts as Sakhalin-2's main gas field, Lunskoye, nears depletion. Stable production is expected only until 2033, Russian news agency Interfax reported in June, citing Gazprom.

Gazprom has bet on developing the Yuzhno-Kirinshoe offshore field nearby, but the U.S. imposed sanctions on it in 2015. The field was initially expected to start producing in 2021 but Gazprom secured a drilling platform for its first well only in July.

Japan has locked in LNG supply to meet demand through 2030, said Daisuke Harada, a research director at the state-owned Japan Organization for Metals and Energy Security.

"However, there is a possibility that in the early 2030s there could be an LNG shortage ... so some companies don't necessarily need to renew their contracts (with Sakhalin-2), while some may have no choice but to do so," Mr. Harada said.

Japan's LNG Contracts and Energy Dynamics Shift

- Japan's LNG Dependency 1
  - 9% from Russia 1
  - 6 million metric tons annually 1
- Sakhalin-2 Project 2
  - Operated by Gazprom 2
  - Mitsui & Mitsubishi stakes 2
- Geopolitical Pressures 2
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- Energy Transition Goals 3
  - Reduce fossil fuel dependence 3
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- Declining LNG Demand 3
  - Sluggish power demand 3
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- Future of Sakhalin-2 Contracts 3
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  - JERA's contract 3
- Potential Supply Gaps 4
  - Evolving energy needs 4
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- New Opportunities 4
  - U.S. and Canadian LNG 4
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Topic → Japan's LNG Contracts and the Shift in Energy Dynamics

As Japan's long-term contracts for liquefied natural gas (LNG) from Russia's Sakhalin-2 project approach expiration, the energy landscape is shifting dramatically. With rival producers eager to fill the potential supply gap, Japan is also navigating its own transition towards cleaner energy sources. Let's dive into the details of this evolving situation.

Introduction

Japan, the world's second-largest LNG buyer, has relied heavily on Russian gas, particularly from the Sakhalin-2 project. However, as geopolitical tensions rise and Japan's energy policies evolve, the future of these contracts is uncertain.

Overview of Japan's LNG Dependency

Japan's energy needs are significant, with the country depending on Russia for about 9% of its LNG supply, translating to around 6 million metric tons annually. This reliance has been a cornerstone of Japan's energy strategy, but the tides are changing.

The Role of Sakhalin-2 Project

The Sakhalin-2 project, operated by Gazprom, has been a reliable source of LNG for Japan due to its proximity—just a few days away by sea. This geographical advantage has made it a preferred choice for Japanese buyers.

Key Players in Sakhalin-2

Notably, Japanese trading giants Mitsui and Mitsubishi hold a combined 22.5% stake in the Sakhalin-2 project, further intertwining Japan's energy security with Russian gas supplies.

The Changing Landscape of LNG Supply

However, the geopolitical landscape is shifting. With Japan's allies pushing to isolate Russia due to its actions in Ukraine, the future of Sakhalin-2 is in jeopardy.

Geopolitical Pressures

An official from Japan's industry ministry highlighted the challenges of maintaining the same level of supply from Russia, especially with G7 agreements aimed at reducing reliance on Russian energy.

japan's Energy Transition Goals

Japan is also on a path to reduce its dependence on fossil fuels. The government aims for gas to account for only 20% of power generation by 2030, down from 33% last year, while increasing renewable energy's share to 38%.

Declining Demand for LNG

With sluggish power demand and a push for cleaner energy, the need for LNG in Japan is expected to decline, complicating the decision to renew contracts with Sakhalin-2.

The Future of Sakhalin-2 Contracts

As contracts begin to expire between 2026 and 2033, starting with JERA's 0.5 million ton annual supply agreement, the question looms: will Japan renew its contracts?

Expiration Timeline

The timeline for these contracts is critical, as it aligns with Japan's broader energy strategy and the global LNG market's dynamics.

Potential Supply Gaps

Industry insiders warn of potential supply gaps if contracts are not renewed, especially as Japan's energy needs evolve.

Rival Producers Eyeing the Market

With Japan's contracts in flux, rival LNG producers are keen to step in and fill the void left by Russian gas.

New Opportunities for U.S. and Canadian LNG

Countries like the U.S. and Canada are positioning themselves as viable alternatives to Russian LNG, with new projects on the horizon.

Alaska LNG Project

U.S. Senator Dan Sullivan has been actively promoting the Alaska LNG project to Japanese buyers, emphasizing its strategic importance for both the U.S. and Japan.

Canadian LNG Initiatives

Canada is also gearing up to export LNG to Japan, with projects like the Shell-led LNG Canada project set to begin operations soon.

Conclusion

As Japan navigates its energy future, the expiration of contracts with Sakhalin-2 presents both challenges and opportunities. With a focus on cleaner energy and a shifting geopolitical landscape, Japan's LNG market is poised for significant changes.

Topic → Pollution in caspian sea

🌊 Kazakhstan's state-owned energy company, KazMunayGas, has decontaminated Soviet-era oil waste along the Caspian Sea.

□ The cleanup involved nearly 363,000 cubic meters of oil waste over the past four years at the Karazhanbas field in the Mangystau region.

🌍 The Caspian Sea, the world's largest lake, is facing pollution and the impacts of global warming.

□ Reclamation efforts included cleaning contaminated soil and aboveground storage facilities.

⚠□ Kazakhstan is considering the establishment of "environmental disaster zones" due to pollution from the oil and gas industry.

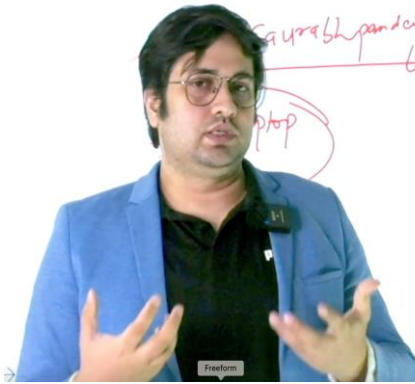
♻□ Central Asian countries, including Tajikistan and Kyrgyzstan, are also increasing efforts to remove toxic waste from the Soviet era.

- Millions of cubic meters of radioactive waste are currently stored in Central Asia, highlight the region's environmental challenges.

Summary: Kazakhstan's KazMunayGas has cleaned up significant Soviet-era oil waste from the Caspian Sea, amid growing pollution concerns and plans for environmental disaster zones

Topics - MINDS MAPS included (Daily current affairs 14th & 13th December 2024

- Global Drowning Prevention Report
- Understanding the Constitution as a Commons
- Switzerland Suspends MFN Treatment for India
- Disaster Management (Amendment) Bill, 2024
- Disease X:
- Delhi's Path to Cleaner Air
- Salar de Uyuni: A Natural Wonder
- Mains



By saurabh Pandey

THE HINDU

Topic → Global Drowning Prevention Report

Key Findings

🌍 **Global Impact:** The WHO's first global status report on drowning prevention reveals that 300,000 people drowned in 2021, equating to approximately 30 every hour.

📉 **Regional Disparities:** A staggering 92% of drowning deaths occurred in low- and middle-income countries. The South-East Asia Region, including India, accounted for 83,000 deaths (28% of the global total).

👶 **Vulnerable Populations:** Children are disproportionately affected, with those under five representing 24% of drowning deaths, and 19% among children aged five to 14.

📊 **Trends Over Time:** Drowning deaths have declined by 38% since 2000. However, progress is uneven; the European Region saw a 68% drop, while South-East Asia experienced a 48% decline.

🕳️ **Underreporting Issues:** Many drowning deaths are underreported, especially those related to natural disasters and water transport, issues exacerbated by climate change.

🏊‍♂️ **Preventive Measures:** Only 33% of countries have national programs for bystander training in rescue and resuscitation, and just 22% include swimming and water safety in school curricula.

💔 **Future Projections:** If current trends persist, over 7.2 million people, mainly children, could die from drowning by 2050, highlighting the urgent need for political will and investment in prevention strategies.

Summary

The WHO's report underscores the global drowning crisis, with a significant impact on children in low-income regions, and calls for immediate action to implement effective prevention strategies

Topic → Understanding the Constitution as a Commons

The Constitution of India is not just a legal document; it’s a living entity that reflects our collective aspirations and struggles. This writer has long argued that our rights and responsibilities as citizens are deeply intertwined with the intellectual history of constitutionalism. It’s essential to recognize that the Constitution is a commons, a shared space where every citizen has a stake.

The Intellectual History of Constitutionalism

The roots of constitutionalism in India are rich and complex. They draw from various philosophical traditions and historical contexts, shaping our understanding of governance and rights. This history is not static; it evolves as we navigate our present and future.

The Evolution of Rights and Responsibilities

Our rights are not merely granted; they are earned through struggle and dialogue. The responsibilities that accompany these rights are equally vital, as they ensure that we engage with our Constitution meaningfully.

The Spirit of the Constitution

The spirit of the Constitution transcends judicial interpretations. It embodies the hopes and dreams of the people, urging us to think beyond precedents and past judicial wisdom.

The Concept of Commons in Constitutional Law

Viewing the Constitution as a commons invites us to share ownership and understanding. It’s not just the domain of legal experts or judges; it belongs to all of us.

Shared Ownership of the Constitution

When we think of the Constitution as a commons, we acknowledge that its interpretation and application should serve the common good. This shared ownership fosters a sense of responsibility among citizens.

The Role of the Preamble

The Preamble of the Constitution sets the tone for this shared ownership. It outlines the values of justice, liberty, equality, and fraternity, guiding us in our collective journey.

Civil Disobedience: A Historical Perspective

Civil disobedience has been a powerful tool in our struggle for rights. It’s a form of protest that challenges unjust laws and practices, rooted in the belief that the Constitution is a living document.

Satyagraha and Its Legacy

Satyagraha, a term coined by Gandhi, embodies the philosophy of nonviolent resistance. It’s a testament to our collective inheritance, reminding us that change is possible through peaceful means.

Key Figures in the Movement

Figures like B.R. Ambedkar, Maulana Azad, and Jaipal Munda have played pivotal roles in shaping our constitutional landscape. Their contributions remind us of the diverse voices that have fought for justice.

Recently, the norms of judicial propriety have come under scrutiny. The actions of Justice S.K. Yadav of the Allahabad High Court have raised questions about the integrity of our judicial system.

If the judiciary loses its credibility, the very foundation of our constitutional democracy is at risk.

The Path Forward: Embracing Civil Disobedience

In times of crisis, civil disobedience emerges as a constitutional route to recuperation. It’s a reminder that the Constitution is not just a set of rules but a living framework for justice.

The Role of Citizens in Constitutionalism

Citizens play a crucial role in upholding the Constitution. By engaging in civil disobedience, we assert our rights and responsibilities, ensuring that the Constitution serves the common good.

The Need for Collective Action

Collective action is essential in times of crisis. It’s not enough to rely on institutions; we must come together as a community to uphold our constitutional values.

Conclusion

In conclusion, the Constitution of India is a commons that belongs to all of us. It’s our collective responsibility to engage with it, interpret it, and ensure that it serves the common good. As we navigate the challenges of our time, let’s remember the legacy of civil disobedience and the power of collective action.

TOPIC → Switzerland Suspends MFN Treatment for India

Key Developments

🇨🇭 Suspension of MFN Treatment: Switzerland has halted the Most Favoured Nation (MFN) treatment for India under the 30-year-old double-taxation avoidance agreement (DTAA), effective from January 1, 2025.

⚖️ Legal Context: This decision follows an October 2023 Supreme Court ruling in India, which questioned the validity of the MFN clause, stating it does not automatically trigger without notification under the Income Tax Act.

📉 Impact on Indian Firms: Indian companies operating in Switzerland will face increased tax liabilities, with rates rising from a reduced 5% to a 10% residual rate on dividends and other incomes.

🔄 Bilateral Treaty Dynamics: The change signifies a major shift in bilateral treaty dynamics, highlighting India's stricter interpretations of international tax treaties to protect domestic revenues.

- **Need for Negotiations:** Experts emphasize the importance of proactive negotiations to clarify treaty interpretations and safeguard Indian firms' interests abroad, particularly in sectors like financial services, pharmaceuticals, and IT.

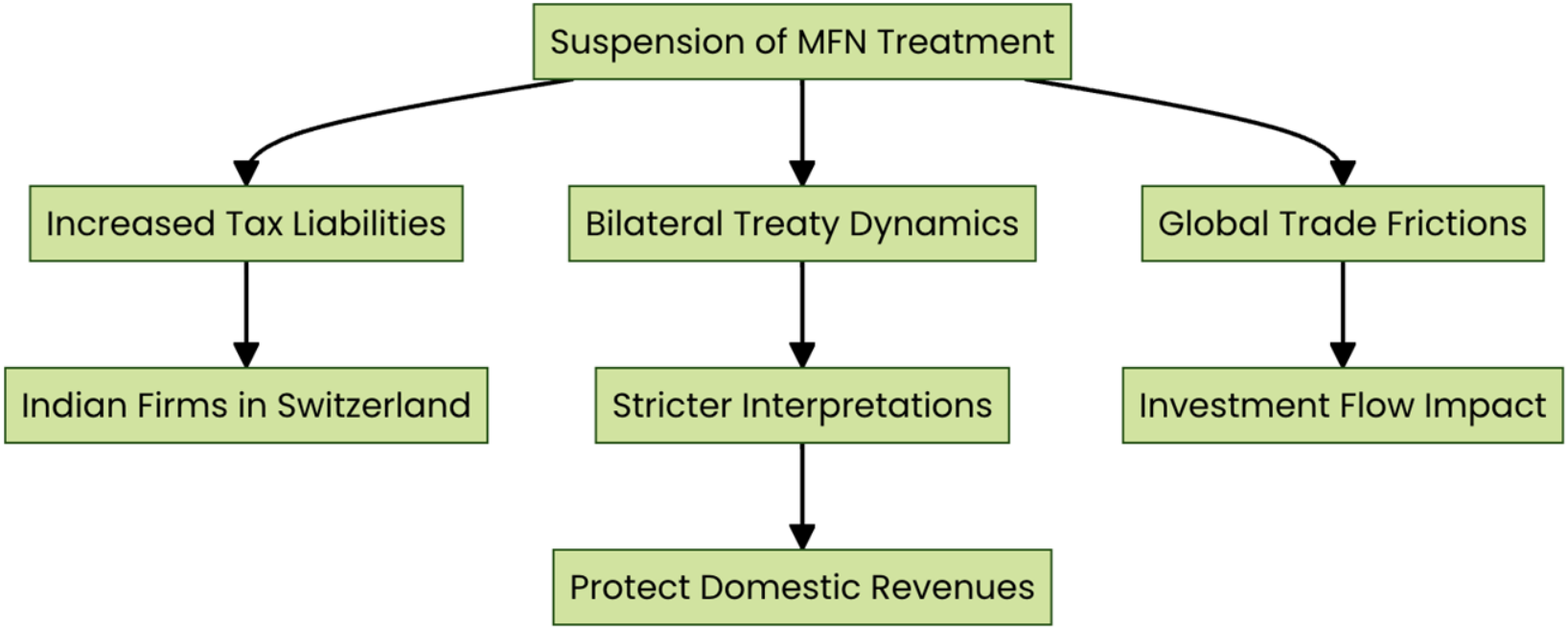
🌍 **Potential Global Impact:** The suspension could lead to frictions with other trade partners and affect inbound and outbound investment flows, potentially creating hurdles in other jurisdictions.

📊 **Future Possibilities:** There is a possibility for India to reactivate the MFN clause if it issues the required notification, as indicated by Swiss authorities.

Summary

Switzerland's suspension of the MFN treatment for India under the DTAA could increase tax liabilities for Indian firms and complicate international tax relations.

Impact Analysis:



Most Favoured Nation (MFN) Status

🌍 Most Favoured Nation (MFN) status is a fundamental principle in trade policy.

📜 It ensures equal treatment for all trading partners.

⚖️ Under MFN, any trade advantage given to one nation must be extended to all nations with MFN status.

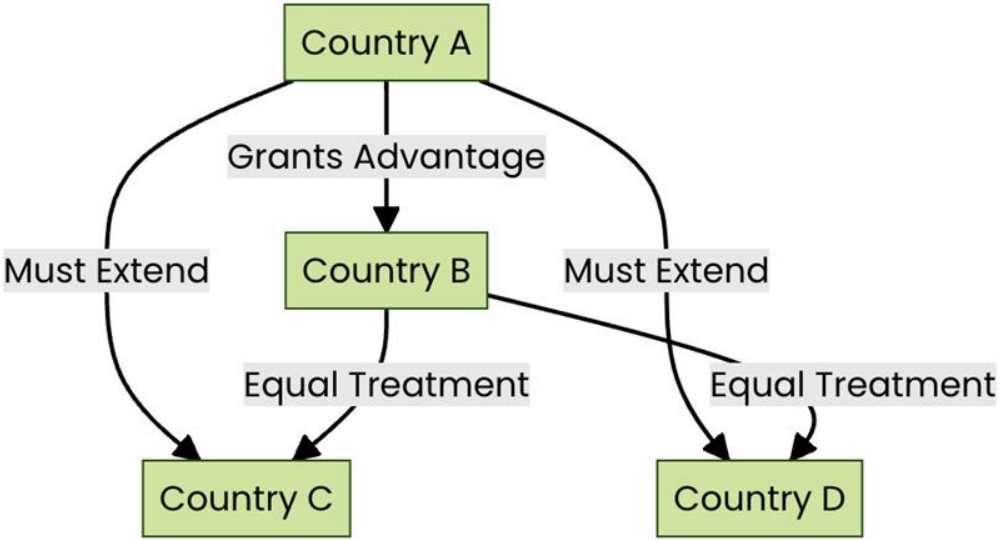
💼 This principle is widely used in international trade agreements.

🔄 MFN status helps in promoting fair competition and reducing trade barriers.

🌐 It is a crucial element of the World Trade Organization (WTO) agreements.

📈 MFN can lead to increased trade and economic cooperation among nations.

MFN Status Flowchart:



`MFN` `TradePolicy` `InternationalTrade` `WTO` `EconomicCooperation`

1-liner summary: Most Favoured Nation status is a trade principle ensuring equal treatment among trading partners to promote fair competition.

European Free Trade Association (EFTA)

Overview

🌍 EFTA stands for the European Free Trade Association, promoting free trade and economic integration among its member states.

CH The founding members include Switzerland, Norway, Iceland, and Liechtenstein.

□ EFTA operates independently of the European Union but maintains a close relationship through various agreements.

Objectives and Activities

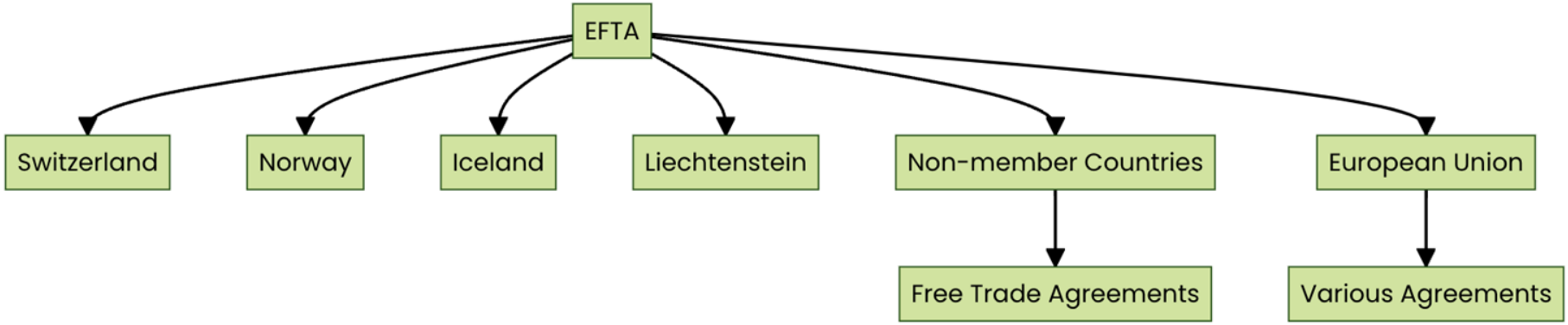
📈 Aims to enhance trade relations and economic cooperation among its members and with other countries.

□ Established free trade agreements with several non-member countries, expanding its global trade network.

📊 Focuses on reducing trade barriers and fostering a competitive market environment.

🔄 Engages in dialogue and cooperation on issues like environmental protection and sustainable development

EFTA's Trade Network:



IR IN NEWS

- **Second martial law impeachment vote looms for S. Korean President .**
- **Georgia’s political crisis deepens as govt. set to name far-right President**

Topic → Disaster Management (Amendment) Bill, 2024

- When it comes to the subject of disaster management, it's imperative that we stay informed and engaged.
- The recent passage of the Disaster Management (Amendment) Bill, 2024 by the Lok Sabha has sparked a flurry of discussions.
- This legislation aims to bolster the disaster management framework in India, ostensibly improving how State governments respond to calamities.
- But amidst the optimism, there are voices of dissent questioning its efficacy and intent.

Key Features of the Bill

The Disaster Management (Amendment) Bill, 2024 introduces several key features that are designed to enhance the operational landscape of disaster management in India. Here's a closer look:

Strengthening State Authorities: The Bill explicitly aims to empower State disaster management authorities, addressing the challenges

flagged by various State governments under the Disaster Management Act of 2005.

Clarity and Convergence: One of the primary objectives of this legislation is to bring about clarity and convergence among the myriad stakeholders involved in disaster management, ensuring a more coordinated approach during emergencies.

Holistic Preparedness: Union Minister Nityanand Rai emphasized that the Bill is crafted to enable a more robust response to disasters, asserting that "when a disaster hits, it hits the country as a whole

Opposition Concerns and Critiques

As the Bill sailed through the Lok Sabha, it wasn't without its share of criticism. Several opposition members raised concerns that warrant careful examination:

Over-centralization: Critics, including Saugata Roy from the Trinamool Congress, argue that the Bill creates a "plethora of organizations" without addressing the fundamental issues that plague disaster management, especially in light of the pandemic.

Climate Change Neglect: Concerns were raised regarding the omission of climate change considerations within the Bill. G.K. Padavi from Congress pointed out that failing to include this critical factor undermines the holistic approach needed in disaster management.

Terminology Changes: The shift from "compensation" to "relief" was another contentious point, with opposition members claiming it reflects a lack of seriousness toward the needs of disaster-affected populations.

Future Implications of the Disaster Management (Amendment) Bill

As we turn our gaze to the future, the implications of the Disaster Management (Amendment) Bill, 2024 are both vast and complex. Here are some prospective effects and considerations that arise from this legislation:

- **Enhanced Preparedness:** With a reinforced framework, State governments are expected to better anticipate and respond to disasters. This could lead to improved resources and training for first responders.
- **Collaboration among Stakeholders:** The emphasis on clarity and convergence could foster stronger collaboration among various stakeholders, including government bodies, NGOs, and community groups. This synergy is crucial in times of crisis.
- **Potential for Bureaucratic Overload:** While the intention is to streamline disaster management, critics caution that the creation of numerous organizations might lead to bureaucratic inefficiencies. The risk of overlapping roles and responsibilities could hamper timely responses.

Conclusion

The passage of the Disaster Management (Amendment) Bill, 2024 marks a significant moment in India's approach to handling disasters. While the Bill aims to strengthen the mechanisms for disaster response, it also opens the floor for critical discussions regarding its implementation and potential pitfalls. As the country navigates this new legislative landscape, continuous engagement with stakeholders and critics will be essential to ensure that the Bill achieves its intended goals without compromising on the needs of the citizens it aims to protect

Topic - Disease X:

Understanding Disease X

- Disease X is a term for a hypothetical infectious disease that could potentially cause a future epidemic or pandemic.
- 🌍 Utilized by the World Health Organization (WHO), it represents unknown pathogens that may emerge and pose a global health threat.
- 🔍 The term underscores the necessity for preparedness and research into potential diseases that have not yet been identified.

Importance of Disease X

- Surveillance and rapid response systems are crucial in public health to address Disease X.
- 📈 It serves as a reminder of the unpredictability of infectious diseases and the potential for new outbreaks.
- 🛡️ The concept encourages investment in vaccine development and healthcare infrastructure to combat future threats.
- ⚠️ Disease X highlights the importance of global collaboration in addressing emerging health challenges.

Summary

Disease X symbolizes a potential future infectious disease that could lead to a global health crisis, emphasizing the need for preparedness and research.

Beijing's war against air pollution

Beijing in 2015 had pollution levels similar to those in Delhi today. However, through coordinated effort over several years, Beijing reduced its pollution by one-third between 2013 and 2017; by learning from Beijing's approach, Delhi can implement effective strategies to tackle its air pollution problem

EXPLAINER

Rohit Azad
Shouvik Chakraborty

Beijing, with a yearly average air quality index (AQI) of 144, was as polluted in 2015 as Delhi is today (Delhi's average is 155 for 2024). But in the interim, Beijing has managed to cut its pollution level by one-third with the most significant fall spanning between 2013 and 2017 (Chart 1). To be sure, Beijing's pollution control programme dates back to 1998 which laid the foundation for this aggressive last phase of the programme, which was termed a "war against air pollution".

Why discuss Beijing in the context of Delhi?

Beijing is the capital of an emerging economy, as is Delhi. So, if Beijing could manage what it did at its stage of development, Delhi could and needs to, as well.

There are many similarities between Beijing in 2013 and Delhi today. Chart 2 compares the sources of pollution for the two cities.

For Delhi, we have used the winter months' data because that is the most updated emission inventory available. Moreover, much like Beijing, the regional contribution to pollutants by neighbouring areas/States of the national capital region (NCR) is also high, especially during the winter months. While local emissions need to be controlled, without a concerted collective effort by the entire NCR region, just as Beijing achieved, it would be difficult to win this battle against air pollution.

What did Beijing do?

With rapid economic growth in Beijing, the ambient concentration of pollutants increased rapidly by the late 1990s. By 2017, Beijing's energy consumption had grown by 74% compared to 1998. Unfortunately, a rapid increase in urbanisation and energy consumption meant higher emissions of pollutants. Things were particularly made worse because the heating in Beijing's residential properties was heavily coal-dependent.

Beijing's 20-year anti-pollution programme can be divided into three phases – 1998-2008; 2009-12; 2013-17. One common theme that ran through the entire effort was not shock-and-awe but a careful and slowly built-up plan with people's participation, which was run autonomously by the local government of Beijing.

Sources of pollution in Beijing were broadly identified as energy structures and coal combustion (contributing 22% to PM2.5), transportation structures (31%), and construction and industrial structures (33%).

For the first source, three steps were taken – ultra-low emission renovation and clean energy alternatives in power plants, renovation of coal-fired boilers, and elimination of civil bulk coal consumption used for residential heating.

For transportation infrastructure, the government first retrofitted cars and public service vehicles with diesel particulate filters (DPF) and gradually tightened emission standards. Then it went for scrapping, through subsidies instead of decree, of 'yellow-labeled' vehicles (heavy pollutant-emitting vehicles). Subway and bus infrastructure was overhauled and expanded at a rapid rate, along with optimising the urban layout.

As for the industrial and construction activities, tightening environmental requirements, intensifying end-of-pipe (EOP) treatment, eliminating obsolete industrial capacity, creating a green construction management model, efficient washing facilities, and implementing video monitoring with penal action against violators of construction sites were some of the steps taken.

The last leg of the plan (2013-17) especially focused on the need for regional cooperation, with five adjoining provinces around Beijing coming together to chalk out a collective plan for reducing ambient pollution in the region. This cooperation had a remarkable effect in reducing the level of pollution.

What did Beijing achieve? And how?

As a result of this meticulously planned strategy at multiple levels, sulphur dioxide, nitrogen oxide, volatile organic compounds (VOCs), and PM2.5, the four major pollutants targeted under the policy, fell by 83%, 43%, 42% and 59% respectively between 2013-17 (Chart 3). Since most activities produce multiple pollutants, albeit to differing degrees, targeting a source meant reducing all the associated pollutants.

Chart 4 shows how by targeting each source, multiple pollutants were controlled.

The single most important factor in Beijing achieving its goal, apart from planning to the last detail, was the financial investment that the government committed to.

Chart 5 shows a whopping six-time jump in investment within just four years. All the steps enumerated above required heavy investment and the government did not shy away from making and fulfilling those commitments.

What can Delhi learn from the Beijing experience?

There are ideas galore on controlling pollution, and Beijing is a perfect example to learn from. We list some here, there are more.

Firstly, since private transport is the biggest contributor to local pollution, an efficient and comfortable bus-metro integrated transport system needs to be in place. Delhi's DTC bus fleet is not only old but also grossly inadequate for a population of this city's size. The metro is an excellent means of transport but is quite expensive, with almost zero last-mile connectivity provided by the State. Old vehicles need to be scrapped at the earliest through a well-thought-out subsidy-for-scrap programme, instead of banning them. Exclusive cycling and walking lanes should be built throughout the city. Other ideas, such as cross-subsidisation through affordable public transport and expensive private transport (cars and motorcycles) using congestion or high parking charges, as well as separate fuel costs for the two modes of transport, could be experimented with. An urban layout is needed where places of work and residence are brought closer, alleviating the need for long-distance travel.

Secondly, Delhi's electricity is still supplied primarily through coal fired plants. The energy system needs a serious overhaul both from the sides of supply and demand. Subsiding solar roof tops and connecting it to the grid with electricity bill discounts could be one such step in this regard.

Thirdly, much like the Beijing plan, Delhi needs to coordinate with neighbouring regions, instead of being at loggerheads, to control other sources which originate in these regions. Such a step may work in their collective interests.

Last but not least, the people of Delhi need to fight for the right to clean air and hold the government accountable instead of normalising poor AQIs as being better than severe ones. Prolonged exposure to pollutants, even in the poor AQI zone (for a larger part of the year), may be as dangerous as a short period of severe AQI in October and November every year. This change in attitude itself may go a long way in building pressure on the governments.

Unfortunately, it is not the lack of ideas but political will which is stopping Delhi from acting. It is the same reel playing out every year. Air in the very harmful zone for weeks with schools closing down, the young and the elderly gasping for breath through the day is the new normal in the winter months in Delhi. And what does the government do? The Centre blames the State and vice versa while they have both been in office for a decade. Neither of them is serious or even vaguely interested in solving the problem. Schools, offices, and individuals look for solutions in the form of air purifiers, but private protection for a public bad is by definition exclusivist, with especially the disadvantaged, who contribute the least to the problem, getting a raw deal. Delhi deserves a better response. It is high time that the government, both at the Centre and the State, listened and acted.

Rohit Azad is a faculty at the Centre for Economics Studies and Planning, Jawaharlal Nehru University, New Delhi and Shouvik Chakraborty is a Research Assistant Professor at the Political Economy Research Institute, Amherst, U.S.

Turning the tide on pollution

Beijing's battle against air pollution provides a useful framework for Delhi. With improved transportation, stricter regulations, and regional collaboration, Delhi can follow a similar path to cleaner air

Chart 1: AQI in Beijing vs Delhi 2014-24
(Yearly average)

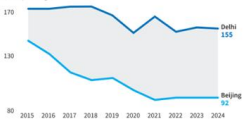
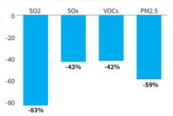


Chart 2: PM2.5 source apportionment for Beijing and Delhi
(Beijing in 2013 and Delhi in 2023)

Chart 3: Fall in emissions of major pollutants in Beijing 2013-17
(in %)



Pedestrians walk along the Kartavya Path engulfed in thick smog, near India Gate, in New Delhi, on November 18. AFP

Chart 4: Measure-specific fall in pollutants in Beijing
Contribution of each measure in fall of air pollutants between 2013-17 (in %)

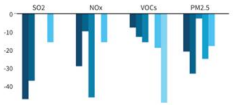
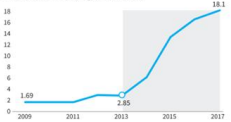


Chart 5: Financial investment to control air pollution in Beijing (in billion yuan)



Source: Data on Beijing has been taken from 'UN Environment 2019 - A Review of 20 Years' Air Pollution Control in Beijing,' United Nations Environment Programme, Nairobi, Kenya, and, for Delhi, from a report titled 'Real-Time Source Apportionment and Forecasting for Advance Air Pollution Management in Delhi' submitted to the Delhi pollution control committee

THE GIST

- Beijing's approach to air pollution involved a long-term, coordinated effort with a focus on regional cooperation and comprehensive policies across multiple sectors.
- Key measures included improving transportation infrastructure, retrofitting vehicles, scrapping old vehicles, and enhancing industrial regulations.
- Delhi can adopt similar strategies, focusing on integrated transport systems, regional collaboration, and stricter emission controls to combat its pollution crisis.

Topic --

Delhi's Path to Cleaner Air

Key Strategies for Pollution Control

🚌 **Integrated Transport System:**

Delhi requires an efficient bus-metro transport system to minimize pollution from private vehicles.

The current DTC fleet is outdated and insufficient.

🚴 **Promote Non-Motorized Transport:**

Constructing exclusive cycling and walking lanes can encourage sustainable transport options.

This reduces reliance on cars.

☀️ **Renewable Energy Transition:**

Shift energy supply from coal to renewable sources.

Subsidize solar rooftops and connect them to the grid.

Regional Coordination:

Collaborate with neighboring regions to tackle cross-border pollution sources.

This benefits all parties involved.

- **Public Awareness and Advocacy:**
  - Citizens should advocate for their right to clean air.
  - Hold the government accountable for air quality issues.

- **Political Will:**
  - The main barrier to effective pollution control is the lack of political will.
  - Numerous ideas are available but not implemented.

Accountability for Air Quality:

Continuous poor air quality, especially in winter, demands urgent government action.

Avoid blame-shifting between authorities.

Summary

Delhi can learn from Beijing's pollution control strategies by:

- Improving public transport.
- Promoting renewable energy.
- Fostering regional cooperation.
- Encouraging public advocacy for clean air.

Charge of the battery brigade

Power struggle: A salt sculpture is seen at the Salar de Uyuni, the world's largest salt flat, in Uyuni, southern Bolivia. In the heart of the 'lithium triangle,' located between Chile, Argentina, and Bolivia, a strategic battle is being fought to exploit this key metal in the energy transition. The first two are already major players, while Bolivia is stumbling to enter the global race. AFP

Topic→ Salar de Uyuni: A Natural Wonder

Overview

🌍 Salar de Uyuni is the world's largest salt flat.

BO Located in Uyuni, southern Bolivia.

□ Composed mainly of salt crusts, serving as a significant natural resource.

📸 A popular tourist destination known for its unique landscape.

🌞 During the rainy season, the flat creates stunning mirror-like reflections.

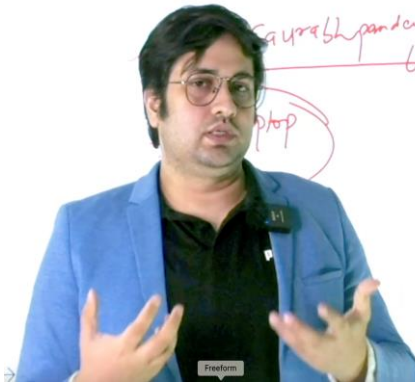
□ Home to various wildlife, including llamas and flamingos.

□ Part of the Altiplano plateau, featuring high-altitude geography.

Summary: Salar de Uyuni is the largest salt flat in the world, located in southern Bolivia, known for its breathtaking landscapes and unique ecological features

Topics - MINDS MAPS included (Daily current affairs 15th December 2024

- Metal Scrap Transformation into High-Performance Alloys.
- Giraffe Movement and Habitat Study
- Pancreatic Cancer Detection Advancements.
- Neurotropism
- The Political Landscape: A No-Confidence Motion Against Vice President Jagdeep Dhankhar
- Gene Therapy for severe Hemophilia A
- Mains



By saurabh Pandey

THE HINDU

Topic → Metal Scrap Transformation into High-Performance Alloys

Key Insights

🔄 **Direct Transformation:** Metal scrap can be upgraded into high-performance alloys without conventional melting processes.

🏭 **Aluminum Source:** Scrap aluminum from industrial waste can produce high-performance metal alloys comparable to primary aluminum.

💰 **Cost-Effective:** The new method offers a low-cost pathway for high-quality recycled metal products in the marketplace.

🌱 **Environmental Impact:** The solid phase alloying process enhances material properties while contributing to environmental sustainability.

⚙️ **Rapid Production:** The ShAPE technique allows for the creation of high-strength aluminum alloys in minutes, significantly faster than traditional methods.

🔧 **Versatile Applications:** The solid phase alloying process can be used for custom metal wire alloys in 3D printing technologies.

🚀 **Innovative Potential:** The method is applicable to various metal combinations, enabling the creation of new alloys previously unachievable.

Summary: A new study reveals that metal scrap can be efficiently transformed into high-performance aluminum alloys using a rapid, environmentally friendly process

Topic → Giraffe Movement and Habitat Study

- A study analyzed the movements of 33 GPS-collared giraffes across five reserves in South Africa.

- Giraffes avoid steep terrain and cannot navigate slopes with a gradient greater than 20 degrees due to energy expenditure and fall risk.

- They tolerate slopes up to 12 degrees if it leads to favorable vegetation.

- The findings reveal a mismatch between giraffes' ideal flat habitats and their conservation areas.

- Researchers calculated the proportion of inaccessible habitats in key African countries, finding that one in three had more unusable areas in protected zones than outside.

📉 Giraffes are found in 21 African countries, but their populations are declining despite th wide distribution.

🔍 The study emphasizes the need for habitat management that aligns with giraffes' movement patterns and habitat preferences.

Summary: A study reveals that giraffes avoid steep terrain, highlighting habitat mismatches in conservation areas and the decline of their populations across Africa.

Key Findings

Giraffe Movement: Analysis of 33 GPS-collared giraffes in South Africa.

Terrain Avoidance: Giraffes avoid slopes >20 degrees; tolerate up to 12 degrees for better vegetation.

Habitat Mismatch: Ideal flat habitats often not in conservation areas.

Inaccessible Habitats: One-third of key African countries have more unusable areas in protected zones.

Population Decline: Despite being in 21 countries, giraffe populations are decreasing.

Habitat Management: Need for alignment with giraffes' movement and habitat preferences.

Topic → Pancreatic Cancer Detection Advancements

- Precursor lesions of pancreatic cancer are difficult to identify with traditional MRI.

🔍 New Study: Highlights the effectiveness of Diffusion Tensor Imaging (DTI) in detecting premalignant lesions.

📈 First-time Evidence: DTI robustly identifies these lesions.

🛡️ Clinical Impact: Could lead to earlier diagnosis for at-risk individuals.

💊 Treatment Assessment: May improve evaluation for pancreatic cancer patients.

🔬 Research Optimism: Positive implications for future management of pancreatic cancer.

📅 Importance of Early Detection: Crucial for improving treatment outcomes.

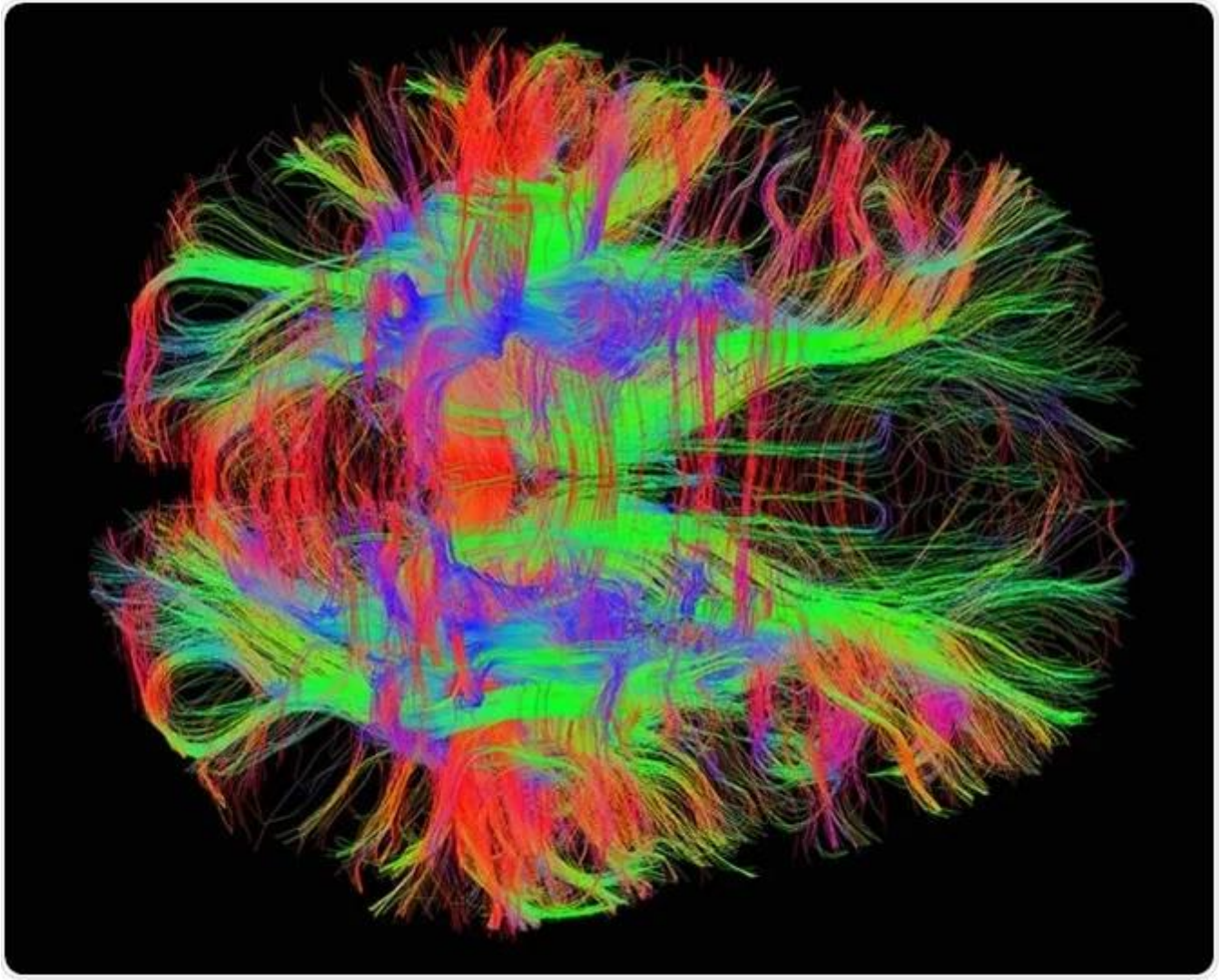
Summary: A groundbreaking study demonstrates that Diffusion Tensor Imaging (DTI) can effectively detect premalignant pancreatic lesions, potentially leading to earlier diagnosis and improved treatment strategies

What is DTI?

DTI technique was first introduced by Peter Basser in 1994.

It is an improved version of conventional MRI wherein signals are solely generated from the movement of water molecules.

The term ‘diffusion’ denotes random thermal motion of water molecules. In other words, DTI uses the diffusion of water as a probe to determine the anatomy of a brain network, which basically provides information on static anatomy that is not influenced by brain functions.



The diffusion of water molecules in a tissue is not the same in all direction (anisotropic diffusion) due to tissue heterogeneity. This anisotropy (directional dominance of water diffusion within a region) is used in DTI to determine the nerve cell organization in the brain.

The basic principle depends on the fact that water molecules should move faster along the axon fiber instead of moving upright to the fiber because obstructions present along the fiber are comparatively lesser to restrict its movement.

Based on the axonal orientation, anisotropic diffusion can produce completely new image contrast, which is very useful in visualizing important brain structures.

Topic → Neurotropism

- Neurotropism refers to the affinity of certain viruses or pathogens for nerve cells.

🧬 It plays a significant role in the pathogenesis of various neurological diseases.

- Viruses such as rabies and herpes simplex exhibit neurotropism, affecting the nervous system.

- Understanding neurotropism can aid in developing targeted therapies for neurological conditions.

📊 Research in neurotropism contributes to the broader field of neurovirology.

- Neurotropic factors are substances that influence the growth and survival of neurons.

🌍 Neurotropism is a critical area of study in both basic and clinical neuroscience.

Summary: Neurotropism is the tendency of certain pathogens to target nerve cells, impacting neurological disease understanding and treatment.

Topic → The Political Landscape: A No-Confidence Motion Against Vice President Jagdeep Dhankhar

Introduction

Politics can often feel like a high-stakes game of chess, where every move is calculated and every piece has its role. Recently, the Opposition has made a bold move by submitting a notice for a no-confidence motion against Vice President and Rajya Sabha Chairman Jagdeep Dhankhar. This article dives into the details of this political maneuver, the accusations against Dhankhar, and the procedures involved in such a significant action.

The Opposition's Move

Background of the Notice

On December 10, the Opposition took a stand, accusing Dhankhar of being an “impassioned spokesperson” for the government’s policies. This isn’t the first time such a motion has been considered; a similar attempt was made during the Budget session in August but was ultimately shelved. So, what’s the driving force behind this renewed effort?

Accusations Against Dhankhar

Partisan Conduct

The crux of the Opposition's argument lies in the claim that Dhankhar has engaged in partisan conduct. They argue that as the Vice President, he should remain neutral, yet they perceive him as favoring the government’s stance in public forums. This raises questions about the integrity of his position and the expectations of impartiality that come with it.

The Impeachment Procedure

Constitutional Provisions

Understanding the impeachment process is crucial. The Vice President's powers are derived from Article 63 of the Constitution, while Article 64 designates him as the ex-officio Chairman of the Rajya Sabha.

Article 63 and 64 Explained

Article 63 establishes the Vice President as the second-highest constitutional authority, while Article 64 outlines his role in the Rajya Sabha. This dual responsibility adds complexity to the impeachment process.

Article 67: The Removal Process

According to Article 67, the Vice President serves a five-year term but can resign or be removed. The removal process requires a majority vote from the Rajya Sabha, which must also be approved by the Lok Sabha. However, a 14-day notice is mandatory before any resolution can be moved.

The Timeline of Events

Previous Attempts at Impeachment

The political landscape is not new to such attempts. The Opposition's previous motion during the Budget session serves as a reminder of the ongoing tensions between the government and its critics.

Will the Motion Be Discussed?

The 14-Day Notice Rule

With the Winter Session of Parliament concluding on December 20, time is of the essence. The 14-day notice rule poses a significant hurdle, making it unlikely that the motion will be discussed in this session.

Historical Context

Previous No-Confidence Motions

Historically, no-confidence motions have been a tool for the Opposition to express dissent. For instance, in 2020, a motion against Deputy Chairman Harivansh was dismissed due to the same notice requirement.

The Role of the Vice President

Duties and Responsibilities

The Vice President's role is multifaceted, serving not only as the second-highest constitutional authority but also as the Chairman of the Rajya Sabha. This dual role complicates the dynamics of the current situation.

Can Dhankhar Preside Over the Motion?

Constitutional Restrictions

Article 92 of the Constitution explicitly bars him from doing so while a resolution for his removal is under consideration. However, he can still participate in discussions, albeit without voting rights.

Conclusion

The no-confidence motion against Vice President Jagdeep Dhankhar is a significant political event that highlights the ongoing tensions in Indian politics. While the procedural hurdles may prevent immediate action, the implications of this move are far-reaching. It serves as a reminder of the delicate balance of power and the expectations of impartiality in high office.

Impeachment and Political Dynamics in India

- Accusations Against Dhankhar 1
  - Partisan Conduct 1
  - Integrity and Impartiality 1
- Impeachment Procedure 1
  - Constitutional Provisions 1
  - Articles 63 and 64 2
  - Article 67: Removal Process 2
- Timeline of Events 3
  - Previous Impeachment Attempts 3
  - 14-Day Notice Rule 3
- Historical Context 4
  - No-Confidence Motions 4
  - Role of Vice President 4
- Can Dhankhar Preside? 5
  - Constitutional Restrictions 5
  - Participation in Discussions 5
- Conclusion 5
  - Political Significance 5
  - Balance of Power 5

How can gene therapy cure haemophilia A?

What is replacement theory and how effective is it as a form of treatment for haemophiliacs? What is Roctavian? How is using a lentivirus as the vector in gene therapy different from using an adenovirus? Are medicines for treating haemophilia affordable and accessible?

Jacob Koshy

The story so far:

Medical researchers at the Christian Medical College, Vellore have reported successfully applying gene-therapy to treat severe haemophilia A, a rare, hereditary condition that results from a faulty gene which triggers severe, spontaneous and fatal bleeding episodes.

What is the usual treatment?

The primary approach to treating haemophilia is called replacement therapy. As the disease is a condition resulting from low levels of clotting factor – necessary to prevent bleeding – replacement therapy involves slowly dripping, or injecting into a vein, concentrates of clotting factor VIII (for haemophilia A) or clotting factor IX (for haemophilia B). Clotting-factor concentrates can be derived and manufactured from human blood, which must be properly tested and screened to prevent the spread of diseases, such as hepatitis. It is also possible to use clotting-factor concentrates that aren't made from human blood reducing, the albeit very small risk, of contracting diseases from injecting blood. These are called recombinant clotting factors and can be easily stored, mixed, and used at home. Haemophiliacs can regularly inoculate themselves with replacement therapy to prevent bleeding, and is meant to protect against unexpected bleeding episodes. Among the challenges with clotting factors is that the body's own antibodies can destroy the clotting factor before it has a chance to work and defeats the whole idea of replacement therapy. Other forms of treatment include desmopressin (DDAVP), a man-made hormone used to treat people who have mild haemophilia A. DDAVP isn't used to treat haemophilia B or severe haemophilia A. This hormone increases the level of clotting factor in the blood.

A March 2024 study estimates the per-patient cost of treating a haemophiliac in India to be $3,00,000 over a 10-year period

GETTY IMAGES

What is gene therapy in haemophilia?

Among the emerging approaches to fix diseases such as haemophilia, which is due to a defective gene on the X chromosome, is gene therapy. Here copies of a 'corrected' gene are introduced into the cells of a patient, the idea being that this would result – in the case of haemophilia – normal expression of the necessary clotting factor. So far there is only one U.S. Food And Drug Administration-approved gene therapy for haemophilia. Called Roctavian, it is an adeno-associated virus vector-based gene therapy and approved only in 2023 for treating adults with severe haemophilia A, and that too only for those without pre-existing antibodies to adeno-associated virus. Roctavian consists of a viral vector carrying the necessary gene for clotting Factor VIII. The gene is expressed in the liver to increase blood levels of FVIII and reduce the risk of uncontrolled bleeding. The effectiveness of the treatment was established based on results from 112 patients followed up for at least three years after Roctavian treatment. Following the infusion, the mean, annualised bleeding rate decreased from 5.4 bleeds per year at baseline to 2.6 bleeds per year. The majority of patients who received Roctavian also got corticosteroids to suppress the immune system for the gene therapy to be effective and safe. Treatment response to Roctavian may decrease over time.

How was the Vellore trial different?

The main difference in this approach is the use of a lentivirus as the vector, instead of an adenovirus. Because adenovirus infections are fairly common in people, the chances of having antibodies are fairly high and this could actually be counter-productive to those using treatments such as Roctavian. Lentivirus infections being less common, it is expected that fewer people will have antibiodies to them, making them more effective in treatment. Further the Indian approach relies on gene transfer into adult stem cells with the lentiviral vector that integrates with the body's cells instead of in vivo transfer to a hepatocyte, or a liver cell, through a non-integrating AAV vector. The advantage of this approach is expected to be a reliable, life-long production of the clotting factor in necessary quantities without side-effects. Though tested in only five patients in Vellore, none of them reported bleeding episodes over an average follow-up period of 14 months.

Is haemophilia treatment affordable?

A March 2024 research study in the journal *Heliyon*, estimates the per-patient cost of treating a haemophiliac in India to be $3,00,000 over a 10-year period. Based on various estimates, there may be about 1,00,000 haemophiliacs with type A and type B conditions, with the former being more common. This is the reason why treatments can be expensive. Roctavian is also not cheap and costs nearly $2 million. Whether the gene-therapy product tested in the India will be affordable remains to be seen, though that is the hope. "It is too early to talk about costs but in principle it will need to be something that will make sense in the Indian healthcare system," Dr. Alok Srivastava, Head, Haematology Research Unit, St John's Research Institute, Bangalore, told *The Hindu*. He led the trial at Vellore.

Topic → Gene Therapy for severe Hemophilia A

Gene Therapy Breakthrough for Severe Hemophilia A at Christian Medical College, Vellore

In a groundbreaking development, medical researchers at the Christian Medical College in Vellore have successfully applied gene therapy to treat severe hemophilia A. This rare hereditary condition is caused by a faulty gene that leads to severe, spontaneous, and potentially fatal bleeding episodes. Let's dive into what this means for patients and the future of hemophilia treatment.

Understanding Hemophilia A

To appreciate the significance of this breakthrough, we first need to understand hemophilia A.

What is Hemophilia A?

Hemophilia A is a genetic disorder that affects the blood's ability to clot. It primarily affects males and is caused by a deficiency in clotting factor VIII. Without enough of this factor, even minor injuries can lead to excessive bleeding.

Symptoms and Risks

Symptoms include prolonged bleeding after injuries, spontaneous bleeding episodes, and joint pain due to internal bleeding. The risks associated with hemophilia A can be life-threatening, making effective treatment crucial.

Traditional Treatments for Hemophilia

Historically, the primary approach to treating hemophilia has been replacement therapy.

Replacement Therapy Explained

Replacement therapy involves infusing clotting factor concentrates into the bloodstream to help the blood clot properly. This is typically done through slow drips or injections.

Clotting Factor VIII and IX

For hemophilia A, patients receive clotting factor VIII, while those with hemophilia B receive factor IX. These concentrates can be derived from human blood or produced using recombinant technology.

Challenges with Replacement Therapy

One of the significant challenges with replacement therapy is that the body can develop antibodies that destroy the infused clotting factors, rendering the treatment ineffective.

Other Treatment Options

Other treatments include desmopressin (DDAVP), a synthetic hormone that can temporarily increase clotting factor levels in patients with mild hemophilia A. However, it is not suitable for severe cases or hemophilia B.

hemophilia.

The Role of Gene Therapy in Hemophilia

Gene therapy is an emerging approach that offers hope for a more permanent solution to

What is Gene Therapy?

Gene therapy involves introducing a corrected version of a faulty gene into a patient's cells, aiming to restore normal function. In the case of hemophilia, this means producing adequate levels of clotting factor VIII.

FDA-Approved Gene Therapy: Roctavian

The only FDA-approved gene therapy for hemophilia A is Roctavian, which uses an adeno-associated virus vector to deliver the necessary gene. While it has shown promise, it is only approved for adults without pre-existing antibodies to the virus.

The Vellore Trial: A New Approach

The recent trial at Vellore marks a significant shift in gene therapy methodology.

Differences in Methodology

Unlike Roctavian, the Vellore trial utilized a lentivirus as the vector. This is crucial because lentivirus infections are less common, meaning fewer patients will have pre-existing antibodies that could hinder treatment effectiveness.

Results from the Vellore Trial

In the trial, five patients were treated, and none reported bleeding episodes over an average follow-up period of 14 months. This suggests a promising future for this approach.

The Cost of Hemophilia Treatment

While advancements in treatment are exciting, the financial implications cannot be ignored.

: Financial Implications in India

A recent study estimated that treating a hemophiliac in India could cost around $300,000 over ten years. With approximately 100,000 hemophiliacs in the country, the financial burden is significant. Roctavian itself costs nearly $2 million, raising concerns about accessibility.

Conclusion

The successful application of gene therapy for severe hemophilia A at Christian Medical College, Vellore, represents a significant leap forward in treatment options. While challenges remain, particularly regarding cost and accessibility, the hope is that this innovative approach will lead to more effective and affordable treatments for patients in the future.

Gene Therapy for Severe Hemophilia A

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  - Christian Medical College, Vellore 1
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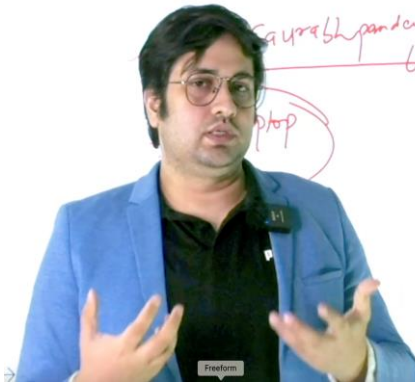
  - Slow Drips or Injections 2

Topics - MINDS MAPS included (Daily current affairs 16th December 2024

- Golan Height
- Olive Ridley Turtle Conservation
- Morocco's Strategic Position in Defense Exports
- Jalvahak Scheme:
- Understanding Light Echoes
- Chirality and Its Implications
- Erg Chebbi:
- One Candidate Contesting Multiple Constituencies (OCMC)
- India’s Strategic Mineral Diplomacy: Securing the Future
- Empowering Women in India's Digital Revolution: Combating Technology-Facilitated Gender-Based Violence.
- The Rise of Carbon Markets: Insights from COP29 in Baku
- Polavaram Dam
- Greenfield port city
- Mains



By saurabh Pandey

THE HINDU

Israel to double population in occupied Golan Heights

Reuters
JERUSALEM

Israel agreed on Sunday to double its population on the occupied Golan Heights while saying threats from Syria remained despite the moderate tone of rebel leaders who ousted President Bashar al-Assad a week ago.

"Strengthening the Golan is strengthening the State of Israel, and it is especially important at this time. We will continue to hold onto it, cause it to blossom, and settle in it," Prime Minister Benjamin Netanyahu said in a statement.

Israel captured most of the strategic plateau from Syria in the 1967 Six-Day War, annexing it in 1981.

Israel captured most of the strategic Golan Heights from Syria in the 1967 Six-Day War, annexing it in 1981. AFP

In 2019, then-President Donald Trump declared U.S. support for Israeli sovereignty over the Golan, but the annexation has not been recognised by most countries. Syria demands Israel withdraw but Israel refuses, citing security concerns. Various peace efforts have failed.

"The immediate risks to the country have not disappeared and the latest developments in Syria increase the strength of the threat," Defence Minister Israel Katz told officials examining Israel's defence Budget. Mr. Netanyahu's office said the government approved a more than 40-million-shekel ($11 million) plan to encourage demographic growth in the Golan.

LEBANON
SYRIA
Damascus
Mediterranean Sea
ISRAEL
GOLAN HEIGHTS
WEST BANK
GAZA
JORDAN
EGYPT
50km
50 miles
Google

Carcasses of Olive Ridley turtles continue to wash ashore in Vizag

V. Kamalakara Rao
VISAKHAPATNAM

Carcasses of Olive Ridley turtles, which are currently in their breeding season, continue to wash ashore along the Visakhapatnam coast.

For the past few days, visitors continue to find the carcasses on the beaches in the city such as Mangamaripeta, near Bhimili. Eyewitnesses say that a number of carcasses were found on the beach on Saturday night.

Environmental experts say that a majority of the deaths are due to marine pollution and trawling activities for catching fish.

National Fisherfolk Forum general secretary A. Dasu said, "We saw dead turtles on the city beaches where at least 10 carcasses were washed ashore on Saturday. During this season, the turtles come close to the shore, up to nearly 500 metres, to lay eggs."

The carcass of an Olive Ridley turtle found at R.K. Beach in Visakhapatnam. K.R. DEEPAK

The Andhra Pradesh State Forest Department usually takes up conservation of turtles every season. Officials say that this year too they have started four artificial hatcheries as part of the conservation measures.

"Four hatcheries (nesting points) have been set up in areas such as R.K. Beach and Jodugullapalem," said Visakhapatnam District Forest Officer Shambangi Venkatesh.

"We usually receive reports of dead turtles on city beaches. This happens when the turtles come to the surface of the sea to breathe and are accidentally caught by heavy fishing vessels during trawling operations," he said.

"Nobody will intentionally harm a turtle. However, we are continuously educating the fishing community and others to take special care of turtles in the deep sea during the breeding season," Mr. Venkatesh told *The Hindu* on Sunday.

Topic → Olive Ridley Turtle Conservation Efforts in Visakhapatnam

Overview

🐢 Carcasses of Olive Ridley turtles are being discovered along the Visakhapatnam coast during their breeding season.

🌊 Multiple carcasses have been reported by eyewitnesses on beaches such as Mangamaripeta, with at least 10 found in a single night.

⊘ Environmental experts cite marine pollution and trawling activities as the primary causes of turtle deaths.

□ The Andhra Pradesh State Forest Department has initiated conservation efforts, including the creation of four artificial hatcheries.

- These hatcheries are located at R.K. Beach and Jodugullapalem to support turtle nesting.

⚓ Officials note that turtles often get caught in fishing gear when they surface to breathe, especially during the breeding season.

📚 Continuous education efforts are being made to inform the fishing community about the importance of protecting turtles.

Conservation Initiatives

Artificial Hatcheries: Established to support nesting and increase hatchling survival rates.
Community Education: Ongoing efforts to raise awareness among local fishermen about the impact of their activities on turtle populations

Olive Ridley Sea Turtles 🐢

Overview 🌊

Species: Olive Ridley sea turtles are recognized by their heart-shaped shell.
Habitat: Found in warm and tropical waters, especially in the Pacific and Indian Oceans.
Nesting Behavior: Known for `arribada`, a mass nesting event where thousands of females lay eggs on the same beach.

Physical Characteristics 🐢

Size: Smaller than other sea turtles, weighing 77 to 100 pounds (35 to 45 kg).

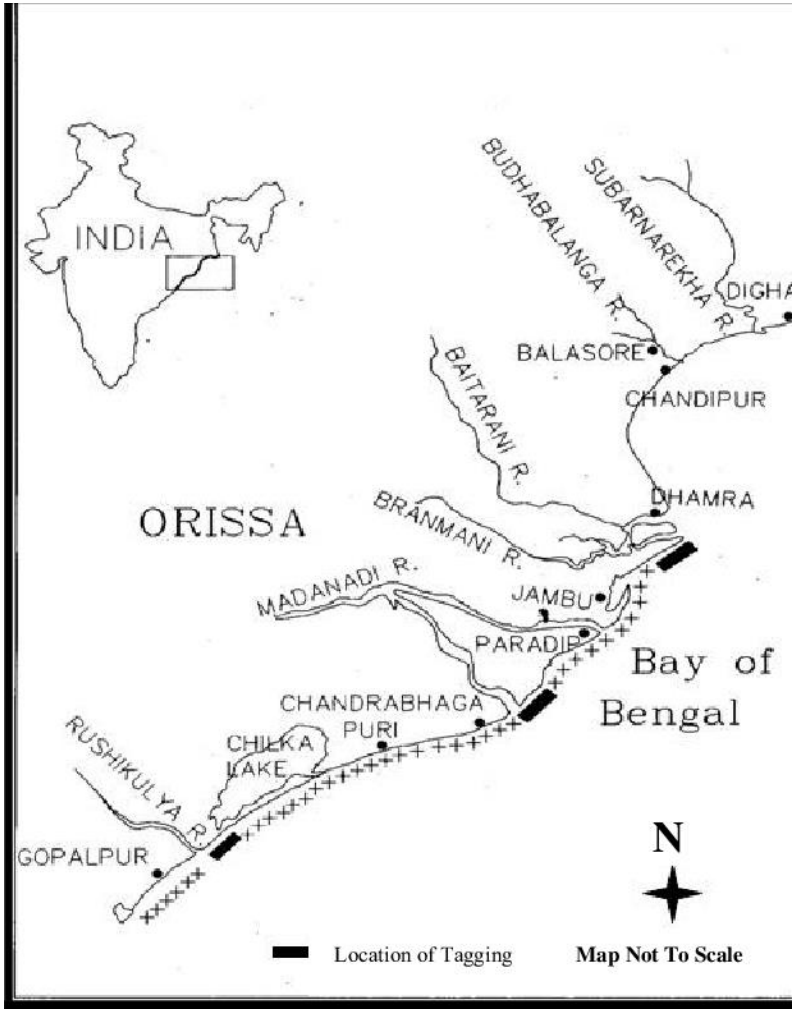
Conservation Status ⚠

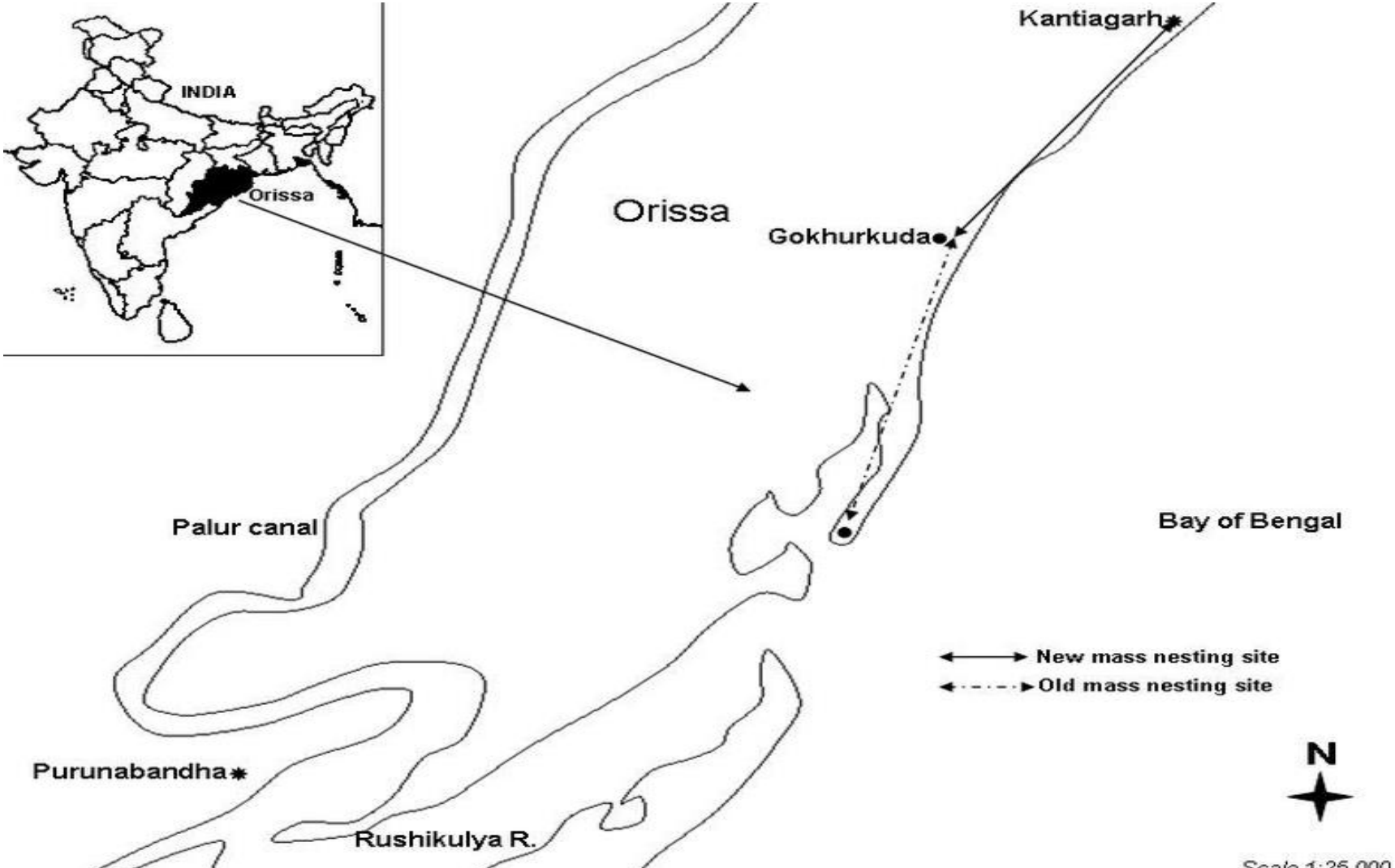
Threats: Classified as vulnerable due to:

- Habitat loss
- Poaching
- Accidental capture in fishing gear

Efforts: Conservation initiatives focus on:

- Protecting nesting sites
- Reducing bycatch in fisheries




INDIA
Orissa
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Kantiagarh
Gokhurkuda
Palur canal
Bay of Bengal
New mass nesting site
Old mass nesting site
N
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Morocco welcomes Indian defence companies to set up production units

Dinakar Peri
NEW DELHI

Morocco is emerging as a springboard for India's ambitions to expand its footprint in Africa for defence exports. Pitching Morocco as a gateway to Africa and Europe for Indian companies, Abdeltif Loudyi, Morocco's Minister Delegate to the Head of the Government, and In-Charge of Administration of National Defence, said they would like "to offer state-of-the-art environment, zero bureaucracy, and profitability for Indian defence companies".

"Morocco and India enjoy excellent bilateral relations based on mutual respect, and have every potential to pursue their positive momentum in various fields, including defence," Mr. Loudyi said, addressing the India-Morocco defence industry seminar held in Rabat on December 9 and 10, and jointly organised by the Defence Ministries of the two countries, the Indian Embassy in Morocco, and the Society of Indian Defence Manufacturers. "We want you in Morocco; we will support you," he said.

Stronger ties: Officials at the first edition of the India-Morocco Defence industry seminar held in Rabat. X@SIDMINDIA

This seminar can only strengthen the historic ties between Morocco and India, two emerging economies with growing strategic cooperation in the defence sector, the Minister observed.

Mr. Loudyi said the launch of the strategic defence industry project placed Morocco at the centre of attention as a defence development hub, and opened up promising prospects for investors interested in the defence and high-tech sectors, as demonstrated by the new strategic partnership signed between the National Defence Administration and the Tata Group, aimed at local production of the WhAP 8x8 ground combat vehicle. "The partnership between ADN and TASM is part of a broader drive to develop Morocco's defence industry, with the aim of gradually building strategic autonomy," he observed.

The seminar offered opportunities for joint ventures, technology sharing, and procurement potential for Indian defence companies in Morocco, officials said.

"Presentations by Moroccan officials emphasised the country's investor-friendly climate; free zones, including the Atlantic Free Zone; and incentives for foreign investments. The Indian delegation also visited the Atlantic Free Zone, gaining a comprehensive understanding of Morocco's industrial landscape," the Society of Indian Defence Manufacturers said on social media platform X.

Bilateral trade between India and Morocco was approximately $4.1 billion in 2023, with major exports from India including refined petroleum, vehicles, and various chemicals. India is the largest buyer of phosphate from Morocco.

Topic → Morocco's Strategic Position in Defense Exports

Morocco as a Gateway for Indian Defense Exports

🇲🇦 Morocco is positioning itself as a key entry point for India’s defense exports to Africa and Europe.

🗣️ Abdeltif Loudyi, Morocco’s Minister Delegate for National Defence, is advocating for Indian companies to invest in the country.

🏭 Morocco aims to provide a state-of-the-art environment for defense companies looking to expand.

📉 The country promises zero bureaucracy to facilitate smoother operations for Indian firms.

💰 Profitability is a key selling point for attracting Indian defense companies to Morocco.

🌍 Morocco is being marketed as a strategic gateway for Indian businesses in the defense sector.

✈️🛡️ The initiative reflects India's broader ambitions to enhance its presence in the African market.

Centre launches Jalvahak scheme for cargo movement via inland waterways

Dinakar Peri
NEW DELHI

The Centre on Sunday launched the Jalvahak scheme to boost long-haul cargo movement via inland waterways.

The scheme incentivises cargo transport on National Waterways 1 (Ganga), 2 (Brahmaputra), and 16 (Barak) and provides an opportunity for the trade interests to explore movement of cargo via waterways with positive economic value proposition, Union Minister for Ports, Shipping, and Waterways Sarbananda Sonowal said.

He flagged off cargo ships *MV AAI*, *MV Homi Bhaba*, and *MV Trishul* along with two dumb barges Ajay and Dikhu from the G.R. Jetty in Kolkata.

This marks the beginning of fixed scheduled sailing service of cargo vessels from Haldia for NW-1 (Ganga) and NW-2 (Brahmaputra), the Ministry said in a statement.

New network: Sarbananda Sonowal, Minister for Ports, Shipping, and Waterways, flags off cargo vessels in Kolkata on Sunday. PTI

"With its advantage of being an economical, ecologically sound, and efficient mode of transportation, we want to boost cargo movement via waterways to decongest the railways and roadways," Mr. Sonowal said.

Further, the regular scheduled freight service, which began from Kolkata, will ensure that the cargo is transported and delivered within a stipulated time frame, he said.

35% reimbursement

The Jalvahak scheme offers reimbursement of up to 35% of the total operating expenditure incurred, the Ministry said.

To encourage the business proposition of vessel operators, the scheme encourages cargo owners to hire vessels owned or operated by government entities. "The incentive scheme is ideal for major shipping companies, freight forwarders, trade bodies and associations that handle bulk and containerised cargo. By opting for the scheme, it provides them an opportunity to optimise their supply chain network. The scheme is initially valid for three years."

The fixed day scheduled sailing service will ply vessels between Kolkata-Patna-Varanasi-Patna-Kolkata stretch of NW-1 and between Kolkata and Pandu in Guwahati on NW-2 via Indo Bangladesh Protocol Route (IBPR), the Ministry said.

UltraTech Cement said it became the first cement company to leverage NW-1 for gypsum transport at scale.

Topic → Jalvahak Scheme: Enhancing Inland Waterway Transport

🚢 Launch of Jalvahak Scheme: The Indian government launched the Jalvahak scheme to enhance long-haul cargo movement via inland waterways.

🌊 Targeted Waterways: The scheme focuses on National Waterways 1 (Ganga), 2 (Brahmaputra), and 16 (Barak) to promote cargo transport.

□ Scheduled Sailing Service: A fixed scheduled sailing service for cargo vessels has commenced from Haldia for NW-1 and NW-2.

💰 Financial Incentives: The Jalvahak scheme offers a reimbursement of up to 35% of total operating expenses to encourage cargo transport via waterways.

🚚 Decongesting Transport: The initiative aims to reduce congestion on railways and roadways by promoting economical and eco-friendly waterway transport.

🎁 Business Opportunities: The scheme is designed for major shipping companies, freight forwarders, and trade bodies to optimize their supply chain networks.

 First User: UltraTech Cement became the first cement company to utilize NW-1 for large-scale gypsum transport.

Summary: The Jalvahak scheme aims to boost cargo movement via India's inland waterways, offering financial incentives and a scheduled service to enhance efficiency and reduce transport congestion

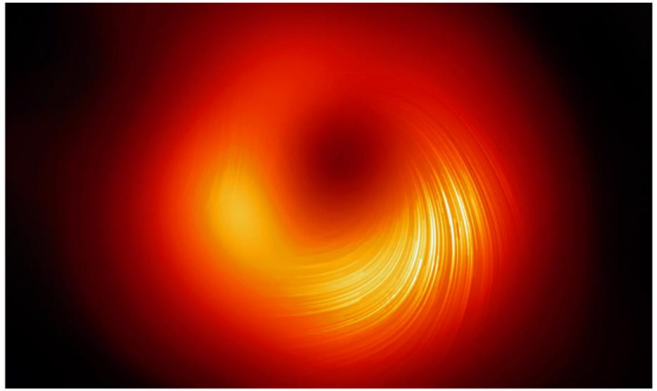
Can we make black holes reveal themselves in echoes of light?

When light passes around a black hole, its path bends. So some parts of the light take a direct route to the viewer while others pass around the black hole a few times before getting back on the original path. In this way, light emitted by a distant source in the cosmos may reach the earth at different instances, creating light echoes

Qudsia Gani

When it comes to making sense of our universe, the importance of black holes is hard to understate. Scientists know that a black hole exerts a strong gravitational pull, so much so that any object that gets closer to its centre beyond a point can never get back out. The effects of black holes on their surroundings include the release of a tremendous amount of energy. These effects are crucial to determining the structures of the galaxies they occupy and how the stars around them evolved over time.

A study published in the *Astrophysical Journal Letters* on November 7 is notable in this wider context. It was carried out by astrophysicists from the Institute for Advanced Study in Princeton, New Jersey, and led by George Wong of the School of Natural Sciences at Princeton University. In their study, the researchers presented a new method to measure the properties of black holes by using the effects they have on light flowing around them.



A view of the M87 supermassive black hole in polarised light as captured by the Event Horizon Telescope and released in 2021. EHT COLLABORATION (CC BY 4.0)

THE GIST

The effects black holes have on their surroundings are crucial to determining the structures of the galaxies they occupy and how the stars around them evolved over time

The mass and radius of a black hole impact the manner in which light behaves. The study claims that light echoes can be used as a new way to determine the masses and spins of black holes

Researchers collected images of light travelling around the M87 black hole. They estimated the time light took to travel from the near end to its far end, which depends on its mass and momentum. From this data, the team inferred echo delay

Signatures in the light

When light passes around a very heavy object, like a black hole, its path bends. As a result some parts of the light may take a direct route to the viewer while others may pass around the black hole a few times before getting back on its original path. In this way, light emitted by a distant source in the cosmos may reach the earth at different instances, depending on its interactions with black holes on the way. When two beams of light emitted by the same source reach the earth at different points, the beam to arrive second will be an echo of the beam that arrived first. This phenomenon is thus called a light echo.

The manner and extent to which light circles around a black hole depends on the black hole's mass and radius. If the black hole is spinning (a.k.a., a Kerr black hole), it will also depend on the object's angular momentum. Thus, according to the study, scientists can use light echoes as a new and independent way to the masses and spins of black holes.

In general, the task of measuring a black hole's mass and spin is quite tedious because all the matter, hot gases, and the radiation swirling around the object complicate observations and make signals harder to extract from the noise. Light, fortunately, is affected differently and light echoes could offer a better signal-to-noise ratio.

An object that bends light is called a lens. Black holes do this by the sheer strength of their gravity; thus, the phenomenon is called gravitational lensing. Scientists theorised long ago that gravitational lensing could create light echoes, but they have not been directly measured so far. To get around this issue, the new study proposes the use of a technique called long-baseline interferometry. The principle here is that the non-simultaneous arrival of two signals – like two light beams – could interfere with each other to create a new, unique signal.

To spot light echoes created by a black hole, one telescope could be placed on the earth and the other in space. While the number of instruments may seem modest, they will have to operate with supreme technical rigour.

The main motivation for the new study was the fact that some of the supermassive black holes in the centre of the Milky Way and the nearby M87 galaxies have been found to have bright rings of light at a frequency of 230 GHz around them. The structure of these rings is influenced by astrophysical forces and the spacetime geometry of black holes, and scientists have been keen to study them in detail using very long baseline interferometry techniques. One particular aspiration is to trace the black hole's shadow on these rings to understand spacetime around the black holes.

Albert Einstein's general theory of relativity also anticipated the phenomenon of light echoes. In particular the theory predicts the echoes will be achromatic, meaning light of all frequencies should be able to form echoes

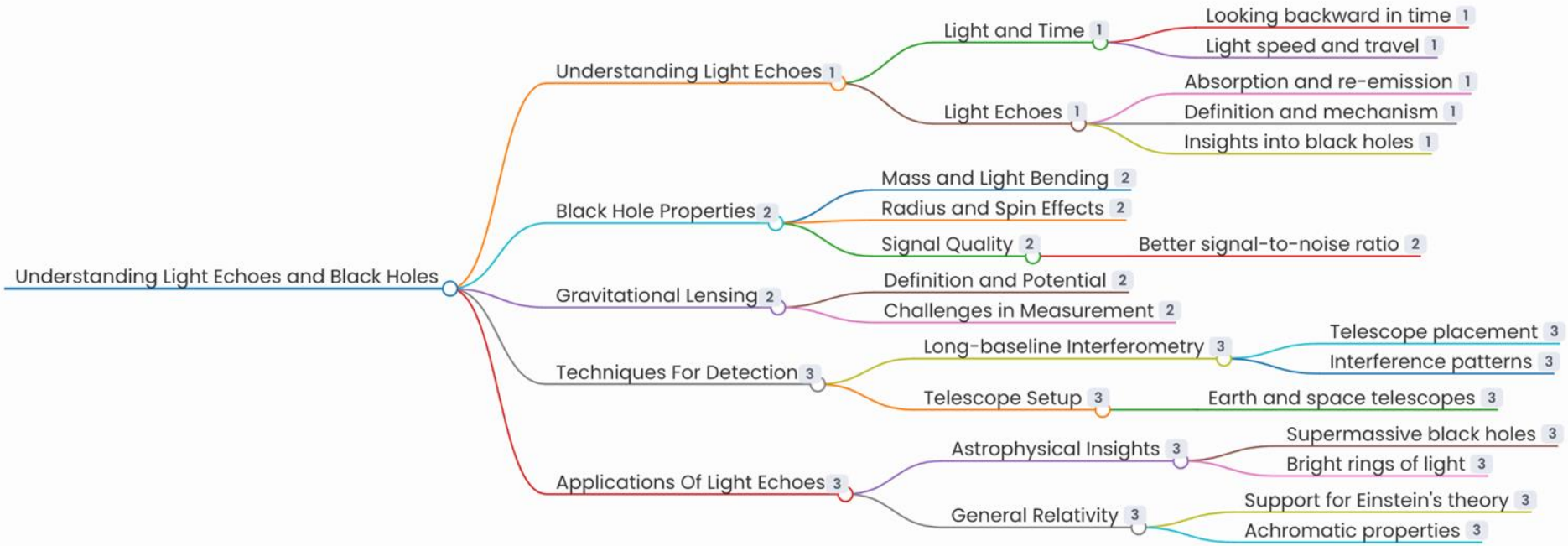
Independent of colour

The analysis in the new study essentially focused on a black hole at the centre of the M87 galaxy – an appealing object of study for light echoes since it's quite large in the sky. But the results are also applicable to other black holes. The baseline in 'long baseline interferometry' refers to the distance between the two telescopes that receive the light. According to the study, it should be at least 40 Gλ, where Gλ is a unit of measurement that refers to the telescopes' ability to collect signals at a specific frequency.

The Princeton team also carried out preliminary high-resolution simulations to test the credibility of their technique. For this, team members collected several thousand instantaneous images of light travelling around the M87 black hole, located nearly 55 million lightyears away, using the Event Horizon Telescope. Then they estimated the time beams of light took to travel from the near end of the black hole to its far end, which, according to their idea, would depend on the black hole's mass and angular momentum, after adjusting for the angle at which the telescope was viewing it. From this simulated data, the team inferred the echo delay.

Albert Einstein's general theory of relativity also anticipated the phenomenon of light echoes. In particular the theory predicts the echoes will be achromatic, meaning light of all frequencies should be able to form echoes. (Since Gλ is inversely proportional to the frequency, building a telescope to detect the echoes is a separate headache.) Thus any approach to detect light echoes at multiple frequencies at the same time could provide a good test of the new technique. A positive result will also be yet another confirmation that the general theory of relativity provides an accurate description of black holes.

(Qudsia Gani is an assistant professor in the Department of Physics, Government Degree College Pattan, Baramulla. qudsiagani6@gmail.com)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Topic → Understanding Light Echoes

- When we look outward into space, we're looking backward in time. That's because light moves at the speed of light. It takes time for the light to reach us
- But it gets even stranger than that. Light can be absorbed, reflected, and re-emitted by gas and dust, giving us a second look.
- They're called light echoes, and they allow astronomers another way to understand the universe around us.
- Definition: Light echoes occur when light emitted from a source is bent around a massive object, like a black hole, leading to different arrival times at the observer.
- Mechanism: Light can take direct or indirect paths, influenced by the black hole's gravity.
- Significance: Light echoes can provide insights into the mass and spin of black holes.

Key Factors Influencing Light Echoes

Black Hole Properties:

Mass: Heavier black holes bend light more significantly.

Radius: Determines the extent of light bending.

Spin: Kerr black holes have additional angular momentum effects on light paths.

Signal Quality:

Light echoes offer a better signal-to-noise ratio compared to other methods of measuring black holes.

Gravitational Lensing

Definition: The bending of light around massive objects.

Potential: Gravitational lensing can create light echoes, although direct measurements have been challenging.

Techniques for Detection

Long-baseline Interferometry:

Involves placing telescopes at great distances (minimum of 40 Gλ).

Captures non-simultaneous signals to create unique interference patterns.

Telescope Setup:

One telescope on Earth and another in space to capture light echoes.

Applications of Light Echoes

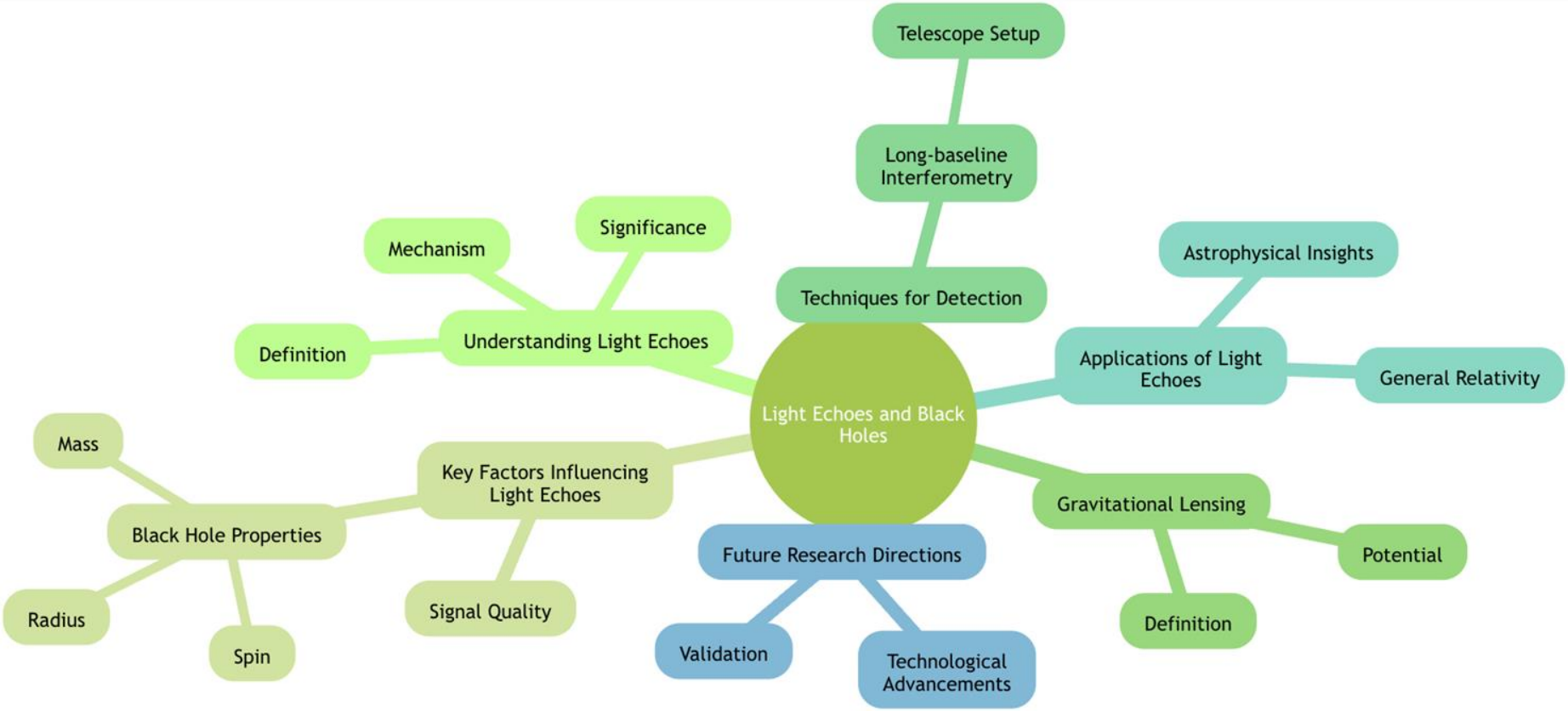
Astrophysical Insights:

Studying supermassive black holes in the Milky Way and M87.

Investigating bright rings of light around black holes at specific frequencies (e.g., 230 GHz).

General Relativity:

Light echoes support Einstein's theory, showing achromatic properties (light of all frequencies forming echoes).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WHAT IS IT?

Mirror life: a deadly geometry

In a mirror, left and right become swapped. While you unscrew a bottle cap anti-clockwise in the real world, in the mirror you'll be rotating it clockwise.

Anything that has a handedness — left or right — is said to be chiral. Chiral molecules that are mirror images of each other are called enantiomers. A good example is the compound thalidomide. It was sold as a sedative for four years in the late 1950s before being withdrawn.

Scientists found that the right-handed enantiomer worked as a sedative, but the left-handed one caused severe birth defects.

In the human body itself, the amino acids used to make proteins are all left-handed whereas the DNA is right-handed (the double-helix twists to the right). The reasons are a mystery.

Scientists have been making and studying enantiomers in the lab for a long time, but recently a few of them have started on the road to creating ''microbes' — synthetic bacteria whose building blocks are enantiomers of their natural counterparts.

This illustration shows a DNA molecule twisting to the left. In our bodies, DNA twists to the right, and left-twisting DNA is absent. GETTY IMAGES

Earlier this month, an international group of scientists, including Deepa Agashe of the National Centre for Biological Sciences, Bengaluru, published a 300-page technical report and a commentary in the journal *Science* warning against efforts to build mirror life.

"Our analysis suggests that mirror bacteria would likely evade many immune mechanisms mediated by chiral molecules, potentially causing lethal infection in humans, animals, and plants," the commentary read.

- The Hindu Bureau

For feedback and suggestions for 'Science', please write to **science@thehindu.co.in** with the subject 'Daily page'

Topic → Chirality and Its Implications

Key Concepts and Case Studies

🔄 **Chirality Concept:** Objects can exhibit **`handedness`**, such as left or right, similar to how a mirror swaps left and right.

🪞 **Enantiomers:** These are chiral molecules that are mirror images of each other. A well-known example is **`thalidomide`**.

👶 **Thalidomide Case:** Marketed as a sedative in the late 1950s, thalidomide's left-handed enantiomer caused severe birth defects, leading to its withdrawal from the market.

🧬 **Amino Acids and DNA:** Proteins are composed of left-handed amino acids, while DNA is right-handed. The reason for this distinction remains unknown.

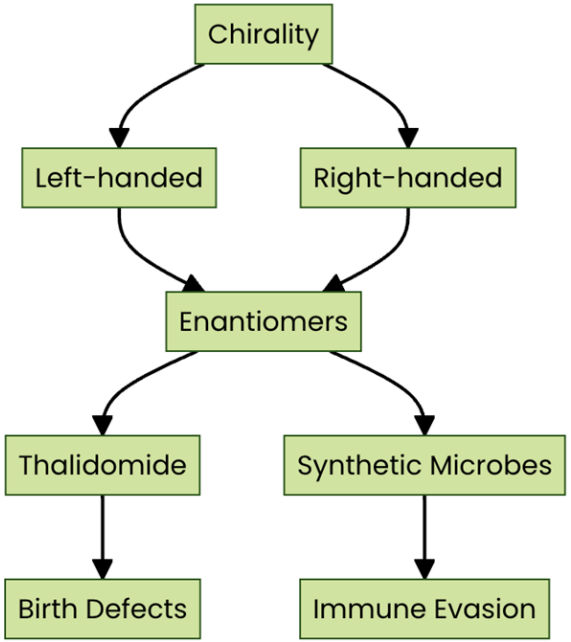
- **Synthetic Microbes:** Researchers are investigating the creation of synthetic bacteria using enantiomers, which may differ from natural bacteria.

- ⚠️ **Warning Against Mirror Life:** A recent report highlights the risk that mirror bacteria could evade immune responses due to their chiral nature, posing threats to humans, animals, and plants.

- 📄 **Research Publication**: An international team, including Deepa Agashe, published a comprehensive report in the journal Science, discussing the potential dangers of creating mirror life.

Visual Representation

Chirality and Enantiomers:



Summary

The exploration of chiral molecules and the potential creation of synthetic mirror bacteria raises significant safety concerns due to their ability to evade immune responses.

A camel caravan moves along the Erg Chebbi dunes in the Sahara outside Merzouga, Morocco, on December 5. An extratropical cyclone brought heavy rain to parts of the Sahara, including the Erg Chebbi, in early September. The runoff from the deluge created ephemeral lakes in the desert, including around the Erg Chebbi. REUTERS

Topic → Erg Chebbi: A Majestic Dune System in the Sahara Desert

Overview

- Erg Chebbi is a notable dune system in the vast Sahara Desert.
- 🌍 Located in southeastern Morocco, close to the town of Merzouga.
- 🌞 Dunes can soar up to 150 meters (around 490 feet) in height.

Tourist Attractions

- 🐫 A favored spot for camel trekking and immersive desert experiences.
- 🌌 Renowned for its breathtaking sunsets and starry night skies.
- Visitors often stay in traditional Berber tents to embrace the desert lifestyle.
- 📸 Offers exceptional photography opportunities, especially at sunrise and sunset.

Summary

Erg Chebbi is a magnificent dune system in southeastern Morocco, celebrated for its towering dunes, tourist activities, and awe-inspiring natural beauty.

Let's talk about 'one candidate, multiple constituencies'

SAURABH PANDEY
CSE
FROM BASICS TO OPTIC RELEVANCE

Santosh Kumar Dash

an Assistant Professor at the Institute of Rural Management Anand (IRMA), Anand, Gujarat

Santosh Kumar Panda

a PhD scholar in political science at the University of Hyderabad

Ever since the panel for 'One Nation One Election' led by the former President of India, Ram Nath Kovind, recommended simultaneous elections to the Lok Sabha and State Legislative Assemblies, much has been written on its positive and negative aspects, the practical considerations and of course the politics around the subject. Amidst all the political accusations and counter-accusations, another important issue has gone missing from attention. The matter is about one candidate contesting from multiple constituencies (OCMC) for the same office.

The background, the challenges

The Constitution of India provides for regular elections every five years to the Legislative Assembly and the lower House of Parliament. However, the Constitution, other than providing for the Election Commission of India (ECI), has empowered Parliament to regulate the manner of conducting the elections. Therefore, 'contesting from multiple constituencies' has been dealt with in the Representation of the People Act 1951. Under the Act, there was no limit on the number of constituencies a candidate could contest – until 1996. This resulted in candidates contesting from multiple constituencies, sometimes more than two, winning them and vacating all but one seat, in accordance with Section 70 of the same Act. This necessitated by-elections frequently.

Due to this, Parliament amended the Act in 1996 to limit the number of constituencies that a candidate can contest from, to two. The amendment intended to discourage one candidate from contesting from multiple constituencies. Despite this, the practice has continued. The numbers are even more frequent in State Legislative Assembly elections, leading to frequent by-elections – there were 44 by-elections for State Assemblies in November 2024 due to the resignation of sitting legislators.

Frequent by-elections due to candidates winning from multiple constituencies pose several challenges. First, they add to taxpayer costs. The administrative cost of the Lok Sabha elections is borne by the central government, and Legislative Assemblies by the State governments; in the 2014 general election, it amounted to ₹3,870 crore. Adjusted for 6% annual inflation, the 2024 general election is put at a cost of ₹6,931 crore, or ₹12.76 crore per seat. If 10 politicians win from two constituencies, the extra cost of holding a by-election would be around ₹130 crore. While this is relatively small when compared to overall election spending, the real issue lies in the massive expenditure by political parties, estimated at ₹1,35,000 crore for the recent general election, or about ₹250 crore per constituency, according to the estimates by the Centre for Media Studies. This burden ultimately falls on the public, and much of the funding comes from black money, which undermines financial transparency.

Second, the by-election necessitated by the vacation of a winning candidate within an initial six months tends to favour the ruling party. This is borne out in by-election trends across multiple States. This emanates from the fact the ruling party can mobilise resources and provide patronage to party workers. Such a scenario of a non-level playing field is skewed against the Opposition, which has negative implications for parliamentary democracy.

Third, the financial burden of organising a by-election disproportionately falls on the already defeated candidate and their party, forcing them to spend resources once again.

Fourth, the saying "Democracy is a government of the people, by the people, and for the people" suggests that elections should serve people's needs. However, a candidate contesting from multiple seats serves as a hedging mechanism against uncertainties and often prioritises the leader's interests, not the people's. This undermines democratic principles, placing politics above the public.

Fifth, OCMC is sometimes used to enhance the reach and message delivery of the leader, relying on their popularity for electoral success. This often reflects the leader's dominance within the party, particularly in family- or leader-centric parties. Moreover, OCMC goes against the fundamental right to freedom of speech and expression of citizens. A petition filed in 2023 (*Ashwini Kumar Upadhyay vs Union of India*) argued that when people elect a representative, they trust that person to be their voice. Contesting multiple constituencies, winning them, and vacating one for a by-election violates Article 19(1)(a) of the Constitution. This practice causes voter confusion and discontent, as seen in Wayanad, Kerala, when Rahul Gandhi vacated his seat in 2024, potentially leading to voter apathy. The voter turnout was 64.24% in the bypoll and 72.92% in the general election.

> If 'one person, one vote' is the core democratic principle for voters, it should be 'one candidate, one constituency' for politicians

Some advantages

The OCMC is common in many countries. It may also have some practical considerations. First, contesting multiple seats provides a safety net for candidates, especially in tightly contested constituencies. Second, in a polity such as India, where politics is centered around the leader and family, OCMC smoothens the leader's continuation or transition in case a leader-centric party secures a majority in the elections but the leader of the party loses out. For instance, Mamata Banerjee lost the Nandigram seat in the 2021 West Bengal Assembly elections. To make way for her, another leader elected from the Bhabanipur constituency had to resign from the Assembly. Similar things unfolded in the case of Pushkar Singh Dhami, Chief Minister of Uttarakhand in the 2022 Assembly elections.

International experience

OCMC is not unique to India. Pakistan and Bangladesh allow candidates to contest multiple constituencies but require them to relinquish all but one seat. Pakistan places no limit on the number of constituencies a candidate can contest, as seen in the 2018 elections when the former Prime Minister contested five seats and vacated four. Similarly, Bangladesh allowed candidates to contest up to five constituencies until 2008 but now limits it to three. The practice was once common in the United Kingdom but has been banned since 1983. Most European democracies have phased it out to promote clear representation and accountability.

The misuse of the OCMC far outweighs the benefits. There have been demands for reforms, and probable solutions may be considered. First, amend Section 33(7) of the RP Act 1951 to ban one candidate contesting from multiple constituencies for the same office. The ECI, in 2004, recommended the government ban the practice. The 255th Law Commission report in 2015 made the same recommendation.

Second, recovering the full cost of by-elections from the candidate vacating a seat can serve to discourage candidates from contesting simultaneously. The ECI recommended cost imposition on candidates contesting from multiple constituencies in 2004. However, the practice of OCMC will continue as the winning candidate or political party can afford to pay the cost.

Third, a more effective deterrent would be to hold the by-elections after a year, allowing voters ample time to make an informed decision and giving the defeated candidate sufficient time to recover and prepare strategically for another contest. This would also provide a more balanced and fair electoral process. This could be done by amending Section 151A, Representation of Peoples Act 1951 which provides for by-election within six months of the occurrence of vacancy.

Holding elections requires substantial financial resources from the state. Furthermore, with elections being a round-the-year affair in India, the frequent need for by-elections takes time and money – resources that could otherwise be better invested in the country's development. However, as the issue of OCOC is political, it requires political willpower and the support of the major parties to bring about change. However, unlike the One Nation One Election, it does not have many proponents in political parties. If "one person, one vote" is the core democratic principle for voters, it is time to enforce "one candidate, one constituency" for candidates.

One Candidate Contesting Multiple Constituencies (OCMC)

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Topic -- One Candidate Contesting Multiple Constituencies (OCMC)

Introduction

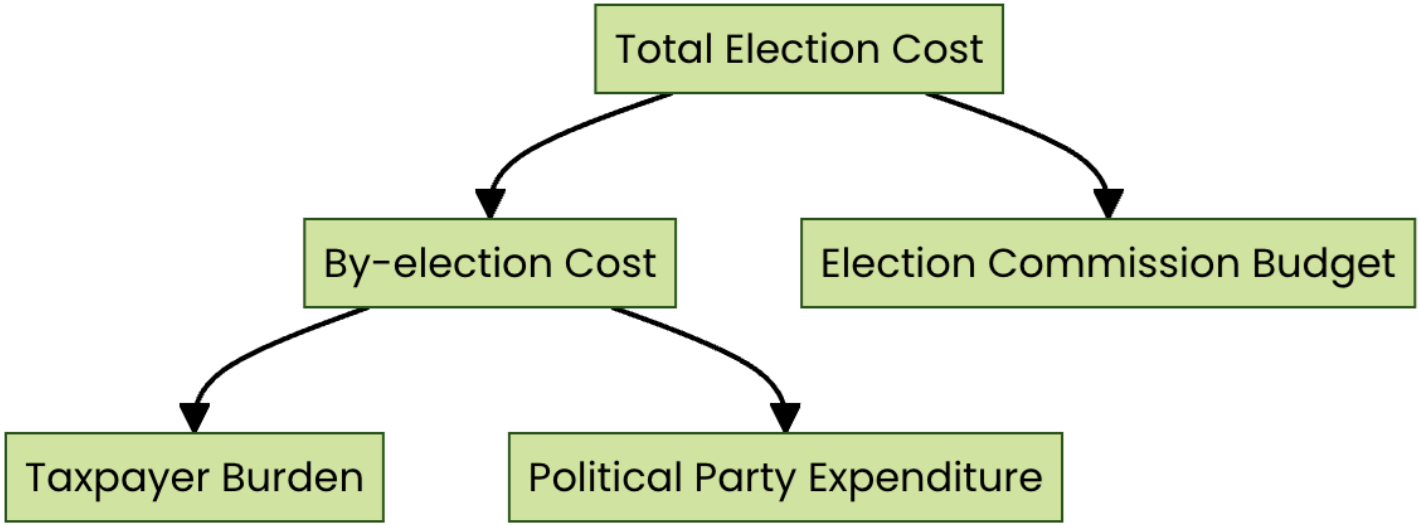
- The electoral landscape in India is often a tapestry woven with complex threads of tradition, law, and political maneuvering. Among the many topics that spark debate, One Candidate Contesting Multiple Constituencies (OCMC) stands out, particularly in the wake of the One Nation One Election proposal.
- This practice has stirred considerable controversy, raising questions about its implications for democracy, financial burdens, and voter engagement. Let's unravel the layers surrounding this issue and explore why it merits our attention

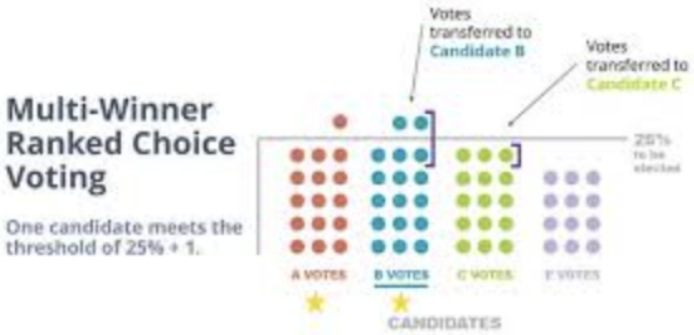
Background and Historical Context

The practice of candidates contesting from multiple constituencies is enshrined within the Representation of the People Act 1951. Initially, there were no restrictions on the number of constituencies a candidate could contest from, leading to a chaotic electoral environment where candidates would secure multiple wins, vacating all but one seat.

- **1996 Amendment:** To curb this trend, Parliament amended the Act, limiting candidates to contest from a maximum of two constituencies. Despite this, the practice persists, particularly in State Legislative Assembly elections.
- **Frequent By-Elections:** The need for by-elections due to OCMC results in increased taxpayer costs and administrative strains, with significant financial implications.

Figure 1.1 Financial Implications of By-Elections:





Challenges Posed by OCMC

The ramifications of OCMC extend beyond mere financial considerations, touching the core of democratic integrity:

- **Taxpayer Costs:** The administrative burden of conducting by-elections is borne by the public, leading to discontent and skepticism regarding electoral spending.
- **Political Imbalance:** By-elections often favor the ruling party, creating an uneven playing field for opposition candidates.
- **Voter Disillusionment:** The constant churn of candidates and seats breeds confusion among voters, diminishing their trust in electoral processes.

International Perspectives and Practices

India is not alone in grappling with the complexities of OCMC. Countries like Pakistan and Bangladesh allow candidates to contest multiple constituencies, though with varying regulations:

- **Pakistan:** No limit on the number of constituencies, as exemplified in the 2018 elections.
- **Bangladesh:** Initially permitted up to five constituencies but now limits candidates to three.
- **Historical Context in the UK:** Once a common practice, it has been banned since 1983 to promote accountability.

The international perspective shows a trend towards limiting OCMC to enhance political accountability and representation.

Proposed Reforms and Solutions

Addressing the challenges posed by OCMC requires a multifaceted approach:

- **Amendment of Section 33(7) of the RP Act 1951:** Ban candidates from contesting multiple constituencies.
- **Recovery of By-Election Costs:** Imposing financial penalties on candidates who vacate seats can deter OCMC.
- **Delayed By-Elections:** Holding by-elections after a year can provide voters with the necessary time for informed decision-making.

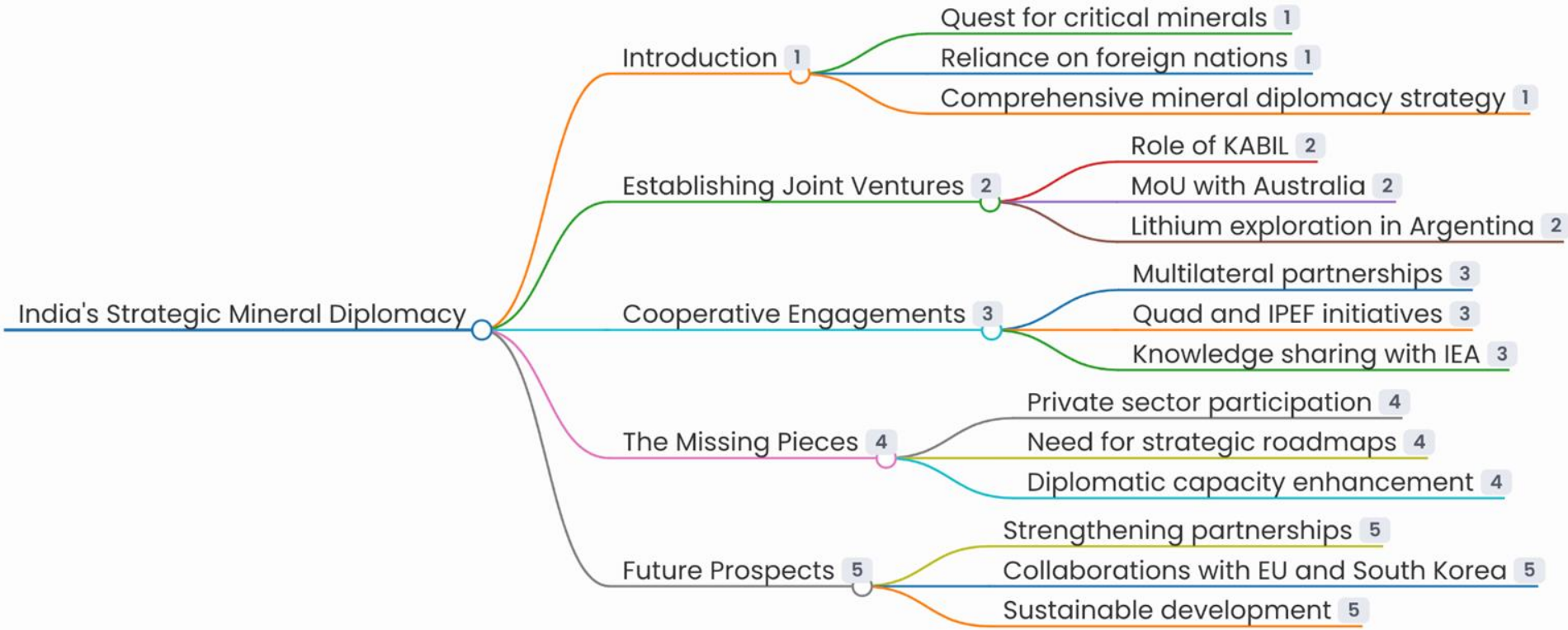
These reforms aim to restore the sanctity of electoral processes and ensure that representatives truly reflect the will of the people.

Conclusion

The persistent practice of One Candidate Contesting Multiple Constituencies is a reflection of deeper issues within the Indian electoral framework.

While it offers certain tactical advantages, the drawbacks—ranging from financial burdens to the erosion of democratic principles—far outweigh the benefits.

It's time for lawmakers to take decisive action to ensure a fair electoral process that prioritizes the electorate's needs over tactical political maneuvers.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Topic → India’s Strategic Mineral Diplomacy: Securing the Future

Introduction

The quest for critical minerals has become paramount in India's ambition to augment its manufacturing and technological prowess.

As a significant importer of these resources, India finds itself in a precarious position, heavily reliant on foreign nations—particularly China—for its mineral security.

This strategic concern has prompted the Indian government to initiate a comprehensive mineral diplomacy strategy aimed at reducing dependency and securing essential resources for the future

Establishing Joint Ventures

India's approach to mineral diplomacy is primarily centered around the establishment of joint ventures with resource-rich nations. The Khanij Bidesh India Ltd. (KABIL) plays a crucial role in this endeavor, tasked with ensuring a steady supply of critical minerals to the domestic market.

- **Bilateral Agreements:**
  - In March 2022, KABIL signed a significant Memorandum of Understanding (MoU) with Australia focusing on lithium and cobalt projects.
  - In January 2024, India entered into a $24 million lithium exploration pact with Argentina, securing five lithium brine blocks.
- **Focus on the Lithium Triangle:**
  - Argentina, Chile, and Bolivia have become focal points for India’s mineral diplomacy, as these nations boast vast reserves of lithium essential for battery production.

Cooperative Engagements

To strengthen its mineral security, India is actively engaging in cooperative endeavors with various international partners.

Formation of Multilateral Partnerships:

India has aligned itself with initiatives such as the Quad (comprising Australia, Japan, India, and the U.S.) and the Indo-Pacific Economic Framework for Prosperity (IPEF) to enhance cooperation in critical mineral supply chains.

Knowledge Sharing:

Collaborations with the International Energy Agency aim to streamline India's policies and align them with global standards, facilitating better capacity building and knowledge exchange.

The Missing Pieces

Despite the strides made in mineral diplomacy, India faces several hurdles that impede its progress.

Private Sector Participation:

The absence of a cohesive strategy for private sector involvement has left a significant gap in India’s mineral supply chain.

Need for Strategic Roadmaps:

A comprehensive approach to risk mitigation and a clear roadmap for the private sector are essential to enhance policy clarity and participation.

Diplomatic Capacity:

Strengthening India's diplomatic capacity is imperative, with suggestions to establish a dedicated mineral diplomacy division within the Ministry of External Affairs.

Future Prospects

Looking ahead, India’s mineral diplomacy holds promise, provided that critical challenges are addressed.

- **Strengthening Partnerships:**
  - Collaborations with key international players like the EU and South Korea can bolster India’s mineral security through shared technological expertise.
- **Sustainable Development:**
  - Establishing strategic and sustainable partnerships is crucial for ensuring long-term resource security, which can significantly contribute to India's economic growth and technological advancement.

The digital frontier of inequality

Susan Jane Ferguson

Country Representative for UN Women in India

Shombi Sharp

UN Resident Coordinator for India

Both authors are part of Team UN in India

India stands at a pivotal moment in its digital revolution, underpinned by an internationally recognised model of digital public infrastructure. Today, India has 1.18 billion mobile connections, 700 million Internet users, and 600 million smartphones.

While the narrowing of the digital gender divide is a sign of progress, as in many countries, a surge in gender-based violence (GBV), particularly tech-facilitated GBV, threatens to overshadow gains. In response, the Union Ministry of Women and Child Development recently launched 'Ab Koi Bahana Nahi (no more excuses)', a national campaign aligned with the global '16 Days of Activism Against Gender-Based Violence'. This annual campaign is led by UN Women.

The risks

India's digital transformation has unlocked immense opportunities for empowerment. The Pradhan Mantri Jan Dhan Yojana has increased account coverage almost four-fold since 2015, with women holding 55.6% of the accounts. Digital Jan Dhan-Aadhaar-mobile linkages enable direct benefits and cashless transactions, especially in rural areas. However, this increased connectivity has also exposed women to new risks.

In urban areas, online harassment is rampant, particularly targeting women in public-facing roles such as journalists and politicians. Rural India boasts 20% more Internet users than in urban areas (2021 Nielsen report). Already constrained by societal norms, many women and girls lack the digital literacy and skills to navigate online spaces safely. Compounding the issue, many women are also unaware of their rights or the mechanisms available to them for reporting abuse.

TFGBV takes many harmful forms. These include persistent harassment such as cyberstalking, online trolling, and the non-consensual sharing of intimate images. Impersonation and fraud through fake profiles, voyeurism, and grooming further exploit vulnerable individuals. These often force women and girls to retreat from digital spaces.

India has taken important steps to combat TFGBV. Legal protections, including the Information Technology Act, 2000, and the Bharatiya Nyaya Sanhita, 2024, provide a strong foundation to address digital violence. Mechanisms such as the National Cyber Crime Reporting Portal enable anonymous reporting, while the government-led Information Security Education and Awareness Programme spreads digital safety awareness. Women-specific programmes, such as Digital Shakti, launched by the National Commission for Women, equip women with tools to navigate online spaces securely. These measures mark great progress in creating safer digital spaces, though some gaps remain.

India also actively engages in international negotiations and agreements, including the 67th Session of the Commission on the Status of Women where UN member states, including India, signed off on agreed conclusions that called for "adequate safeguards in order to promote an open, secure, stable, accessible and affordable information and communications technology environment for all women and girls". This underscores India's commitment to tackling TFGBV.

> Ensuring women's safety online is not only a moral obligation but also a critical pillar for India's progress

The way forward

Achieving truly safe digital environments for women and girls requires more focused and strategic efforts that can keep pace with this changing and evolving digital world.

The Global Digital Compact, adopted by world leaders including India, at the UN Summit of the Future earlier this year, further strengthens legal and policy frameworks "to counter and eliminate all forms of violence, including sexual and gender-based violence that occurs through or is amplified by the use of technology". Therefore, combating TFGBV must be a top priority. This includes enforcing stricter laws against perpetrators of online violence, and swifter justice for survivors. Holding social media platforms accountable is an important part of the tool kit to reduce TFGBV.

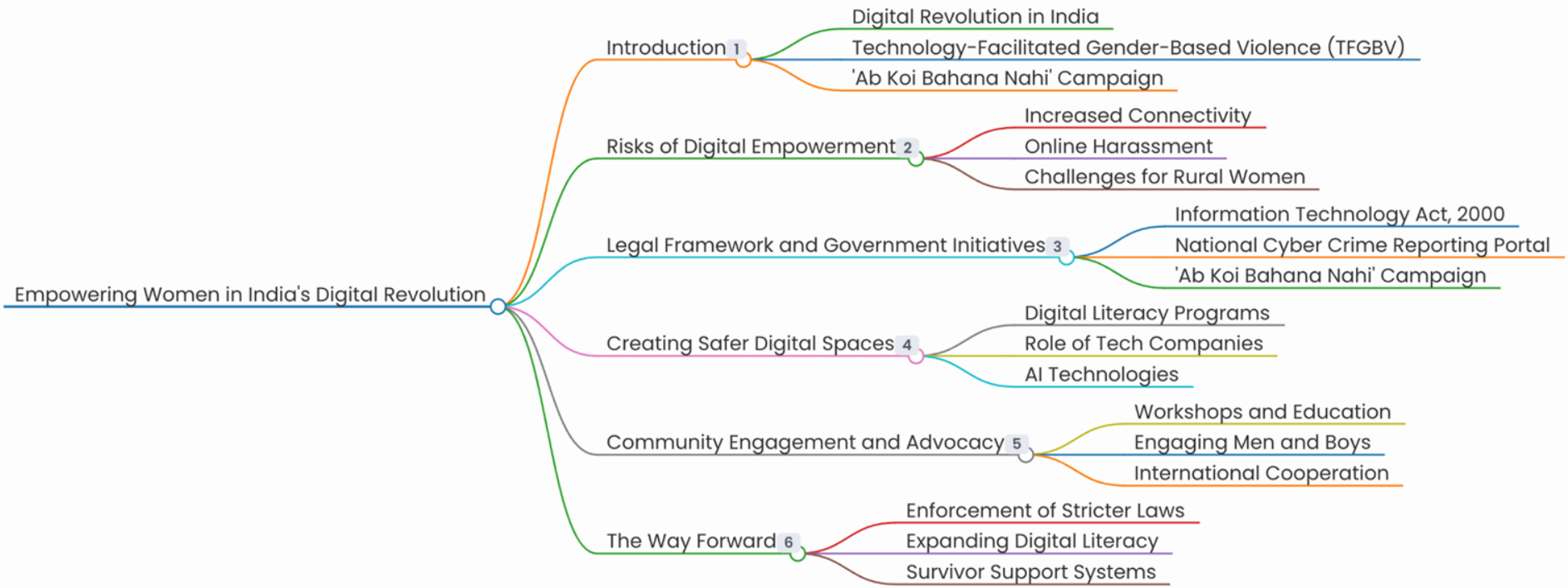
Expanding digital literacy programmes, particularly in rural areas, is critical. Integrating safe online practices into school curriculums and conducting community workshops for women and men, young and old, can be empowering. Additionally, nationwide campaigns that challenge societal norms and actively engage men and boys as allies can foster respectful and inclusive digital spaces.

Collaboration with India's vibrant tech industry is essential. While many platforms have introduced safety features, these need further enhancement to proactively address online abuse. Leveraging artificial intelligence to detect and remove abusive content, yet retaining human oversight, alongside introducing user-friendly reporting mechanisms, can improve safety.

Just as important is the development of robust survivor support systems that offer accessible counselling, legal aid, and rehabilitation services. Expanding the capacity of helplines and initiatives such as TechSakhi, a helpline offering accurate information, empathetic support, and assistance, will ensure that survivors receive timely and effective assistance.

As we concluded observing the 16-Days of Activism that ends on International Human Rights Day every year, India's timely message is unequivocal: *Ab Koi Bahana Nahi*. Ensuring women's safety online is not only a moral obligation but also a critical pillar for India's progress.

Governments, tech companies, civil society groups, individuals, and international organisations have a role to play, and we in the UN Country Team are proud to be a partner in this journey.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Topic → Empowering Women in India's Digital Revolution: Combating Technology-Facilitated Gender-Based Violence.

Introduction

India stands at a pivotal moment in its digital revolution, characterized by an impressive 1.18 billion mobile connections and 700 million internet users. While this connectivity heralds empowerment, it simultaneously ushers in a troubling surge in technology-facilitated gender-based violence (TFGBV). The Union Ministry of Women and Child Development's recent campaign, ‘Ab Koi Bahana Nahi,’ fortifies the fight against this burgeoning menace.

- 🌐 **Digital Landscape:** Acknowledges the dual nature of digital empowerment.
- 🚺 **Gender-Based Violence:** Highlights the urgent need for protective measures.

The Risks of Digital Empowerment

The digital transformation in India has unlocked immense opportunities for women, yet it has also exposed them to unprecedented risks.

- **Increased Connectivity:** Women now hold 55.6% of accounts under the Pradhan Mantri Jan Dhan Yojana, which fosters financial independence.
- **Online Harassment:** Urban women, especially in public-facing roles, are frequent targets of online harassment, such as cyberstalking and trolling.
- **Rural Women:** Despite a higher number of internet users in rural areas, many women lack the digital literacy to navigate online spaces securely.

Legal Framework and Government Initiatives

India has laid the groundwork with robust legal protections against digital violence.

- **Information Technology Act, 2000:** Establishes a legal framework for addressing cyber crimes.
- **National Cyber Crime Reporting Portal:** Enables anonymous reporting of online abuse.
- **‘Ab Koi Bahana Nahi’ Campaign:** This initiative aligns with global efforts to combat GBV, providing resources and support to victims

Creating Safer Digital Spaces

The responsibility to foster safer online environments extends to various stakeholders.

- **Digital Literacy Programs:** Initiatives like Digital Shakti equip women with essential skills to navigate online safely.
- **Tech Companies:** Platforms must enhance safety features and introduce user-friendly reporting mechanisms to curb online abuse.
- **AI Technologies:** The integration of AI can help detect abusive content while ensuring human oversight

Community Engagement and Advocacy

Creating awareness and engaging communities are pivotal in combating GBV.

- **Workshops:** Community-led workshops can empower women and educate them about their rights.
- **Engaging Men and Boys:** Involving them as allies fosters a culture of respect and accountability.

International Cooperation and Agreements

India's commitment to combating TFGBV is reflected in its participation in international agreements.

- **UN Initiatives:** Engaging in global platforms reinforces the need for a collaborative approach to tackle GBV.
- **Legal Framework Enhancements:** Strengthening laws at both national and international levels is essential for comprehensive protection

The Way Forward

To ensure a safer digital environment for women, concerted efforts from all stakeholders are paramount.

- **Enforcement of Stricter Laws:** Holding perpetrators accountable must be a priority.
- **Expanding Digital Literacy:** Programs must reach rural areas to empower all women.
- **Survivor Support Systems**: Initiatives like TechSakhi provide critical support and resources.

How would a carbon market function?

What are carbon credits and how would they be traded between firms? Why do corporations not want the government to be involved in the issual of carbon credits? Who introduced the concept of carbon credits? Why are some experts critical of carbon offsets?

EXPLAINER

The Hindu Bureau

The story so far:

COP29, the ongoing climate conference in Azerbaijan's capital Baku, has given a fillip to the idea of using carbon markets to curb carbon emissions by approving standards that can help in the setting up of an international carbon market as soon as the coming year.

What is a carbon market?

A carbon market is a market that allows the buying and selling of the right to emit carbon into the atmosphere. Suppose a government wants to limit the amount of carbon emitted into the atmosphere. It can issue certificates called carbon credits that allow the holder of the certificate to emit a certain amount of carbon into the atmosphere. One carbon credit is equivalent to 1,000 kilograms of carbon dioxide. By limiting the number of carbon credits that are issued, governments can control how much carbon is released into the environment. It should be noted that anyone who doesn't hold carbon credits to their name would not be allowed to emit any carbon into the atmosphere. Carbon credits were first used in the 1990s in the U.S., which introduced the cap-and-trade model to control the emission of sulphur dioxide.

Individuals and firms that hold carbon credits but don't actually need them for any reason can sell their credits to interested buyers. The price at which these carbon credits are traded is determined by market forces, which in this case are the supply of carbon credits and the demand for these certificates. A carbon market can also include the trading of carbon offsets. In this case, a business that pollutes the environment for example, can purchase carbon offsets sold by an environmental NGO that promises to plant trees that suck a certain amount of carbon emissions out of the atmosphere for each offset that it sells.

ISTOCKPHOTO

What is good about carbon markets?

Pollution of the environment and climate change caused by carbon emissions is a classic case of what economists call an externality. An externality is caused when the cost of an economic activity is not properly accounted for (or internalised) by the market price system due to the absence of well-defined property rights. For example, a business that uses raw materials such as iron will have to pay the supplier who owns the iron to be able to procure and use it, thus incurring a certain cost. But when the same firm emits carbon into the atmosphere, it doesn't usually have to pay any money to anyone. In other words, firms are generally able to emit their waste into the atmosphere for free. This of course leads to unhindered pollution of the atmosphere as firms in this case have no financial incentive to curb their carbon emissions. Carbon markets in which the right to pollute is traded for a price can solve the problem by imposing a certain cost on firms for polluting the atmosphere, helping to curb emissions in the process.

The intersection of standardised accounting frameworks and technological advancements has improved the ability of corporations to monitor and report their carbon emissions. While, this is difficult for the vast majority of small businesses in the developing world, particularly in accurately capturing supply chain emissions, ongoing developments, like real-time data tracking of the energy sector, continue to enhance the granularity and reliability of corporate carbon accounting. However, corporations have preferred a voluntary reporting system, like the Carbon Disclosure Project. They have been loathe to government interventions limiting carbon emissions, arguing that such budgeting may lead to output restrictions or rise in costs. They also point to varied production processes, some that might have diverse supply chains that might make it difficult to find the optimal carbon budget for their facilities. Large multinational corporations such as ExxonMobil and General Motors have advocated for carbon markets that allows free trading of carbon credits among firms at a price determined by market forces, that would allow these firms to purchase carbon credits from other firms, which don't need them as much. This they say, helps allocate carbon credits more efficiently than government diktat.

What can go wrong?

Even when there is a functioning carbon market, a government that is not very keen on reducing emissions may increase the supply of carbon credits and drive down the price of the right to pollute, leading to no noticeable drop in emissions. Others may keep a strict cap on the supply of carbon credits but allow firms to cheat by allowing them to illegally emit carbon. The success of carbon offsets also depends on the degree of personal incentive that firm owners possess to care about carbon emissions, which may often be very little. Critics claim that firms that purchase carbon offsets often do it for the sake of virtue signalling and may have little incentive to ensure that their investments in these instruments are actually helping offset carbon emissions. Meanwhile, other critics have raised more fundamental questions regarding how exactly a government would be able to arrive at the optimum supply of carbon credits. They argue that politicians, who do not incur any personal economic cost when they legislate emission reductions, may restrict the supply of carbon credits more than what is really necessary, leading to slower economic growth.

THE GIST

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- However, corporations have preferred a voluntary reporting system, like the Carbon Disclosure Project. They have been loathe to government interventions limiting carbon emissions, arguing that such budgeting may lead to output restrictions or rise in costs.
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The Rise of Carbon Markets: Insights from COP29 in Baku

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Topic → The Rise of Carbon Markets: Insights from COP29 in Baku

What is a Carbon Market?

A carbon market serves as a trading platform for carbon credits, which are certificates representing the right to emit a specified amount of carbon dioxide (CO_2). This innovative mechanism allows governments and businesses to buy and sell these credits, creating a financial incentive for reducing greenhouse gas emissions.

Historical Context: The concept of carbon markets originated in the 1990s, driven by the need to address environmental externalities associated with carbon emissions. The U.S. introduced the cap-and-trade model to control sulfur dioxide emissions, setting a precedent for future carbon trading systems.

Mechanics of Carbon Credits: One carbon credit equates to 1,000 kilograms of CO_2. Governments issue a limited number of credits, incentivizing firms to innovate in emission reduction strategies.

Market Dynamics: The price of carbon credits fluctuates based on supply and demand. A scarcity of credits can drive prices up, thus encouraging more companies to invest in sustainable practices.

The Benefits of Carbon Markets

Carbon markets offer numerous advantages, primarily focusing on economic efficiencies and environmental accountability.

Economic Incentives: By assigning a cost to carbon emissions, firms are encouraged to reduce their output. This market-driven approach ensures that the most cost-effective solutions are prioritized.

Encouraging Corporate Accountability: Companies are now more motivated to monitor and report their emissions accurately. The intersection of technological advancements has enhanced data tracking, although some smaller businesses still face challenges.

Facilitating Innovation: The potential for profit from selling excess credits incentivizes firms to develop cleaner technologies and processes

Challenges and Criticisms of Carbon Markets

Despite their potential, carbon markets face significant challenges that can undermine their effectiveness.

Market Manipulation Risks: Inadequate regulations can lead to oversupply of credits, diminishing their value and effectiveness in curbing emissions.

Concerns Over Carbon Offsets: Critics argue that purchasing offsets can lead to "greenwashing," where companies invest in offsets without making substantial changes to their emissions practices.

Regulatory Challenges: Governments may struggle to establish optimal credit supply levels, risking either excessive restrictions or ineffective measures

Insights from COP29: Bridging the Gap

The recent COP29 climate conference in Baku highlighted pivotal agreements that may shape the future of global carbon markets.

- **Key Agreements:** Delegates reached significant consensus on establishing standardized carbon trading frameworks, which can enhance transparency and efficiency in the market.
- **International Cooperation:** The necessity of collaboration across borders has become increasingly apparent, as climate change knows no boundaries.
- **Future Outlook:** Moving forward, the success of carbon markets will depend on robust regulatory frameworks and genuine corporate commitment to sustainability

Why is the BJD opposing the Polavaram project?

What are the concerns of tribal communities residing in Odisha's Malkangiri district?

Satyasundar Barik

The story so far:

The Biju Janata Dal (BJD) has recently intensified its efforts to highlight the potential adverse impacts of the Polavaram Dam project, undertaken by the Andhra Pradesh government, on the tribal communities in Odisha's Malkangiri district. A delegation comprising BJD's Rajya Sabha members submitted a fresh memorandum to the Central Water Commission (CWC), the Ministry of Tribal Affairs, the National Commission for Scheduled Tribes and the Ministry of Environment, Forest and Climate Change stating that the impact of submergence due to 'unilateral' change in the design of the project has not yet been studied.

What is the status of the project?

Andhra Pradesh Chief Minister N. Chandrababu Naidu has vowed to complete the Polavaram Project on River Godavari by 2027 as the interstate dispute involving mainly Odisha, Chhattisgarh and Andhra Pradesh has entered a crucial phase. The Union government has assured ₹15,000 crore in this year's budget for the completion of the project.

However, the BJD has alleged that the CWC had refused to conduct a backwater study for the revised design flood, despite the recommendations of experts and the Odisha Government's concerns regarding the safety of tribal populations. The BJD argued that various studies, including those by the Government of Andhra Pradesh and CWC, have shown different estimates for submergence levels. "A backwater study by AP in 2009 indicates that 50-lakh cusec flood will cause submergence up to 216 feet in Odisha, far exceeding the originally agreed maximum level of 174.22 feet. A report from IIT Roorkee in 2019 further estimates that a flood of 58 lakh cusecs would result in submergence levels of Reservoir Level of 232.28 feet in Odisha," it said.

How did the project start?

The Polavaram Irrigation Project on the river Godavari was conceived as a part of the recommendations of the Godavari Water Disputes Tribunal (GWDT). Andhra Pradesh, Madhya Pradesh and Odisha had entered into an agreement dated April 2, 1980, where the project was to be executed by Andhra Pradesh. As per the Andhra Pradesh State Reorganization Act (APRA), 2014, the Polavaram Irrigation Project was declared as a national project.

In response to an RTI query, the Ministry of Jal Shakti said that the maximum height of the concrete dam of Polavaram Project, measured from the deepest foundation level (-18.50m) to the top of bridge is 72.60 metre. The initial project cost was ₹10,151.04 crore in 2005-06 which reached ₹55,548.87 crore in 2019.

What are the concerns?

Though no comprehensive study has been carried out with regards to the likely submergence of the Malkangiri district by backwaters due to the Polavaram project, the Odisha State government in the year 2016 submitted to the NCST that the project was going to submerge 7,656 hectares of land, including forestland, and displace more than 6,800 people including 5,916 tribals in Malkangiri.

The Ministry of Jal Shakti said that as per the Water Resource Department of Andhra Pradesh, by providing remedial measures such as constructing protective embankments for a length of 30 kms along Sileru and Sabari River in Odisha, and 29.12 km along Sabari River in Chhattisgarh, the submergence in both Odisha and Chhattisgarh could be avoided completely. In August this year, the Ministry had asked the State Pollution Control Boards of Odisha and Chhattisgarh to conduct a public hearing for the construction of protective embankments without further loss of time as the project is in an advanced stage of construction. The Odisha State Pollution Control Board is yet to hold a public hearing. The Odisha government had earlier expressed its reservation over the high protective embankment saying it was not feasible. "The construction of an embankment requires the diversion of forestland and creates flooding in Odisha territory."

THE GIST

- The Biju Janata Dal (BJD) has recently intensified its efforts to highlight the potential adverse impacts of the Polavaram Dam project, undertaken by the Andhra Pradesh government, on the tribal communities in Odisha's Malkangiri district.
- The Polavaram Irrigation Project on the river Godavari was conceived as a part of the recommendations of the Godavari Water Disputes Tribunal (GWDT).
- The Odisha State government in the year 2016 submitted that the project was going to submerge 7,656 hectares of land, including forestland, and displace more than 6,800 people including 5,916 tribals in Malkangiri.

Topic → Polavaram Dam Concerns and Developments

BJD's Concerns

- The Biju Janata Dal (BJD) is raising alarms about the Polavaram Dam's potential negative effects on tribal communities in Odisha's Malkangiri district.

Memorandum Submission

- 📜 A BJD delegation submitted a memorandum to various central authorities, highlighting the lack of studies on the impacts of the dam's design changes.

Project Status

- 🚧 Andhra Pradesh Chief Minister N. Chandrababu Naidu aims to complete the Polavaram Project by 2027, with ₹15,000 crore allocated in the current budget.

Disputed Estimates

- The BJD claims that different studies show varying estimates for submergence levels, with some suggesting levels could exceed previously agreed limits.

Land and Displacement

- The Odisha government estimates that the project could submerge 7,656 hectares of land and displace over 6,800 people, including 5,916 tribals.

Remedial Measures

- The Ministry of Jal Shakti proposed protective embankments to mitigate submergence, but the Odisha government has reservations about their feasibility.

Historical Context

- ⚖️ The Polavaram Project was initiated based on a 1980 agreement among Andhra Pradesh, Madhya Pradesh, and Odisha and was declared a national project in 2014.

Summary: The BJD is actively opposing the Polavaram Dam project due to concerns over its impact on tribal communities and land in Odisha, while the Andhra Pradesh government pushes for its completion by 2027.

Polavaram Project Overview

🌊 Project Overview

Multi-purpose Initiative: The Polavaram Project is a significant irrigation project on the Godavari River in Andhra Pradesh, currently under construction.

🇮🇳 National Project Status

Central Government Recognition: Designated as a National project, underscoring its importance.

📍 Reservoir Reach

Backwater Extension: The reservoir extends approximately 150 km upstream on the main river and 115 km on the Sabari River, impacting regions in Chhattisgarh and Odisha.

🌳 Tourism Boost

Enhancement in Tourism: Expected to boost tourism in the Godavari Districts, especially near Papikonda National Park.

⚡ Hydroelectric Development

Hydroelectric Project: The Polavaram hydroelectric project is being constructed alongside the irrigation project.

🚢 National Waterway 4

Water Transport Development: Includes the development of National Waterway 4 on the river's left side.

✈️ Proximity to Key Locations

Strategic Location: Located 40 km upstream from the Sir Arthur Cotton Barrage and 25 km from Rajahmundry Airport.

Summary: The Polavaram Project is a crucial multi-purpose irrigation initiative in Andhra Pradesh, enhancing tourism and hydroelectric power while affecting neighboring states

Gujarat aims to complete 500 sq. km greenfield port city project by 2047

With a massive port capable of handling 500 mtpa at its core, the project seeks to integrate port-related industries, marine activities, residential complexes, industries and recreational activities; the State government is now in the process of identifying a site from four shortlisted options

NEWS ANALYSIS

Avinash Nair

Drawing inspiration from international port cities such as Rotterdam, Dubai, and Antwerp, the Gujarat government is revisiting a decade-old idea of building India's first greenfield port city spread over 500 sq km. It targets completion by 2047 with a cumulative investment of ₹1.5 lakh crore, giving the State a maritime edge countrywide.

With a massive port, capable of handling 500 million tonnes per annum (MTPA), at its core, the project seeks to integrate port-related industries, marine activities, residential complexes, industries and recreational activities. "It is a long-term project. We are in the process of identifying a site from the four shortlisted sites," says a senior State government official.

Gujarat currently accounts for 66 % of the cargo handled by non-major ports in the country, followed by Andhra Pradesh (14%) and Maharashtra (9%) at a distant second and third. This year alone, non-major ports in Gujarat (which include the private ports of Mundra and Pipavav) handled 229 million tonnes of cargo during April-October 2024. By 2047, Gujarat targets handling 2,200 MTPA, almost four times its existing capacity.

Healthy growth: Gujarat's cargo handling capacity has risen five times in the last 20 years. FILE PHOTO

Gujarat Maritime Board (GMB), which is spearheading the port-city project, has appointed global real-estate consultants Cushman and Wakefield (C&W) to prepare a master plan for the project. "The development (of the project) will be spread over a couple of decades," says an executive from C&W.

Porbandar, Bhavnagar, Surat, and Valsad are the four shortlisted sites for the planned port-city. These locations were selected based on key factors such as proximity to deep-water access, availability of waterfront space, connectivity to robust road and rail networks, and potential to support sustainable industrial growth.

> We are not looking to retrofit an existing city or port. We are looking to build the entire port-city from scratch
> A Cushman and Wakefield executive

Government insiders say the strongest contender among the four sites is Maroli/Nargol in Valsad district. Bhavnagar's strengths include its deep draught and strategic location, while Surat – located near the industrial powerhouse of Hazira – finds favour for its established infrastructure and close links to major ports and industries, making it ideal for both industrial and port-led development.

Decades-old idea

In 2013, Gujarat had first mooted the idea for the development of two port cities at Mundra in Kutch district and Pipavav in Saurashtra, respectively. GMB had prepared a concept plan for a ₹6,000 crore, 500 sq. km Mundra port city, scheduled for completion by 2041 and capable of housing 15 lakh people. Later, the diversified conglomerate GVK Group had also proposed to build a port city at Dahej in South Gujarat.

The proposed site was thereafter shifted to Okha on the western end of the State. None of those projects took off.

Challenges

While the key hurdle is in identifying a suitable site, an even bigger challenge is in finding a 500 sq. km contiguous land parcel. "We are not looking to retrofit an existing city or port. We are looking to build the entire port-city from scratch," the C&W executive says.

Another challenging task involves the construction of a 500 MTPA port, which roughly equals the 48 existing non-major ports in Gujarat with 593 million tonnes capacity. State government officials say this is feasible as Gujarat's cargo handling capacity has risen five times in the last 20 years. From 84 million tonnes in 2002-03, cargo handled by Gujarat's non-major ports rose to 415 MTPA in 2022-23. However, most of it is handled by two private ports, Mundra and Pipavav. Gujarat's maritime ecosystem has 48 non-major ports, of which only 20 are functional, according to data tabled in the Lok Sabha in 2021.

The concept for developing a port city also finds mention in GMB's Vision 2047 document, which was released during the Vibrant Gujarat summit earlier this year. Currently boasting a ship turnaround time of 70 hours, Gujarat targets cutting it to 40 hours. The lone major port in Gujarat, Kandla, had a turnaround time of 54 hours in 2023-24, while another major port in neighbouring Maharashtra – Jawaharlal Nehru Port – comes in at an impressive 26 hours.

The development of state-of-the-art port facilities is fundamental to the success of any port city. With the continuous increase in the size and depth of sea-going vessels, demand is set to grow for larger, deep-draught terminals with longer quays and advanced mechanisation. Gujarat's proposed port city is expected to have deep-draught multipurpose terminals, shipbuilding and repair facilities, marina, water sports and more. It will include industrial units, exim zones, warehouses, cold storage, hi-tech parks and multimodal connectivity.

Once the master plan and the location are finalised, tenders will be floated, inviting developers for the port city.

(The writer is with The Hindu businessline)

Topic → Greenfield port city

🌍 The Gujarat government is inspired by international port cities like Rotterdam, Dubai, and Antwerp.

 A decade-old proposal is being revisited to build India's first greenfield port city.

📏 The planned port city will cover an area of 500 square kilometers.

 Target completion year for the project is set for 2047.

💰 The project aims for a cumulative investment of ₹1.5 lakh crore.

⚓ The initiative is expected to enhance Gujarat's maritime capabilities on a national level.

📍 Four potential sites for the port city include Porbandar, Bhavnagar, Surat, and Valsad.

Summary: Gujarat plans to develop India's first greenfield port city by 2047, inspired by global counterparts, with a significant investment and four potential locations.

What are greenfield ports??

🌱 Definition: Greenfield ports refer to new port developments that are constructed on undeveloped land, as opposed to expanding or upgrading existing ports.

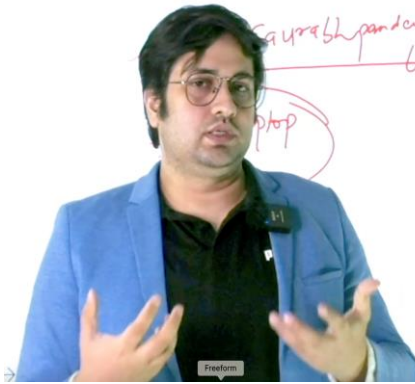
🏗 Construction: These ports are built from the ground up, allowing for modern designs and technologies to be implemented.

🌍 Location: Greenfield ports are often situated in strategic locations to enhance trade and shipping efficiency.

⚓ Environmental Considerations: The development of Greenfield ports typically involves environmental assessments to minimize ecological impact.

Topics - MINDS MAPS included (Daily current affairs 17th December 2024

- **Vizhinjam Port**
- **Understanding Particle Pollution:**
- **United Nations Convention to Combat Desertification (UNCCD) COP16.**
- **What is Greenwashing?**
- **GREEN HYDROGEN.**
- **La Niña and Its Weather Impact.**
- **Cyclone chido**
- **Mains**



By saurabh Pandey

THE HINDU

Can't draw parallels between Tuticorin and Vizhinjam ports, Centre tells Kerala

Dhinesh Kallungal
THIRUVANANTHAPURAM

Deepening uncertainty over providing the Central share of viability gap funding (VGF) to the Vizhinjam international seaport, the Centre has made it clear that Kerala cannot draw a parallel between Tuticorin port and Vizhinjam port.

Kerala had been demanding that since the VGF given for the development of outer harbour container terminal at Tuticorin port has no such condition of repaying the VGF amount to the Centre, the same should be given for Kerala.

Uncertain times: A container vessel leaving the Vizhinjam International Seaport in Thiruvananthapuram. FILE PHOTO

Defending its stand that Kerala should repay the VGF amount of ₹817.80 crore to the Centre, Union Ports, Shipping and Waterways Minister Sarbananda Sonowal said in Parliament that the development of the outer harbour container terminal at Tuticorin is carried out by V.O. Chidambaranar (VOC) Port Authority. It is a Central project where the expenditure is carried out by VOC Port Authority, and the revenue also goes to the VOC Port Authority.

Since VOC is an autonomous body under the administrative control of the Government of India, there is no need for any revenue-sharing agreement while providing VGF. The State had been maintaining that it will have to repay approximately ₹10,000 to ₹12,000 crore if the repayment condition is agreed for the VGF amount of ₹817.80 crore, which goes to the kitty of Vizhinjam port concessionaire Adani Vizhinjam Private Port Limited (AVPPL).

Topic → Vizhinjam Port Overview

Summary of Facts

- Location: Vizhinjam is situated in the Thiruvananthapuram district of Kerala, India.
- Port Type: It is a deep-sea port, designed to accommodate large vessels.
- Significance: The port aims to enhance trade and shipping activities in the region.
- Economic Impact: Expected to boost local economy by creating jobs and improving infrastructure.

🌍 Connectivity: Will improve maritime connectivity with international shipping routes.

🏗 Development: The project is part of a larger initiative to develop Kerala's coastal infrastructure.

📅 Timeline: Construction and operational timelines are crucial for regional development plans.

Topic → Deep-Water Ports: An Overview

🌊 Definition

Deep-water ports are manmade structures designed to accommodate the largest ships and cargo, constructed in deep water.

📍 Location

Typically found in naturally deep harbors or areas that have been dredged to increase depth.

📏 Depth

These ports have a depth of at least 45 feet, compared to regular ports which are usually 20 feet or less.

□ Infrastructure

Equipped with advanced facilities such as large cranes, storage areas, and intermodal connections.

🚢 Purpose

Primarily used for the transportation, storage, and handling of oil, natural gas, and various cargo.

IN Examples in India

Vizhinjam Port: Located near Thiruvananthapuram, it is a strategic natural deep-water port.

Krishnapatnam Port: Known as India's deepest port with a draft of 18.5 meters.

Vadhavan Port: A project in Maharashtra aimed at creating one of India's largest deep-water ports.

New chemical pathway worsens quality of air in harsh winters

Shahzad Gani, of the Centre for Atmospheric Sciences in IIT Delhi, said the new study indexes a 'major shift' in our understanding of how the formation of secondary aerosols like hydroxymethanesulphonate 'can happen in fine particles even in extremely cold, dark conditions'

Sayantan Datta

In winter, the temperature in Dras in Ladakh drops to -20° C, making it the coldest place in India. On the other side of the world, Fairbanks, the capital city of Alaska, holds a similar record in the U.S., its temperature hovering around -22.4° C in winter. But the two cities have drastically different air quality. Unlike Dras, where the air is remarkably healthy, Fairbanks is among the U.S.'s worst-performing cities. One estimate ranked it tenth in a list of the country's most air-polluted cities. Another ranked it first for particle pollution.

Particle pollution, also called 'particulate matter' (PM), is a mix of solid particles and liquid droplets suspended in the air. PM can be classified into two broad categories: $PM_{10-2.5}$ and $PM_{2.5}$. $PM_{10-2.5}$ refers to particles whose diameter ranges between 2.5 and 10 micrometres (µm, equal to one millionth of a metre), and $PM_{2.5}$ refers to particles that are less than 2.5µm in diameter.

$PM_{2.5}$ particles are also called ultrafine particles. They are considered to be particularly dangerous: they enter the lungs through the nose and throat; once in, they reduce lung function, aggravate asthma, and – for people with lung or heart disease – pave the way for premature death.

An aerial view of the smog-covered city of Bishkek, Kyrgyzstan, in January 2023. COLLAB MEDIA

Pollution and temperature

In 2009, authorities from the Division of Air Quality in Alaska declared Fairbanks to be a "$PM_{2.5}$ nonattainment area": that is, the amount of $PM_{2.5}$ in the city exceeded the limit of 35µg per cubic metre of air. The main sources of these pollutants were identified to be emissions from wood stoves, the burning of distillate fuel oil, industrial sources, and automobiles, all of which also emit a large amount of sulphur dioxide.

To bring $PM_{2.5}$ levels below the permissible limits, the Division in a 2022 directive banned the use of fuel with sulphur concentrations exceeding 1,000 parts per million in Fairbanks. Now, a study led by researchers from the University of Alaska Fairbanks and the Georgia Institute of Technology, both in the U.S., has found that the ban may not be entirely effective because the chemistry of $PM_{2.5}$ particles changes in cold weather.

In their study, published in the journal *Science Advances* on September 4, the researchers found that lower sulphate concentrations in the air combined with low temperatures (around -35 °C) made the PM particles less acidic. This in turn increased the production of hydroxymethanesulphonate – another component of $PM_{2.5}$ – in the air.

Rodney J. Weber, a professor at the School of Earth and Atmospheric Sciences, Georgia Institute of Technology, and one of the corresponding authors of the study, told this reporter that the study's findings have implications for the "effectiveness of emission controls to reduce pollution levels."

Aerosol chemistry

In a 2022 study, James Campbell, the lead author of the current study and a doctoral scholar at the University of Alaska Fairbanks, showed that a large amount of hydroxymethanesulphonate formed during winters in Fairbanks when formaldehyde and sulphur dioxide reacted in the presence of liquid water.

Campbell's finding was surprising because hydroxymethanesulphonate formation has been traditionally thought to occur in clouds and fog, not in aerosols, because the former have more liquid water.

Hydroxymethanesulphonate formation also requires more acidic conditions, whereas the sulphite ions (SO_3^{2-}) required for its formation are present in adequate amounts only when the air is less acidic. The higher density of water droplets in clouds and fog absorbs more water-soluble gases, rendering them less acidic than most aerosols, the authors wrote in their paper.

What, then, explained the formation of large amounts of hydroxymethanesulphonate particles in Fairbanks during the winter?

To investigate, the researchers combined measurements obtained previously from the Alaskan Layered Pollution and Chemical Analysis (ALPACA) project with thermodynamic modelling. For the latter, they used computational models to calculate the amount of various ions and gases in aerosol particles in a given air mass.

At very low temperatures, water typically freezes to ice. But sometimes, in a process called supercooling, the temperature of a liquid can drop well below its freezing point without it turning solid.

The researchers wrote in their paper that aerosol particles exist in a supercooled state during Fairbanks winters. As a result, they contain liquid water, which allows hydroxymethanesulphonate to form within these particles. The researchers also reported that the acidity of aerosol particles in Fairbanks changes rapidly during the winter from low to high, making the conditions more favourable for the formation of hydroxymethanesulphonate.

Since Fairbanks sees very low temperatures, fewer ammonium ions jump to the gaseous state. As concentration of ammonium ions in the aerosol builds, its acidity falls, making it ideal for hydroxymethanesulphonate production

The rapid shift in the acidity of $PM_{2.5}$ in many places is largely the handiwork of the relative concentration of two ions: sulphate (SO_4^{2-}) and ammonium (NH_4^+). Sulphate ions increase the acidity of aerosol particles while the latter, a base, neutralise the acidity.

Two ammonium ions are required to neutralise the acidity contributed by each sulphate ion.

If there were to be an equal number of sulphate and ammonium ions in an aerosol particle, it would be more acidic. But since the 2022 ban on high-sulphur fuel in Fairbanks, the concentration of ammonium ions in $PM_{2.5}$ particles increased relative to that of sulphate ions. This lowered the acidity.

Further, ammonium in aerosols can exist in its gaseous form, ammonia, and in its ionic form dissolved in the liquid water in the aerosol. In normal conditions, the two forms exist in equilibrium, where the rates of conversion of ammonium to ammonia and ammonia to ammonium are equal.

But since Fairbanks's winters register very low temperatures, fewer ammonium ions are able to jump to the gaseous state. And as the concentration of ammonium ions within the aerosol particle builds up, its acidity drops further, making it a fertile site for hydroxymethanesulphonate production.

Relevance to the Global South

According to Prof. Weber, the Georgia Tech atmospheric scientist, the study's results are "broadly applicable to cold regions but also provide new insights into aerosol thermodynamics."

Shahzad Gani, an assistant professor at the Centre for Atmospheric Sciences in IIT Delhi, told this reporter the study indexes a "major shift" in our understanding of how "secondary aerosol formation can happen in fine particles even in extremely cold, dark conditions." Secondary aerosol refers to molecules like hydroxymethanesulphonate that are formed from parent molecules in chemical reactions.

"These findings have important implications for understanding how air quality-relevant aerosols form in extremely cold urban and industrial regions," he added.

At the same time, he clarified the study's relevance to "many areas of the Global South is limited, except for some high-altitude regions like the Andes or Himalayas." He said he is looking forward to future research in other cold regions that could help validate the findings of the study and expand its implications to the Global South.

Meanwhile, he added, the study compels scientists to confront how temperature changes might affect chemical pathways related to air quality and climate, especially in a world that is being rapidly reshaped by global warming.

(Sayantan Datta is a science journalist and a faculty member at Krea University. (dattasayantan95@gmail.com))

Topic →Understanding Particle Pollution: A Deep Dive into Particulate Matter (PM)

Particle pollution, often referred to as particulate matter (PM), is a significant environmental concern that affects air quality and public health.

: What is Particle Pollution?

It’s a mix of solid particles and liquid droplets suspended in the air. These particles can come from various sources, including vehicles, industrial processes, and even natural events like wildfires.

: Definition of Particulate Matter (PM)

Particulate matter is classified based on the size of the particles. The two main categories are PM10-2.5 and PM2.5.

: **Types of Particulate Matter**

Understanding these categories is crucial for grasping their health implications.

PM10-2.5

PM10-2.5 refers to particles with diameters between 2.5 and 10 micrometres. These particles can penetrate the lungs but are generally less harmful than their smaller counterpart

PM2.5

PM2.5, on the other hand, consists of particles smaller than 2.5 micrometres. These ultra-fine particles are particularly dangerous as they can easily enter the bloodstream and cause severe health issues.

Health Impacts

PM2.5 can reduce lung function, aggravate asthma, and even lead to premature death, especially in individuals with pre-existing heart or lung conditions. It’s like having a silent enemy lurking in the air we breathe.

: **Vulnerable Populations**
Children, the elderly, and those with chronic illnesses are particularly vulnerable to the effects of PM2.5. It’s essential to understand who is at risk to take appropriate measures.

PM2.5 Nonattainment Area
In 2009, Fairbanks was declared a “PM2.5 nonattainment area,” meaning the levels of PM2.5 exceeded the safe limit of 35µg per cubic metre of air.

: **Sources of PM2.5 Pollution**
Emissions from wood stoves, burning distillate fuel oil, industrial activities, and automobiles. These sources also release a significant amount of sulphur dioxide, compounding the problem.

The Role of Temperature in PM2.5 Levels

Interestingly, temperature plays a crucial role in PM2.5 levels.

Effects of Cold Weather

A study revealed that during cold weather, particularly around -35 °C, the chemistry of PM2.5 changes, making it less acidic and increasing the production of hydroxymethanesulphonate, another harmful component.

Hydroxymethanesulphonate Formation

This formation occurs when formaldehyde and sulphur dioxide react in the presence of liquid water, which is surprising since it was previously thought to happen only in clouds and fog.

The Surprising Role of Supercooling

During Fairbanks winters, aerosol particles can exist in a supercooled state, allowing liquid water to remain without freezing. This unique condition facilitates the formation of hydroxymethanesulphonate.

Acidity Changes in PM2.5

The acidity of PM2.5 can shift rapidly, influenced by the balance of sulphate and ammonium ions. This shift can create conditions favorable for hydroxymethanesulphonate production.

Implications for Global Air Quality

What does this mean for air quality globally?

Relevance to Cold Regions

The findings from Fairbanks are applicable to other cold regions, providing new insights into aerosol thermodynamics and pollution control.

Insights for the Global South

However, the relevance to the Global South is limited, except for high-altitude areas like the Andes or Himalayas.

Conclusion

In conclusion, understanding particle pollution, particularly PM2.5, is crucial for protecting public health and improving air quality. The unique chemistry of aerosols in cold regions like Fairbanks highlights the complexity of air pollution and the need for targeted solutions.

Topic → COP16: The Unfortunate Outcome

Negotiators from 196 countries and the European Union gathered for a 12-day marathon at the **United Nations Convention to Combat Desertification (UNCCD) COP16, held in Riyadh**. The hope was to produce a groundbreaking protocol to address the escalating crisis of drought, a pressing environmental concern that has far-reaching implications on global ecosystems and economies. However, the outcome left much to be desired.

- The meeting concluded without a binding agreement, a scenario that many had anticipated yet feared.
- **UNCCD Executive Secretary Ibrahim Thiaw** highlighted the need for a bold decision to combat this pressing environmental disaster.
- **The assembly's failure to finalize a deal signifies** a disappointing trend following recent unsuccessful biodiversity talks and climate negotiations.

"Parties need more time to agree on the best way forward," acknowledged Thiaw in a candid assessment of the negotiations.

Looking Ahead: A Call for Continued Action

Despite the lack of a finalized protocol, the discussions at COP16 laid a foundation for future negotiations. The next pivotal gathering, COP17, is scheduled to take place in Mongolia in 2026, where parties hope to finalize a comprehensive drought regime.

- **The UNCCD emphasizes the need for 1.5 billion hectares of land restoration by the decade's end and estimates a staggering $2.6 trillion in global investments is required to achieve this goal.**

- **National governments are encouraged to initiate budgets and subsidies to support farmers in sustainable land management practices, a critical step in mitigating the effects of drought.**

- **The absence of a protocol from COP16 shouldn't delay progress—action can still be taken at the national level.**

The hidden cost of greenwashing the Indian Railways

K. Balakesari

formerly of the Indian Railway Service of Mechanical Engineers, was Member Staff, Railway Board

According to a recent report published in this daily, RITES Ltd., the consultancy arm of the Indian Railways, has won two contracts for the repurposing of six broad gauge diesel electric locomotives for export to some African railways. These locomotives will be converted for use on railways that use the Cape Gauge of 1,067 mm as against the 1,676 mm used on the broad gauge of the Indian Railways. While the Indian Railways, in collaboration with its consultancy public sector undertakings such as RITES and IRCON, has exported locomotives to countries in Asia and Africa in the past, this is probably for the first time that second-hand (used) locomotives are proposed to be exported after "gauge conversion''. While there is no doubt that this is a commendable effort in re-engineering that involves virtually rebuilding the locomotives on a narrower platform, the story that lies hidden is a sordid saga of the humongous wasting of costly assets and profligacy unmatched in the annals of railways anywhere in the world, in pursuit of a wholly fictitious goal.

RTI data and policy justification

The report mentions "soon to be redundant diesel locomotives'. The fact is that even as far back as March 31, 2023, according to information obtained by this writer under the Right to Information (RTI) Act more than a year ago, there were 585 diesel locomotives stabled (kept idling/stored) in various locations across the Indian Railways' network due to electrification. Further over 60% of those locomotives had a residual life of more than 15 years. Today, the figure is reported to be about 760 locomotives. How and why did the Indian Railways end up in a situation where hundreds of diesel electric locomotives in good working order with years of service still left in them became redundant? The answer lies with the policy of the government to electrify the entire broad gauge network of Indian Railways in mission mode, at a frenetic pace.

Railway electrification in India has long ago transcended mundane considerations such as economic and financial viability and joined the pantheon of universal desiderata such as world peace and universal brotherhood (*Vasudeiva Kutumbakam*). Today, railway electrification is generally justified broadly on two grounds: a saving of foreign exchange by reducing the import of crude oil and reducing environmental pollution, and, as a corollary of the second point, the adaptability to switch over to renewable sources of energy such as solar and wind. In fact in an official pamphlet issued by the Ministry of Railways in February 2021, entitled 'Mission 100% Electrification - Moving Towards net zero carbon emission', the objectives of the mission have been spelt out thus: to provide environment friendly, green and clean mode of transport to the people; and to unleash its potential to use of renewable energy, especially solar, by making use of the huge land parcel available along the railway tracks.

> The 'mission 100% electrification' project is about chasing a mirage of turning into a green railway; a large number of serviceable diesel locomotives will also become redundant

Let us examine these justifications in greater detail. The benefit of saving in foreign exchange is true in absolute terms. But viewed in the context of the total consumption of high speed diesel (HSD) oil in the country, the consumption for railway traction is minuscule. According to a study conducted by AC Nielsen and published by the Ministry of Petroleum and Natural Gas (January 2014), when electrification of the Indian Railways was proceeding at a sedate "conventional" pace, 70% of of total diesel oil consumption in the country was by the transport sector. Out of this, the share of the Railways was just 3.24%. In comparison, trucks consumed 28% and agricultural sector consumed 13.2%. The share of the Railways reduced further to about 2% in 2021-22. So, 100% rail electrification will eliminate one of the smallest segments of diesel consumption, leaving the elephants in the room to roam free.

Truth about environmental considerations

The claim of environmental benefits is even more untenable in the Indian context. Consider the following facts. Electricity is a secondary source of energy, except when generated by lightning. It needs to be generated by expending a primary source of energy from fossil fuels such as coal, oil and natural gas, nuclear energy or the kinetic energy of water stored at a height (as in hydroelectric projects), or through solar or wind power.

What is the situation in India? Nearly 50% of the electricity generated today in the country is through coal-fired thermal plants and the Indian Railways plays a crucial role in transporting the coal from the pit heads to the thermal power plants. In fact, nearly 50% of the Railways' total freight earnings of about ₹1.7 lakh crore in 2023-24 (revised estimates) was generated by transporting coal for various purposes of which 80%, i.e., 40% of total freight earnings was generated only by transporting coal to thermal generating plants.

Replacing diesel locomotives with electric locomotives will only result in electric locomotives powered by electricity – about 50% of which is generated by burning coal – being used to move more coal to coal-fired thermal plants to generate more electricity, to transport more coal. Coal is considered the dirtiest fuel, environmentally, on the planet. A complete switchover by the Indian Railways to electric traction merely shifts the pollution caused by diesel locomotives near the railway tracks to the source of power generation in a more concentrated form, ultimately polluting the same atmosphere. Unless and until about 80% of the total electricity generated in the country comes from non-fossil fuels – and that day seems far off – any claim of 100% electrification of the Indian Railways, making it a "Green Railway'', is in the realm of fantasy. Incidentally, before that situation becomes a reality, the Railways will have to find alternative commodities to coal – which, today, is the single highest freight earner – to avoid a financial meltdown.

This article is not intended to reopen the time-worn debate of electric traction versus diesel traction. The issue is about chasing a mirage of converting the Indian Railways into a "green railway'', and, in the process, rendering a large number of serviceable diesel locomotives redundant. If all the locomotives already stabled are lined up today end to end, they will stretch for a length of almost 16 kilometres, a majority of them heading prematurely to the scrapyard.

'Disaster management, strategic purposes'

Mission 100% electrification of the Railways will also result in a dichotomy in the near term. The Indian Railways today has more than 4,000 diesel locomotives. With the impending 100% electrification of the system, all of them will not become redundant overnight. According to a recent news report in a reputed financial daily, quoting a senior official, 2,500 diesel locomotives are proposed to be retained by the Railways for "disaster management and strategic purposes''. It is beyond comprehension what disaster will require such a large number of diesel locomotives to be set aside, unless this is a ruse to avoid sending locomotives with considerable residual service life prematurely to the scrapyard. Further, it is reported that another nearly 1,000 locomotives will continue in service for the next few years to meet traffic commitments. In other words, a 100% electrified "green'' railway will continue to use about 3,500 "dirty diesels" in the foreseeable future, financially sustained to a large extent by transporting a not-so-green commodity: King Coal. That raises the question: what was the ultimate purpose of the tearing hurry to electrify 100%?

The Indian Railways' Mission 100% electrification is a sterling example of what happens when headline-grabbing slogans promoting vanity projects substitute for well-thought out policies, finally resulting in colossal wastage of tax-payers' money.

But does anyone care?

Topic → What is Greenwashing?

Greenwashing refers to the practice where organizations present an exaggerated or misleading image of their environmental efforts to deceive consumers. This phenomenon has grown increasingly relevant as eco-consciousness among consumers rises, pushing companies to adopt green marketing strategies that may not accurately reflect their actual environmental impact.

Definition: Misleading use of green marketing to promote an illusion of environmental responsibility.

Common Practices:

Misrepresentation of products as environmentally friendly.
Unsubstantiated environmental claims.
Use of vague terminology (e.g., "eco-friendly," "natural").

Consumer Implications:

Erosion of trust in genuine environmental initiatives.
Difficulty in making informed purchasing decisions

Green hydrogen and the financing challenge

Amarendu Nandy

Assistant Professor (Economics) at the Indian Institute of Management Ranchi. Views are personal

Malvika Awasthy

Green Energy Professional at ReNew. Views are personal

As India charts its path to net-zero emissions by 2070, green hydrogen offers a crucial pathway to decarbonise its industrial sectors. India's ambitious target of producing 5 million metric tonnes (MMT) of green hydrogen annually by 2030 signals its bid to establish early leadership in this emerging sector. However, the daunting economics of financing these projects threatens to derail India's green hydrogen ambition.

Based on a recent analysis by BloombergNEF, India is on track to meet only 10% of its stated goal. The sluggish progress is attributable to the substantial disparity between green hydrogen production costs ($5.30-$6.70 per kg) and traditional grey/blue production costs ($1.9-$2.4 per kg). This wide price differential makes it challenging to drive domestic offtake and attract private investment. It also creates a classic market deadlock – green hydrogen costs can only decrease with scaled production, but scaling requires viable economics.

The barriers

The economics of green hydrogen production hinge on two factors – the levelised cost of electricity (LCOE) and electrolyzer costs, both driven by the cost of capital. In emerging markets like India, perceived higher risks push up borrowing costs, leading to a high weighted average cost of capital (WACC). As investment costs make up 50-80% of LCOE in renewable energy projects, WACC significantly impacts overall costs.

Studies show that an increase in WACC from 10% to 20% can trigger up to a 73% surge in the levelised cost of hydrogen, even when all other production factors remain constant. Add to this the current high costs of electrolyzers, ranging from $500-1,400/kW for alkaline and $1,100-1,800/kW for proton exchange membrane systems, and the financial viability becomes even more challenging.

The global perspective on investments reflects these barriers. By May 2024, only 27.6% of the 1,572 announced large-scale clean hydrogen projects valued at $370 billion had reached final investment decisions. This disparity between plans and financial commitments indicates that the market's structural barriers extend beyond technological readiness. India needs to adopt innovative financing mechanisms and policy frameworks to effectively de-risk investments and attract capital to scale its green hydrogen sector.

On the policy front, several countries are showing the way. The U.K.'s Low Carbon Hydrogen Standard Certification provides a model for building market confidence. Similarly, strategic hydrogen hubs in the U.S., Japan, and Australia reflect a shift from traditional industrial development approaches – rather than letting infrastructure follow demand, these nations are fostering integrated ecosystems where infrastructure, production, innovation, and consumption co-evolve. Adapting this approach, with localised industrial clusters linked to renewable energy sources, could create self-sustaining hydrogen corridors in India that attract investment.

How to de-risk investments

On financing, India needs a multi-pronged approach to de-risk investments. First, the government must implement a comprehensive policy framework that extends beyond production incentives to address fundamental financing barriers. This includes establishing long-term hydrogen purchase agreements and partial loan guarantees to reduce investor uncertainty. It should also create "regulatory sandboxes" that allow for rapid experimentation with novel business models while maintaining safety standards, similar to how fintech innovation was accelerated in India.

Second, India's financial sector must move beyond traditional project finance paradigms designed for conventional energy infrastructure. Indian banks and financial institutions must develop products that address hydrogen's distinctive challenges – long development timelines, uncertain demand, and complex value chains. While blended finance and green bonds provide initial momentum, the sector requires innovative approaches like modular project financing that lets facilities scale in phases, reducing initial capital requirements. "Anchor-plus" financing models could help, where a creditworthy industrial anchor customer underwrites the base capacity while additional capacity is financed using flexible instruments as market demand grows. Equipment-leasing structures could transform electrolyzer investments from prohibitive upfront costs into manageable operational expenses, following the successful model of solar and wind sectors.

Third, India's international collaboration must move beyond aspirational agreements to tackle practical market-making challenges. Establishing standardised carbon intensity and hydrogen origin certification can facilitate exports and bolster trust in India's hydrogen supply chain. Key trade corridors, such as the Hydrogen Energy Supply Chain Project between Australia and Japan, show how cross-border partnerships can provide the demand certainty needed for large-scale investments.

In the next few years, early projects in industrial hubs such as Odisha, Maharashtra, and Gujarat that demonstrate viable business models will shape how the sector develops in India. The green hydrogen projects must integrate financial structuring from the outset. The focus must be on delivering hydrogen at prices that suit key industries.

India's success in green hydrogen will depend on leveraging its abundant renewable resources through efficient project execution, access to low-cost capital, and strategic investments.

India's success in green hydrogen will depend on leveraging its abundant renewable resources through efficient project execution, access to low-cost capital, and strategic investments

Topic → GREEN HYDROGEN

Introduction

- India stands on the precipice of a green revolution in energy, targeting net-zero emissions by 2070.
- Central to this ambition is the production of 5 million metric tonnes of green hydrogen annually by 2030.
- However, the pathway to this ambitious goal is fraught with economic challenges that threaten to hinder progress.
- Understanding these obstacles and exploring potential solutions is crucial for the future of India's green hydrogen economy.

The Current Landscape of Green Hydrogen in India

India's green hydrogen goals are not just a mere aspiration; they reflect a broader commitment to sustainability and energy independence. However, the stark reality remains: the nation is currently on track to meet only 10% of its stated target.

The challenges stem primarily from the high production costs associated with green hydrogen, which range from $5.30 to $6.70 per kg, compared to traditional grey and blue hydrogen, which costs between $1.9 and $2.4 per kg.

Key Points:

- **Economic Disparity:** The significant price differential creates a barrier to domestic uptake and investment.
- **Market Deadlock:** Scaling production is essential for reducing costs, yet viable economics are a prerequisite for scaling

Economic Barriers to Green Hydrogen Adoption

The economics surrounding green hydrogen production hinge on two critical factors: the levelised cost of electricity (LCOE) and electrolyzer costs. Both are heavily influenced by the cost of capital, which is notably high in emerging markets like India.

Weighted Average Cost of Capital (WACC):

Increased WACC can inflate hydrogen production costs significantly.

A shift from 10% to 20% WACC can result in a 73% increase in overall costs.

High Electrolyzer Costs:

Current costs range from $500-1,400/kW for alkaline systems and $1,100-1,800/kW for proton exchange membranes

Strategies for Overcoming Investment Barriers

To de-risk investments in green hydrogen, India can adopt a multi-faceted approach:

Comprehensive Policy Framework:

Establish long-term hydrogen purchase agreements.

Implement partial loan guarantees to mitigate investor uncertainty.

Innovative Financial Products:

Move beyond conventional financing models to address the specific challenges of hydrogen projects.

Introduce modular project financing to lower initial capital requirements.

International Collaboration:

Establish standardized carbon intensity and hydrogen origin certification.

Explore cross-border partnerships to create demand certainty.

Topic → La Niña and Its Weather Impact: What to Expect This Winter

Introduction to La Niña

- La Niña is a complex climatic phenomenon that forms part of the **El Niño Southern Oscillation (ENSO) cycle,** distinguished by cooler sea surface temperatures in the central and eastern Pacific Ocean.
- This natural occurrence significantly influences global weather patterns, especially in regions like India, where it often leads to enhanced monsoon rains. In contrast, its counterpart, **El Niño, tends to bring about warmer ocean temperatures** and can result in severe droughts and extreme weather events.
- Understanding the **nature and implications of La Niña is crucial,** particularly as we approach the winter of 2024.

Current Status of La Niña

Despite prior expectations of **La Niña emerging by mid-2024**, the India Meteorological Department now forecasts its onset to be delayed until late 2024 or early 2025.

Historically, **La Niña conditions typically develop during the monsoon or pre-monsoon periods**, with only rare instances occurring between October and December since 1950.

As of December 2024, the chance of **La Niña forming** is estimated at **only 57%**, and should it materialize, it is expected to be relatively weak.

- Key indicators include the **Oceanic Niño Index (ONI)**, which monitors sea surface temperature anomalies. Currently, **ONI sits at approximately -0.3°C**, suggesting that a robust La Niña is still contingent on further temperature drops

Impact on Global Weather Patterns

The ramifications of La Niña extend far beyond the Indian subcontinent. **During La Niña years,** regions such as India typically experience normal or above-normal rainfall, fostering a conducive environment for agriculture. However, the phenomenon can simultaneously **instigate droughts** in parts of Africa and exacerbate hurricane activity across the Atlantic Ocean.

Impacts include:

- **Increased monsoon rains in India:** The years 2020, 2021, and 2022 showcased above-average rainfall attributed to La Niña conditions.

- **Drought conditions:** Conversely, regions in Africa may face severe droughts during the same period.

Regional Weather Impact in India

In India, the ongoing winter of 2024 is marked by an unusual climatic pattern. Southern cities like Bengaluru and Hyderabad are experiencing colder than average temperatures, while northern regions are seeing a delayed winter with warmer conditions. This dichotomy raises questions about the underlying meteorological influences, especially as La Niña has not yet established itself.

Key observations:

Colder nights in southern India, yet higher daytime temperatures.

The potential for increased air pollution as colder temperatures may prompt more biomass burning for heating.

La Niña's Influence on Future Monsoons

Looking ahead, if La Niña conditions persist into the summer of 2025, they may provide a buffer against the harsh heat typically associated with El Niño years.

Historically, El Niño summers have resulted in severe heat waves and below-average monsoon rainfall.

In stark contrast, La Niña years have consistently promoted robust monsoons, as evidenced by the favorable rainfall during previous La Niña events.

Anticipated effects include:

A potential decrease in extreme heat and an increase in rainfall during the monsoon season.

Historical data indicates a lower likelihood of drought during La Niña conditions compared to El Niño

Conclusion

- While the emergence of La Niña has been delayed, its potential influence on weather patterns cannot be understated.
- As we enter winter 2024, the implications for temperature, rainfall, and regional air quality remain a subject of great interest and concern.
- Monitoring developments in the coming months will be critical to understanding how this climatic phenomenon will shape the weather landscape in India and beyond

Topic -- JUDGE REMOVAL

Understanding the Removal Procedure

The process of removing a judge is steeped in constitutional protocols that ensure both fairness and accountability. Let’s break down the essentials:

Constitutional Framework: Articles 124 and 217 of the Constitution of India stipulate the conditions under which a judge can be removed. This is typically due to ‘proved misbehaviour’ or ‘incapacity’.

Judicial Inquiry: The Judges (Inquiry) Act, 1968 outlines the procedural nuances. A motion must be initiated with signatures from at least 50 Rajya Sabha and 100 Lok Sabha members. The motion then goes through rigorous scrutiny.

Committee Formation: Upon motion admission, a three-member committee, including judges and a distinguished jurist, conducts an investigation to ascertain the validity of the allegations.

Outcome: If the committee finds the judge guilty of misconduct, the motion is brought before the Houses of Parliament, requiring a special majority for removal.

The Road Ahead: What’s Next?

As the situation unfolds, several key aspects will determine the trajectory of this impeachment motion:

Supreme Court Proceedings: The Supreme Court is expected to scrutinize Justice Yadav’s statements further. His appearance before the Supreme Court Collegium will be pivotal in clarifying his position.

Public Discourse: It’s imperative to foster discourse around judicial accountability and the ethical standards expected from judges. The ongoing situation serves as a crucial reminder of the responsibilities judges carry.

Political Dynamics: The likelihood of the Chairman of the Rajya Sabha admitting the impeachment motion remains uncertain, given the political landscape and the implications for judicial independence

Topic → Cyclone Chido: Formation and Naming Insights

Cyclone Chido has emerged as a significant meteorological event, captivating the attention of scientists and the public alike. This article delves into its formation, trajectory, and the cultural significance of its name.

The Meteorological Journey of Cyclone Chido

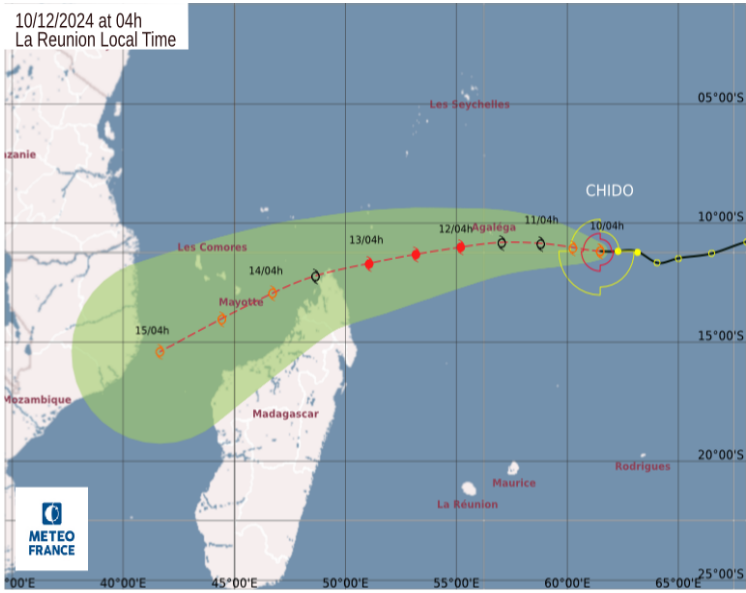
Cyclone Chido's formation can be traced back to a series of meteorological events:

Initial Development: Originating as a tropical depression, it swiftly transitioned into a cyclone due to favorable atmospheric conditions.

Intensification Factors:

Warm Ocean Waters: The Indian Ocean provided the necessary heat, fueling Chido's growth.

Low Wind Shear: Minimal wind shear allowed the cyclone to maintain its structure and increase in intensity



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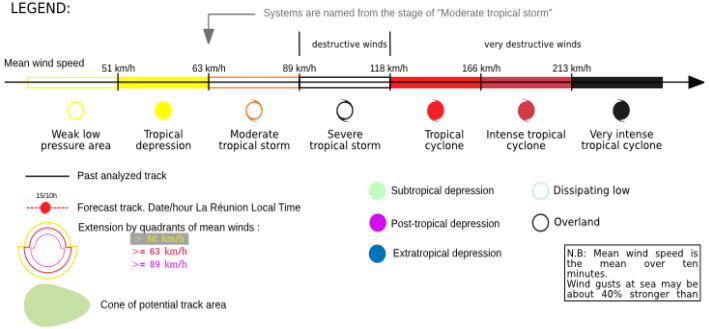


WARNING:

The potential track area depicts the track forecast uncertainty for days 1-5 of the forecast. It indicates that the entire 5-days path of the center of the tropical system for which the track forecast has been made will remain within the cone about 75% of the time.

Hence being situated outside of the uncertainty cone does not mean that there is no risk of being affected by the system, especially so since the uncertainty cone is for the storm's center and does not consider the more or less large extension of potential damaging winds or rain surrounding this center.

The Role of SWIOCTC in Naming Cyclones

The South-West Indian Ocean Tropical Cyclone Committee (SWIOCTC) is the authority responsible for naming cyclones that impact Southern Africa. This committee consists of representatives from various countries including:

- Mauritius
- Madagascar
- Mozambique
- Seychelles
- South Africa

Naming Process

the name Chido, which means "grace" in some African cultures, was chosen to ensure resonance with local communities. This practice includes:

- Selecting names that are meaningful and culturally appropriate.
- Ensuring that the names can be easily pronounced and remembered by the public.
- Each year, member countries contribute names to a predetermined list.
- The names are simple, culturally relevant, and easy to remember.
- Once a cyclone forms and reaches tropical storm strength, it is assigned the next name on the list.
- This methodical process helps prevent confusion during the cyclone season when multiple storms may arise.

Assad's sea-facing holiday home in Latakia leaves Syrians in 'disgust'

Agence France-Presse
LATAKIA

The drive winds between manicured lavender-lined lawns to a crescent-shaped home with a gleaming swimming pool on the Syrian coast: Bashar al-Assad's holiday hideaway disgusts those who now come here.

"To think that he spent all that money and we lived in misery," spat Mudar Ghanem, 26.

He is grey-skinned and his eyes are sunken after spending 36 days in a Damascus jail, accused like other suspected dissidents of "terrorism" against the ousted President's rule.

Now he had come "to see with my own eyes how they lived while other people had no electricity", Mr. Ghanem said, standing by the windows of a huge white-marbled living room. "I do not care if the next President lives here too," he added, "as long as he looks after the people and does not humiliate us."

The Assad holiday home is in Latakia, Syria's second largest port after Tartus. It is in an area that is the heartland of the Assad clan's Alawite faith, an offshoot of Shia Islam.

On Sunday, a week after the deposed President fled Syria after a lightning militant offensive, curious people came to see how Mr. Assad had lived.

This was just one of three Assad villas on the outskirts of the city.

In scenes that were unimaginable just days ago, Syrians wandered through the luxury home that is now guarded by a handful of former militants.

Ransacked structure

There was no air of triumphalism, just stupefaction and anger at how Mr. Assad had lived a life of luxury in this idyllic seaside spot. Over the past week the house itself has been ransacked, stripped of its last doorknob, but the grandeur of its rooms and the antique mosaic adorning the entrance bear witness to its standing.

The land used to be owned by Nura's family. "They chased us away. I didn't dare come back" before now, the 37-year-old said, adding that she intends to seek legal redress to get her property back.

Children play inside an empty swimming pool at the summer residence of ousted Syrian President Bashar al-Assad in Latakia. AFP

Most people, like Nura, spoke freely but preferred not to give their full names. Despite its downfall, the fear instilled by the Assad name is still there. "You never know – they could come back," said 45-year-old Nemer.

The house belonged to Munzer al-Assad, a cousin of the former leader. Along with his brother, who died in 2015, Munzer ran the notorious "shabiha" militia, known for its abuses and trafficking operations.

"It is the first time I've stopped here," Nemer said. "In the past the guards would chase us away. We wer not allowed to park."

The two-storey house had also been stripped. Chandeliers, furniture, and stucco mouldings are all gone. Family photographs ripped up and portraits torn from now bare walls. The looters had been busy.

"I get 20 dollars a month. I have to do two jobs just to feed my family," Nemer said, bitter at the memory of Assad clan convoys that used to speed through the city streets. On the pavement outside, two passers-by stopped beside a sewer grating. They lifted it up and scooped out hundreds of small white pills. This was captagon, a banned amphetamine-like stimulant. It became Syria's largest export, turning the country under Mr. Assad into the world's biggest narco state. They said massive quantities of the drug had been found nationwide after Mr. Assad fell.

"I'm shocked by the scale of these crimes," said Ali, 30, a militant from Idlib.

"God will have his revenge," said Mr. Ghanem at the sumptuous holiday villa, standing there and looking out to sea.

Topic → Latakia: A Coastal Gem of Syria

Overview

📍 **Location:** Latakia is a coastal city in Syria, nestled along the Mediterranean Sea.

🌊 **Geography:** Known for its stunning beaches and mountainous landscapes, it is a favored spot for tourists.

📜 **History**: The city boasts a rich historical tapestry, influenced by the Phoenicians, Romans, and Ottomans.

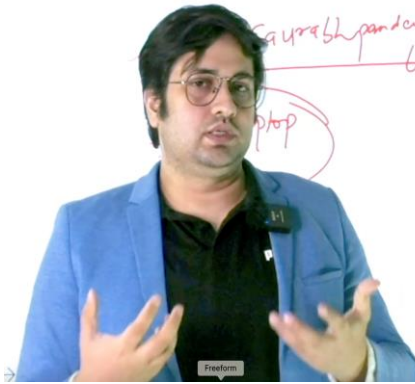
🌍 **Economy:** As a major port, Latakia plays a crucial role in regional trade and commerce.

🎭 **Culture**: A melting pot of Arab, Armenian, and other cultures, contributing to its unique identity.

TURKEY
SYRIA
DAMASCUS
Mediterranean Sea
Idlib
Latakia
Banias
Hama

Topics - MINDS MAPS included (Daily current affairs 19th & 18th December 2024

- Supreme court on sacred groves
- Esquel Meteorite:
- → The Supreme Court's Ruling on Section 6A of the Citizenship Act
- IR IN NEWS
- Coral Farming
- Mains



By saurabh Pandey

THE HINDU

Q. Rabab recently seen in news is associated with which among the following. (PIB)

A) Folk dance

B) Martial Art form

C) Form of Puppetry

D) Musical instrument.

Topic → Supreme court on sacred groves

Introduction

- The Supreme Court of India has taken a monumental step by directing the Centre to create a comprehensive policy for managing sacred groves—vital ecosystems that hold immense cultural and ecological significance.
- These small forests, often preserved by local communities, represent a unique blend of nature and tradition.
- Their preservation not only supports biodiversity but also reflects the cultural heritage of various regions across the country.

Significance of Sacred Groves

Sacred groves are patches of forest that are traditionally protected by local communities due to their religious and cultural importance. These groves serve multiple purposes:

- **Cultural Heritage:** Sacred groves are often sites for worship and rituals, reflecting the spiritual connection communities have with nature.
- **Biodiversity Hotspots:** They are crucial for conserving various species of flora and fauna, often acting as reservoirs of biodiversity.
- **Ecosystem Services:** These groves provide essential services such as soil conservation, water retention, and climate regulation, contributing to the well-being of local communities.

The Supreme Court's Directive Explained

In a landmark ruling, the Supreme Court emphasized the need for a structured approach to protect these sacred groves. Key points from the directive include:

National Survey: The Ministry of Environment, Forest and Climate Change has been tasked with conducting a nationwide survey to identify and assess the extent of sacred groves.

Community Involvement: The court highlighted the importance of involving local communities in the conservation efforts, recognizing their traditional knowledge and practices.

Policy Development: The Centre is expected to develop a robust policy that not only protects these groves but also respects the cultural rights of the communities associated with them

Topic → Esquel Meteorite: A Cosmic Treasure

Introduction to the Esquel Meteorite

The Esquel meteorite is not just a rock from outer space; it’s an extraordinary testament to the wonders of our universe. Discovered in Argentina in 1951, this meteorite has captivated scientists and collectors alike with its unique attributes and rich history. 🌠

Location: Found in Esquel, a region known for its stunning landscapes and rich geological history.

Type: Classified as a pallasite, it features a mesmerizing blend of metal and olivine crystals.

Historical Context: Its discovery has provided insights into the formation of the solar system and the processes that govern celestial bodies

The Origins of the Esquel Meteorite

The journey of the Esquel meteorite began in the vastness of space. It is believed to have originated from the asteroid belt between Mars and Jupiter. Here’s a glimpse into its cosmic journey:

Formation: The meteorite is thought to be remnants of a larger asteroid that underwent differentiation, leading to the formation of its unique structure.

Impact: It traveled through the cosmos for millions of years before entering Earth’s atmosphere, where it survived the fiery descent. ☄

Discovery: Found by a farmer in the early 1950s, it quickly garnered attention from meteorite enthusiasts and scientists

Characteristics and Composition

What sets the Esquel meteorite apart? Its unique characteristics and intricate composition tell a fascinating story of the cosmos.

Visual Appeal: The meteorite is adorned with translucent olivine crystals, offering a stunning display reminiscent of jewels. 💎

Metallic Matrix: Composed primarily of nickel-iron, it reflects the complex processes involved in its formation.

Size: Weighing in at approximately 7.3 kilograms, this meteorite is one of the largest pallasites ever found.

Conclusion

The Esquel meteorite is more than just a cosmic rock; it’s a bridge to our past, offering glimpses into the formation of our solar system and the dynamic processes at play in the universe. Whether you’re a seasoned collector or a curious enthusiast, the allure of the Esquel meteorite is undeniable

Topic → The Supreme Court's Ruling on Section 6A of the Citizenship Act

Introduction

In October 2024, the Supreme Court of India delivered a landmark 4:1 ruling that upheld the constitutional validity of Section 6A of the Citizenship Act, 1955.

This provision is particularly significant as it establishes a framework for migrants from the former East Pakistan (now Bangladesh) who settled in Assam, allowing them to acquire Indian citizenship if they arrived before March 25, 1971.

Background of Section 6A

The Assam Accord

. This provision was introduced in 1985 following the Assam Accord, an agreement between the Government of India and the leaders of the Assam Movement.

The movement arose due to concerns about the influx of migrants from East Pakistan into Assam, which threatened local culture, economic stability, and political balance.

Historical Context of Migration

The Assam Accord aimed to address these issues by setting specific cut-off dates for granting citizenship to migrants. Those who migrated before January 1, 1966, were declared Indian citizens, while those who arrived between January 1, 1966, and March 25, 1971, could apply for citizenship after ten years of residence. Anyone arriving after March 25, 1971, was deemed an illegal migrant.

The Supreme Court's Majority Ruling

Key Points of the Judgment

The Supreme Court's ruling has been met with mixed reactions. The majority opinion emphasized that the law was not unconstitutional and that it was necessary to address the unique demographic challenges faced by Assam.

Chief Justice D.Y. Chandrachud's Reasoning

Chief Justice D.Y. Chandrachud justified the decision by stating that while other states share larger borders with Bangladesh, the impact of migration on Assam's cultural and political rights is more pronounced.

Constitutional Violations in the Ruling

Article 14 and Its Implications

One of the major criticisms of the ruling is its handling of Article 14, which guarantees equality before the law. The judgment seems to suggest that the unique circumstances of Assam justify differential treatment, raising questions about fairness and equality

Article 29 and Cultural Rights

The Court's interpretation of Article 29, which protects the cultural and linguistic identities of distinct groups, has also come under scrutiny. The ruling stated that the influx of migrants did not infringe upon the Assamese people's ability to conserve their culture.

Gaps in the Court's Reasoning

Cultural and Linguistic Displacement

The Court's reasoning fails to acknowledge the significant demographic shifts that have occurred in Assam. Research indicates that the Bengali-speaking population has increased dramatically, while the proportion of Assamese speakers has declined. This shift is not merely a coexistence of cultures but represents a serious threat to the Assamese identity.

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The Mechanism of Section 6A

Flaws in the Identification Process

The mechanism for identifying migrants under Section 6A is fundamentally flawed. It places the burden of proof on the state without providing a means for voluntary self-identification by migrants. This creates a convoluted process that can lead to confusion and injustice.

Impact on the Foreigners' Tribunal

The foreigners' tribunal, responsible for determining citizenship status, is overwhelmed with cases. This backlog not only slows down the process but also complicates the situation for individuals who may not even qualify under Section 6A.

Potential Negative Implications of the Ruling

it poses a threat to the cultural fabric of Assam and raises concerns about the future of citizenship laws in India. The decision could set a precedent for further erosion of cultural rights and identity.

Conclusion

The Supreme Court's ruling on Section 6A of the Citizenship Act is a complex issue that warrants careful consideration.

While it aims to address the unique challenges faced by Assam, it also raises significant constitutional concerns that cannot be overlooked.

IR IN NEWS

Romania's Presidential Election Annulment

Key Events and Figures

- Unprecedented Ruling: On December 6, Romania's constitutional court annulled the presidential elections just two days before the runoff.
- RU Allegations of Interference: The annulment was amid allegations of Russian interference in the electoral process.
- Frontrunner Emerges: Calin Georgescu, an independent candidate, emerged as the frontrunner with 22.9% of the vote after the first round on November 24.

🎓 Background of Georgescu: Georgescu is a professor of environmental sciences and an ex-honorary member of the far-right AUR party, known for his pro-Russian sentiments.

❌ Court's Decision: The court initially ordered a recount due to complaints but later decided to cancel the elections entirely due to multiple irregularities.

📅 Legislative Context: The AUR party, which suggested Georgescu as a Prime Minister candidate, came second in the legislative elections held on December 1.

🌍 Criticism of Alliances: Georgescu is a critic of Romania's NATO and EU memberships, aligning with his far-right political views.

Summary

Romania's constitutional court annulled the presidential elections amid allegations of Russian interference, with frontrunner Calin Georgescu facing scrutiny for his political affiliations and views

BIG SHOT

Jesus Alvarado of the Pilares Marino Foundation holds a structure with tiny coral pieces to create a coral farm in a project with Venezuela's government to repopulate reefs and diminish the effects of global warming, in Santo Domingo, Venezuela. REUTERS

Topic → Cultivating the Future: The Importance of Coral Farming

Introduction

Coral reefs are the vibrant cities of the ocean, teeming with life and biodiversity. 🌊 Unfortunately, they are under siege from various environmental threats, making coral farming an essential practice for their survival.

Coral farming involves cultivating corals in a controlled environment, which can then be used to restore and replenish damaged reefs.

Let's delve into the techniques, impacts, challenges, and future of coral farming.

Coral Farming Techniques

Coral farming employs several innovative techniques to propagate and grow corals effectively. Here are some of the popular methods:

Fragmentation: This is the most common method, where small fragments of coral are broken off and placed in a nursery to grow. This technique allows for rapid reproduction.

Larval Reseeding: Scientists collect coral larvae and introduce them to suitable substrates, promoting natural settlement and growth. This method helps in restoring natural reefs more effectively.

Robotic Assistance: Recent advancements have seen the introduction of robotic hands designed to assist in coral planting and maintenance. These robotic innovations can work in harsh underwater conditions, enhancing efficiency.

Innovative Technologies: The integration of drone technology for monitoring coral health and underwater sensors for data collection has revolutionized coral farming. These tools provide vital information that enables better decision-making and management practices.

Impact on Marine Ecosystems

Coral farming plays a significant role in bolstering marine ecosystems. Here’s how:

Biodiversity Restoration: By providing an environment for various marine species, coral farms support the restoration of biodiversity in areas where coral reefs have been damaged.

Protection Against Erosion: Healthy coral reefs act as natural barriers against storm surges and coastal erosion, safeguarding coastal communities.

Carbon Sequestration: Coral reefs contribute to carbon sequestration, helping to mitigate climate change by absorbing CO2 from the atmosphere.

Economic Benefits: Coral farming can provide livelihoods for local communities through eco-tourism and sustainable fishing practices.

Q. Rabab recently seen in news is associated with which among the following. (PIB)

A) Folk dance

B) Martial Art form

C) Form of Puppetry

D) Musical instrument.

Ans: D

The rubab is the national musical instrument of Afghanistan.

AAKLAN PLUS

Themes-- (Upcoming month)

Week -1

Border management and internal security

Week -2 - International relations

Week -3 -Ethics and integrity

Week -4 - Ethics and integrity

One short videos of sources will b uploaded + model answers

Q. Lake Turkana has often been in news on account of being on the World Heritage List of Danger since 2018 due to fear of heavier rains over Lake Turkana's river inflows, induced by climate change which would raise water levels in the lake itself and increase the likelihood of severe flooding. The Lake Turkana is located in the which among the following Country. (DTE)

A) Brazil

B) Kenya

C) Tanzania

D) Mozambique

Lunch time

Seasonal visit: A spot-billed pelican feeding its young one at the Uppalapadu Bird Sanctuary in Guntur district of Andhra Pradesh on Thursday. Thousands of these migratory birds visit the sanctuary every year to nest and breed. K.V.S. GIRI

Topic → The Spot-billed Pelican

Introduction

The Spot-billed Pelican, characterized by its striking appearance, is predominantly found in freshwater and coastal habitats across Asia.

This species is essential for maintaining fish populations and contributing to the overall health of aquatic ecosystems.

Physical Characteristics and Behavior

The Spot-billed Pelican is easily recognizable due to its unique features:

Distinctive Bill: The large bill has a prominent spot, which is particularly noticeable during the breeding season.

Size: Adult pelicans can reach up to 1.8 meters in wingspan, making them one of the larger pelican species.

Feeding Habits:

Primarily piscivorous, they consume a variety of fish, often hunting in groups to maximize efficiency.

Known for their cooperative hunting techniques, pelicans can drive fish towards shallower waters.

Breeding and Nesting

The breeding season of the Spot-billed Pelican is a time of great activity:

- Timing: Breeding typically occurs between November and March.
- Nesting Sites: Preferred nesting locations include river islands and lakes, where they can build nests from vegetation.
- Community Involvement: Local communities participate in protecting nesting sites, ensuring that these birds can thrive.

Based on these threats the IUCN (International Union for Conservation of Nature) has categorised them under the "Near Threatened" category. In the Wildlife (Protection) Act, 1972 they are found in Schedule IV (Hunting prohibited)

Topic → India-France Museum Collaboration

- IN India and France have signed a Memorandum of Understanding (MoU) for a new National Museum project.
- The museum, named **"Yuga Yugeen Bharat,"** will be modeled after the Louvre in Paris.
- 🌍 Once completed, it is set to become the largest museum in the world.
- **The agreement was signed by Herve Barbaret (France Museums)** and B.R. Mani (National Museum of India).
- 🎯 External Affairs Minister S. Jaishankar emphasized the cultural collaboration and soft power aspect of the project.
- 🌐 The project reflects the strategic partnership between India and France in a multi-polar world.
- The museum will utilize adaptive reuse techniques, leveraging France's expertise in similar projects.

Summary: India and France have signed an MoU to develop the "Yuga Yugeen Bharat" museum, inspired by the Louvre, which will be the largest in the world, highlighting cultural collaboration and strategic partnership

Topic → Dissanayake's Diplomatic Debut: Repercussions of His India Visit

The Ceremonial Welcome

President Anura Kumara Dissanayake's first overseas visit was nothing short of spectacular.

The ceremonial red carpet welcome extended by Indian President Droupadi Murmu and Prime Minister Narendra Modi symbolized not only the warmth of bilateral relations but also the strategic importance of this meeting.

- The visit marks a pivotal moment for Sri Lanka's foreign policy.
- Dissanayake's reception reflects India's commitment to fostering strong ties with its southern neighbor.
- This visit comes after a tumultuous period in Sri Lanka's political landscape.

Joint Statement Analysis

The joint statement issued on **December 16, 2024, titled "Fostering Partnerships for a Shared Future,"** contained 34 points encompassing various aspects of political, economic, and strategic cooperation.

However, it notably lacked references to the long-pending political solution for the Tamil community.

- The absence of Tamil aspirations in the joint statement raises concerns.
- Modi’s remarks hinted at the need for the Sri Lankan government to address Tamil rights.
- The statement focused on infrastructure projects rather than political reconciliation.

Political Landscape in Sri Lanka

Dissanayake's government comes at a crucial juncture, with promises to hold provincial elections and amend the constitution.

However, his administration has yet to articulate a coherent vision for addressing the Tamil community's needs.

- The NPP's manifesto pledges to restore provincial councils.
- Dissanayake has avoided the term "13th Amendment" due to its historical baggage.
- There are calls for a clear political solution to ongoing grievances.

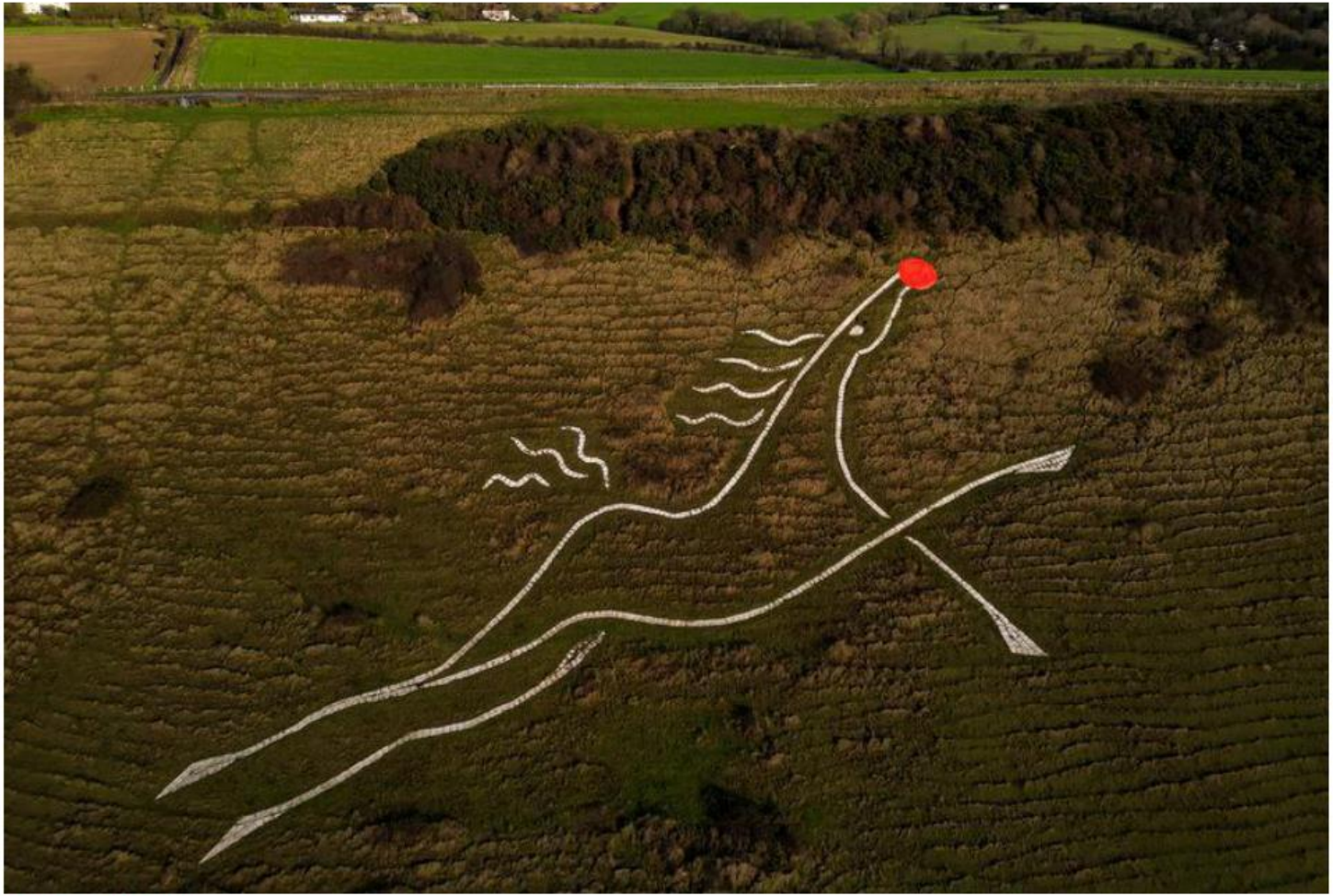
Geopolitical Shifts

Sri Lanka's geopolitical landscape is evolving, with India increasingly focusing on countering Chinese influence in the region.

Dissanayake's visit signals a shift in priorities and a renewed interest in strengthening ties with India.

- The Tamil question is becoming less of a diplomatic leverage for India.
- Sri Lanka is navigating its relations between India and China with caution.
- The recent electoral mandate gives Dissanayake leverage to redefine Sri Lanka's political future.

Rudolph's nose job



Festive makeover: The British landmark Folkestone White Horse adorned with a red nose resembling Rudolph the Reindeer. REUTERS

Topic → The Folkestone White Horse

Overview

- The Folkestone White Horse is a hill figure carved into Cheriton Hill, located in Folkestone, Kent, South East England.
- It overlooks the English terminal of the Channel Tunnel and was completed in June 2003.
- Designed as a Millennium Landmark, it aims to aid in the regeneration of the Folkestone area.

Design and Inspiration

🎨 The design was created by local artist **Charlie Newington**, inspired by a nearby Iron Age fort and the White Horse of Uffington.

 It is the first official hill figure in Folkestone, although there is a chalk area on Summerhouse Hill resembling an elephant's head, known as the Folkestone Elephant.

 The design reflects historical influences dating back three millennia.

Significance

📍 The location is significant for its proximity to the Channel Tunnel, enhancing its visibility and importance.

Q. Lake Turkana has often been in news on account of being on the World Heritage List of Danger since 2018 due to fear of heavier rains over Lake Turkana's river inflows, induced by climate change which would raise water levels in the lake itself and increase the likelihood of severe flooding. The Lake Turkana is located in the which among the following Country. (DTE)

A) Brazil

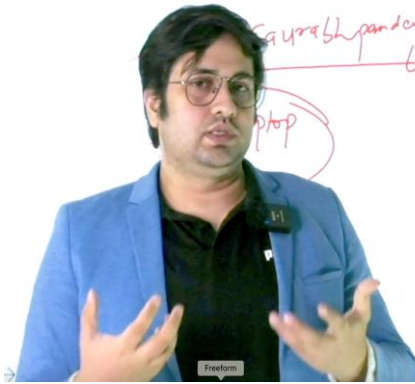
B) Kenya

C) Tanzania

D) Mozambique

Topics - MINDS MAPS included (Daily current affairs 21st December 2024

- Target UPSC CSE Prelims 2025
- Undersea Cable connectivity
- The Places of Worship Act: Navigating the Intersection of Religion and Law.
- A Country with Strategic Significance: Why Is Kuwait Important?
- The Oskil River Overview
- Pakistan's Missile Development and U.S. Sanctions
- Mains



By saurabh Pandey

THE HINDU

Q. Chenda often seen in news is associated with which among the following. (The Hindu)

A) Musical instrument.

B) Folk Dance.

C) Type of Folk drama.

D) Type of fabric.

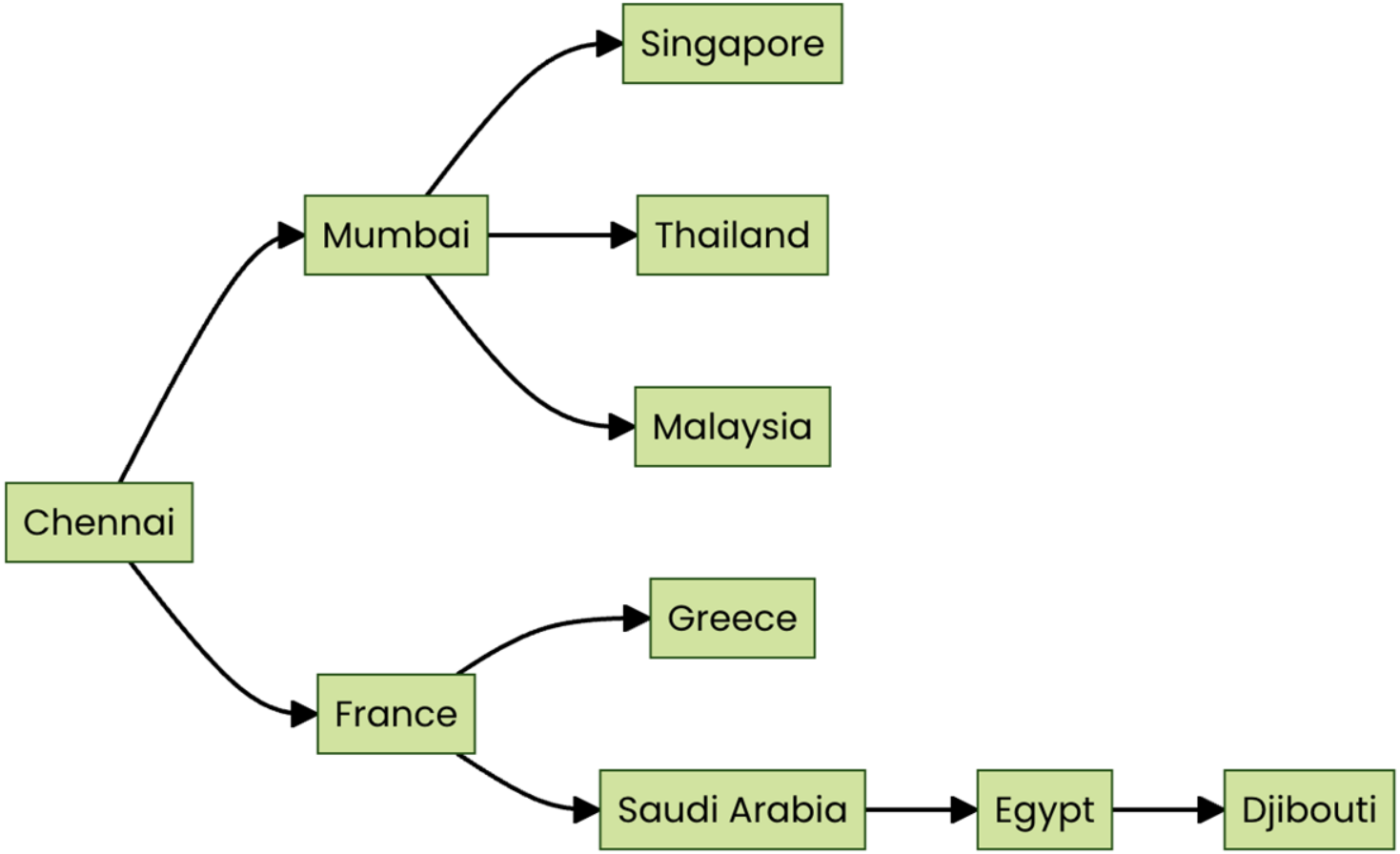
Topic - Undersea Cable connectivity

Introduction

In the digital age, connectivity is paramount, and India is gearing up for a significant leap in its undersea cable infrastructure.

As the demand for data surges year on year, two monumental projects, the India **Asia Xpress (IAX) and India Europe Xpress (IEX),** are set to reshape the landscape of internet connectivity in the region.

This article delves into the implications of these ambitious projects, which collectively span over 15,000 kilometers and bolster India's role in global internet infrastructure.


Singapore
Mumbai
Thailand
Malaysia
Chennai
Greece
France
Saudi Arabia
Egypt
Djibouti

The Significance of IAX and IEX

The IAX and IEX projects, owned by Reliance Jio with strategic backing from China Mobile, promise to enhance internet connectivity between India and critical regions across Asia and Europe.

- IAX links Chennai and Mumbai with destinations like Singapore, Thailand, and Malaysia.
- IEX connects these Indian hubs to countries such as France, Greece, Saudi Arabia, Egypt, and Djibouti.

The addition of these cables amplifies India's already extensive network, which primarily converges in Mumbai and Chennai. This expansion not only caters to escalating traffic demands but also positions India as a central player in global digital commerce.

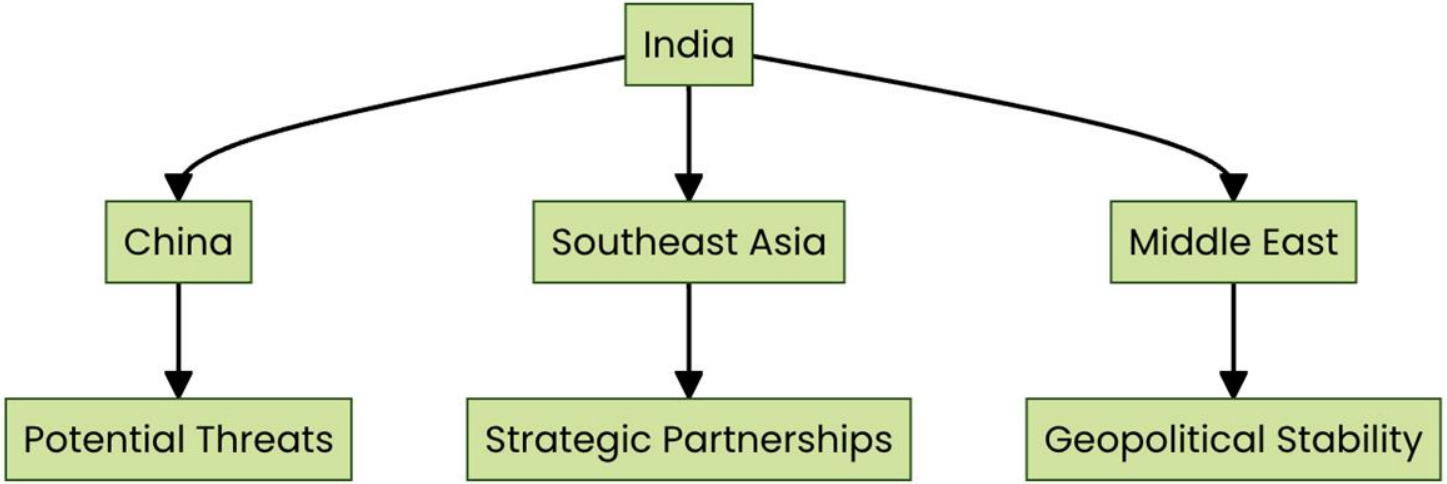
Geopolitical Implications

The growth of India's undersea cable network is not merely a technological advancement; it reflects the country's rising geopolitical ambitions.

→ these new projects significantly enhance India's defense strategy, particularly against potential digital disruptions and cyberattacks.

The strategic positioning of these cables allows India to mitigate risks associated with geopolitical tensions, especially in the Bay of Bengal and South China Sea regions.

Enhanced connectivity through these cables reinforces India's capability to withstand disruptions, as seen in the recent incident where three submarine cables connecting India to West Asia and Europe faced disruptions


India
China
Southeast Asia
Middle East
Potential Threats
Strategic Partnerships
Geopolitical Stability

Conclusion

As India embarks on a new chapter in its undersea cable expansion, the IAX and IEX projects symbolize a transformative leap in connectivity and geopolitical strategy. These developments not only promise to enhance the nation's digital infrastructure but also position India as a formidable player in the global maritime cable arena

Topic → The Places of Worship Act: Navigating the Intersection of Religion and Law.

Introduction

The Places of Worship Act has emerged as a pivotal piece of legislation, igniting fervent discussions surrounding religious freedom and historical integrity.

At the heart of this discourse lies Article 26 of the Constitution, which guarantees religious denominations the fundamental right to manage their own affairs.

As we navigate this intricate landscape, it’s crucial to comprehend the implications of the Act and how it intertwines with our collective history.

Understanding Article 26

Article 26 of the Indian Constitution serves as a guardian of religious freedom, providing every religious denomination the right to manage its practices and affairs without outside interference.

This article is instrumental in upholding the autonomy of various faiths, ensuring that worship within mosques, churches, temples, and other places of reverence remains unhindered.

Key Aspects of Article 26:

Right to Manage Affairs: Each religious group has the autonomy to manage its own affairs concerning religion.

Protection Against Interference: Outsider interference in these matters is considered a violation of this fundamental right.

The historical roots of this article are crucial, as they reflect the secular ethos of the nation, aiming to safeguard diverse religious practices from external meddling.

The Places of Worship Act Explained

The Places of Worship Act, enacted in 1991, was primarily crafted to preserve the religious character of places of worship as they existed on August 15, 1947. Its core objective is to prevent the alteration of the status of these places, thereby fostering communal harmony.

Key Provisions:

- **Status Quo Clause:** Prohibits the conversion of religious places from one religion to another.
- **Legal Immunity:** Provides protection from legal challenges to the status of these places based on historical claims.

While aimed at promoting peace, the Act has stirred controversy and legal challenges, as it clashes with the evolving views on historical narratives and archaeological findings.

Historical Context and Archaeological Significance

Beneath the surface of many religious sites lie remnants of bygone eras—temples beneath mosques, and ancient structures hidden within modern places of worship. This archaeological significance cannot be overlooked, as it offers invaluable insights into the rich tapestry of our shared history.

The Role of Archaeology:

- Archaeologists unearth narratives that illuminate our past, providing context for contemporary religious practices.
- These findings can sometimes fuel divisive interpretations, highlighting the need for careful stewardship of historical truths.

The delicate balance between preserving history and respecting religious sentiments is vital in fostering mutual respect among diverse communities.

Societal Implications

The Places of Worship Act and the debates surrounding it have profound implications for inter-religious relations in India.

While the Act aims to maintain peace, it also opens avenues for conflict if not approached with sensitivity.

Impact on Inter-Religious Relations:

- Potential for heightened tensions among religious groups if claims to sites are perceived as threats.
- Importance of fostering dialogue to bridge gaps and promote understanding.

To mitigate conflict and enhance harmony, constructive dialogues and inclusive approaches must be prioritized, ensuring that all voices are heard and respected.

Conclusion

Navigating the intricate web of the Places of Worship Act and Article 26 reveals a landscape fraught with challenges and opportunities.

As we strive for a society that respects religious freedom while acknowledging historical truths, it is essential to engage in thoughtful dialogue and foster understanding.

The journey may be complex, but the pursuit of harmony and respect for our diverse heritage is a worthy endeavor.

Topic → A Country with Strategic Significance: Why Is Kuwait Important?

Introduction

Kuwait may be one of the smallest countries in the Middle East,This tiny nation packs a punch when it comes to strategic importance. Nestled at the north-east end of the Persian Gulf, Kuwait shares borders with Iraq and Saudi Arabia, making it a key player in regional geopolitics.

Geopolitical Importance of Kuwait

Location and Borders

Kuwait’s geographical position is like a chess piece on a board, strategically placed between two major players: Iraq and Saudi Arabia. This location not only gives it a vantage point in regional politics but also makes it a crucial ally for Western powers, particularly the United States.

Military Presence

Speaking of the U.S., Kuwait hosts important American military bases. This military presence underscores its role as a stabilizing force in a region often fraught with tension. Kuwait’s willingness to cooperate with international forces enhances its strategic value.

Economic Significance

Oil Reserves

Kuwait is rich in oil reserves, boasting the sixth-largest reserves globally.

This wealth has not only fueled its economy but has also made it a key player in the global oil market. As one of the founding members of OPEC, Kuwait’s decisions can sway oil prices worldwide.

Sovereign Wealth Fund

On top of that, Kuwait has one of the largest sovereign wealth funds in the world, managed by the Kuwait Investment Authority (KIA). As of March 2024, this fund is estimated to be around $924 billion, ranking fourth globally. This financial muscle allows Kuwait to invest in various sectors, both domestically and internationally.

Kuwait's Political Landscape

A Unique Monarchy

Unlike many of its neighbors, Kuwait is a monarchy that has successfully experimented with democracy. This unique blend of governance allows for a degree of political freedom that is rare in the region.

Neutral Stance in Regional Issues

Kuwait has generally maintained a neutral stance on regional issues, often acting as a mediator in disputes. This diplomatic approach has earned it respect and trust among its neighbors.

Historical Ties with India

Early Diplomatic Relations

India and Kuwait have enjoyed friendly ties for decades, rooted in a rich history and cultural bonds. India was one of the first countries to establish diplomatic relations with Kuwait after its independence in 1961.

Trade Relations

Trade has been a cornerstone of this relationship, with bilateral trade reaching $10.47 billion during FY 2023-24. Kuwait has also been a significant supplier of crude oil to India, catering to about 3% of its total energy needs.

Cultural Connections

People-to-People Ties

The people-to-people connections between India and Kuwait are strong. With around 1 million Indians living in Kuwait, they form the largest expatriate group and are well-integrated into Kuwaiti society.

Educational Initiatives

Educational ties are also flourishing, with 26 schools in Kuwait following the Indian curriculum. Initiatives like the ‘Festival of India’ and a weekly Hindi radio program, ‘Namaste Kuwait,’ further strengthen these cultural bonds.

Recent Developments

COVID-19 Cooperation

The COVID-19 pandemic showcased the strong sense of brotherhood between India and Kuwait. India provided vaccine doses, while Kuwait sent medical supplies during India’s second wave.

Tragedy and Support

When tragedy struck with a fire in a residential building, Kuwait quickly repatriated the remains of the deceased Indians, demonstrating its commitment to its expatriate community.

Future Prospects for Kuwait-India Relations

Strategic Partnership Agreement

Despite the strong ties, there’s room for growth. A comprehensive strategic partnership agreement could elevate relations to new heights.

Infrastructure Development

India could assist Kuwait in its ‘Vision 2035’ initiative, focusing on infrastructure development and education. This collaboration could pave the way for a golden era in bilateral relations.

Conclusion

In conclusion, Kuwait may be small in size, but its strategic significance is immense. From its geopolitical position to its economic prowess and rich cultural ties with India, Kuwait stands as a vital player in the region. As both nations look to the future, the potential for deeper cooperation is vast.

Topic → The Oskil River Overview

Key Features of the Oskil River

River Name: The Oskil (or Oskol) is a river located in Russia and Ukraine.

Geographical Origin: It originates between Kursk and Voronezh in Russia.

Flow Direction: The river flows southward to join the Siverskyi Donets, which then flows southeast to the Don.

Length: The Oskil river is 472 kilometers (293 miles) long.

Drainage Basin: It has a drainage basin covering 14,800 square kilometers (5,700 square miles).

Regions: The river flows through Kursk and Belgorod Oblasts in Russia and the eastern part of Kharkiv Oblast in Ukraine.

Reservoir: The Oskil Reservoir was created in 1958 for flood protection and electricity generation.

Summary: The Oskil River, flowing from Russia to Ukraine, is 472 km long and features an artificial reservoir for flood control and power generation.

Topic → Pakistan's Missile Development and U.S. Sanctions

Emerging Threat

Advanced Missile Technology: Pakistan's development of sophisticated missile systems poses a potential threat to the U.S. and regions beyond South Asia.

Sanctions Imposed

Entities Sanctioned: The U.S. has sanctioned four Pakistani entities, including the National Development Complex (NDC), for their involvement in the ballistic missile program.

Key Entities

Sanctioned Organizations: The state-owned NDC in Islamabad and three Karachi-based companies—Akhtar and Sons, Affiliates International, and Rockside Enterprise—are among those sanctioned.

U.S. Response

Biden Administration Actions: Multiple steps, including three rounds of sanctions against non-Pakistani entities, have been taken to curb support for Pakistan's missile program.

Technological Advancements

Missile System Development: Pakistan is reportedly enhancing its long-range strike capabilities with sophisticated missile systems and larger rocket motors.

Diplomatic Efforts

Maintaining Channels: Despite sanctions, the U.S. aims to keep diplomatic channels open to address concerns over Pakistan's missile development.

Concerns About Intentions

- Military Capabilities: The advancements in missile technology raise significant questions about Pakistan's intentions and future military capabilities.

Summary: The U.S. has imposed sanctions on Pakistani entities involved in missile development, citing concerns over Pakistan's growing missile capabilities that could threaten targets beyond South Asia, including the U.S.

Q. Chenda often seen in news is associated with which among the following. (The Hindu)

A) Musical instrument.

B) Folk Dance.

C) Type of Folk drama.

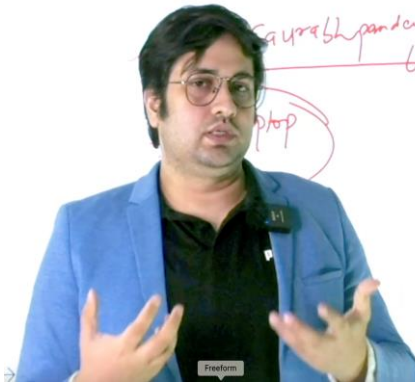
D) Type of fabric.

Ans: A

The Chenda is a cylindrical percussion instrument originating in the state of Kerala and widely used in Tulu Nadu of Karnataka and Tamil Nadu

Topics - MINDS MAPS included (Daily current affairs 22nd December 2024

- Target UPSC CSE Prelims 2025
- India's Forest and Tree Cover Overview
- Kandanar Kelan Theyyam
- India’s National Quantum Mission and Its Upcoming Satellite
- Hydroxychloroquine
- California Ground Squirrels
- Denali Fault
- Nature-Inspired Ammonia Production
- Mains



By saurabh Pandey

THE HINDU

Q. Chancay port has recently been in news on account of Chinese involvement in its development through Border and Road Initiative. In this context the given port is located in which among the following Country. (ToI)

A) Ethiopia

B) Argentina

C) Venezuela

D) Peru

Topic → India's Forest and Tree Cover Overview

Forest and Tree Cover 🌳

Current Status: India's forest and tree cover now makes up 25.17% of the total geographical area, as per the ISFR 2023 report.

Breakdown of Coverage 📏

Forest Cover: Constitutes 21.76% (7.15 lakh sq. km).
Tree Cover: Accounts for 3.41% (1,289 sq. km).

Definition of Forest Cover 🌱

Criteria: Land with a tree canopy density exceeding 10% and covering at least one hectare, including plantations.

Carbon Sink Increase 🌍

Progress: India has enhanced its carbon sink by 2.29 billion tonnes since 2005, aligning with its Paris Agreement commitments.

Controversy Over Plantations 📉

Debate: The inclusion of plantations in forest cover is controversial due to their lack of certain carbon-sequestering features.

State Contributions 📊

Madhya Pradesh: Largest area under forest and tree cover.
Chhattisgarh: Recorded the largest increase in this period.

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Losses in Biodiverse Regions

Concern: Notable losses in forest cover in the Western Ghats and Northeast regions, despite overall gains.

Summary: India's forest and tree cover has reached 25.17% of its geographical area, with significant increases in carbon sink and coverage, but also notable losses in biodiverse regions

Ritualistic frenzy

'Kandanar Kelan Theyyam', a deity based on the legend of an archer-farmer, braves the blazing, gnawing flames during an hour-long Kaliyattam festival at Kooveri Tharavadu Dharma near Pazhayangadi in Kannur. THULASI KAKKAT

Topic → Kandanar Kelan Theyyam: A Cultural Extravaganza

🎭 Cultural Significance

Kandanar Kelan Theyyam is a traditional ritualistic performance in Kerala, India.
It showcases the rich cultural heritage of the region.

🌿 Mythological Roots

The Theyyam is deeply rooted in local mythology and folklore.
It often depicts stories of deities and legendary figures.

🎶 Performance Elements

Features vibrant costumes, intricate makeup, and rhythmic music.
Creates a captivating visual and auditory experience.

□ Spiritual Aspect

More than just a performance, it is a form of worship.
The performer embodies the spirit of the deity.

□ Seasonal Festivals

Typically performed during specific festivals and temple rituals.
Attracts large audiences.

👥 Community Involvement

Involves the participation of local communities.
Fosters a sense of unity and cultural identity.

📜 Preservation Efforts

Ongoing efforts to preserve and promote Theyyam performances.
Considered an essential part of Kerala's cultural heritage.

Summary: 'Kandanar Kelan Theyyam' is a vibrant and spiritual ritualistic performance in Kerala, deeply rooted in mythology and community traditions

Topic → The Quantum Leap: India’s National Quantum Mission and Its Upcoming Satellite

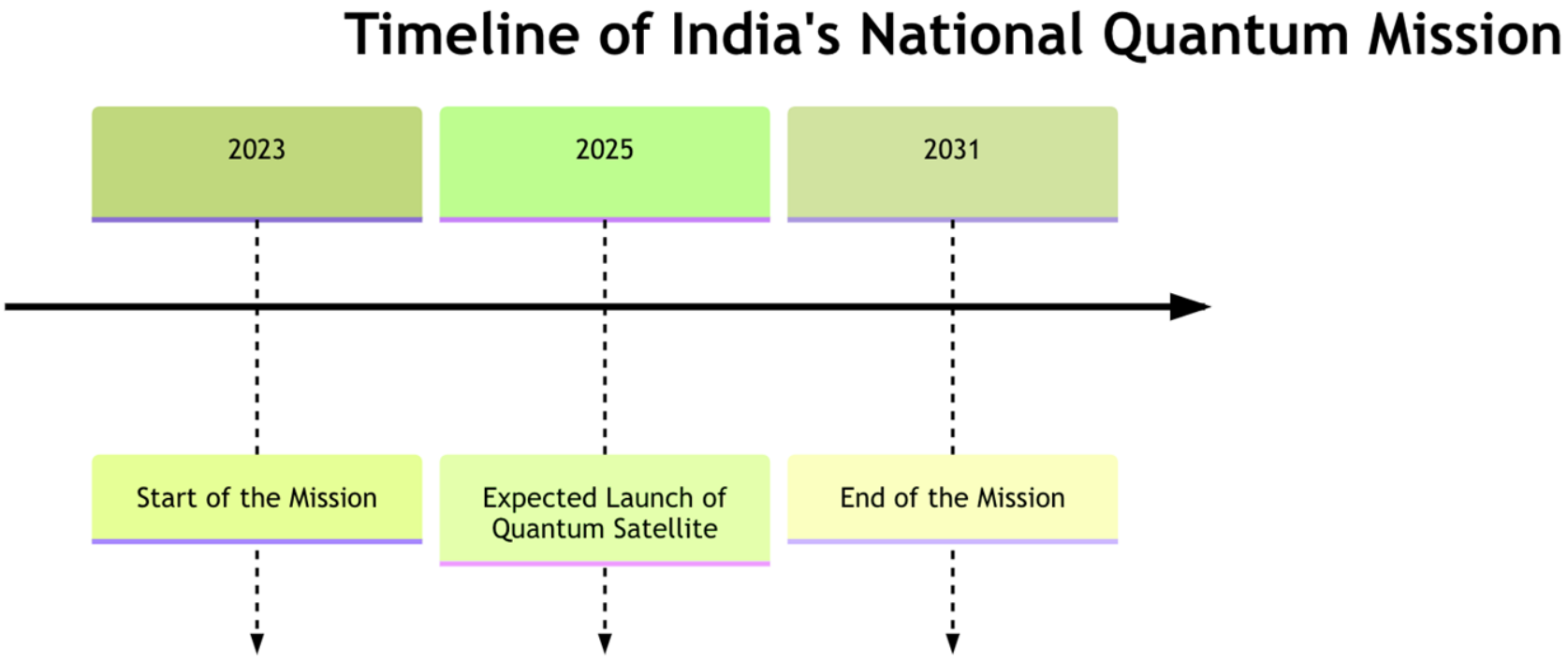
Introduction to the National Quantum Mission

Announcement: Ajai Chowdhry, chairman of the Mission Governing Board, announced India's plan to launch a quantum satellite in 2-3 years.
Objective: Part of a broader initiative to leverage quantum physics for advanced communication and sensing systems.

What is the National Quantum Mission?

Initiation: Launched by the Department of Science & Technology, India.
Budget: ₹6,000 crore approved by the Union Cabinet in April 2023.
Duration: 2023 to 2031.
Goal: To transcend the limitations of classical physics with quantum technology.

Timeline of the National Quantum Mission:



The Need for Quantum Technology

Evolution: From mid-20th century computers to modern innovations like satellites.

Limitations: Classical physics is reaching its limits.

Advancement: Quantum physics offers solutions to existing technological challenges.

The Quantum Satellite: A Game Changer

Definition: Not your average communication satellite; uses quantum physics for security.

Importance: Vital in combating cyber threats.

What is a Quantum Satellite?

Function: Enhances security using quantum physics.
Benefit: Protects communications from data breaches.

How Quantum Satellites Enhance Security

Mechanism: Uses quantum properties to prevent eavesdropping.
Advantage: Ensures secure message transmission over vast distances.

Understanding Message Security

Encryption Basics: Anil encrypts a message to Selvi, akin to sending a secret message via a messenger pigeon.
Cryptography: The art of creating secret codes for secure communication.

How Quantum Physics Secures Messages

Quantum Cryptography: Uses quantum principles for message security.
Technique: Quantum Key Distribution (QKD) alerts recipients of eavesdropping attempts.

Quantum Key Distribution (QKD) Explained

Concept: Shares a secret key between two parties, detecting any interception.
Mechanism: Changes in key state alert users to potential breaches.

Real-World Implementations of QKD

Global Progress: China operates the largest QKD network.
India's Efforts: Research in optimal conditions for QKD, especially in Ladakh.

Challenges and Limitations of QKD

Technical Issues: Concerns from the U.S. National Security Agency about authentication and infrastructure costs.

The Future of Quantum Cryptography

Outlook: Despite challenges, advancements in technology may overcome current limitations, enhancing digital security.

Conclusion

Significance: India's National Quantum Mission and quantum satellite mark a major advancement in communication technology.

Future: Quantum physics promises a more secure communication landscape.

Topic → Hydroxychloroquine as a Prophylactic Treatment

Overview

- Hydroxychloroquine is being explored for use as a prophylactic treatment.
- Prophylactic treatment refers to medical interventions aimed at preventing disease or health issues before they occur.
- 💊 It can include vaccinations, medications, or lifestyle changes to reduce the risk of illness
- The primary focus is on healthcare workers who are at a higher risk of exposure.
- Known primarily as an antimalarial drug, hydroxychloroquine is under scrutiny for new applications.
- Ongoing research aims to determine its effectiveness in preventing infections.

- The use of hydroxychloroquine for prophylaxis has sparked debate within the medical community.
- Studies are being conducted to assess its safety and efficacy in this context.
- The topic has gained significant attention, especially during health crises like pandemics.

Summary: Hydroxychloroquine is under investigation as a preventive treatment for healthcare workers at risk of exposure.

Topic → California Ground Squirrels: New Behavioral Insights

New Findings

Study Revelation: California ground squirrels have been observed hunting, killing, and consuming voles, marking a significant behavioral discovery.

Behavioral Shift

Dietary Perception: This research shifts the understanding of ground squirrels from being primarily granivorous to opportunistic omnivores with a flexible diet.

Research Methodology

Documentation: The study employed videos, photos, and direct observations to capture the squirrels' behavior in a regional park setting

📅 Observation Period

Timeline: Observations were conducted from June 10 to July 30, with a notable peak in carnivorous activity during the first two weeks of July.

📈 Prey Availability

Vole Population Surge: The increase in hunting behavior was linked to a rise in vole populations, as reported by citizen scientists on iNaturalist.

🐾 Age and Gender

Diverse Participation: Squirrels of all ages and genders were seen engaging in hunting and competing for vole prey.

⊘ Limited Prey Scope

Focused Hunting: The study noted that the squirrels exclusively targeted voles, with no evidence of hunting other mammals.

Summary: The study highlights a previously unrecognized carnivorous behavior in California ground squirrels, indicating a broader dietary adaptability

Topic → Geological Insights on the Denali Fault

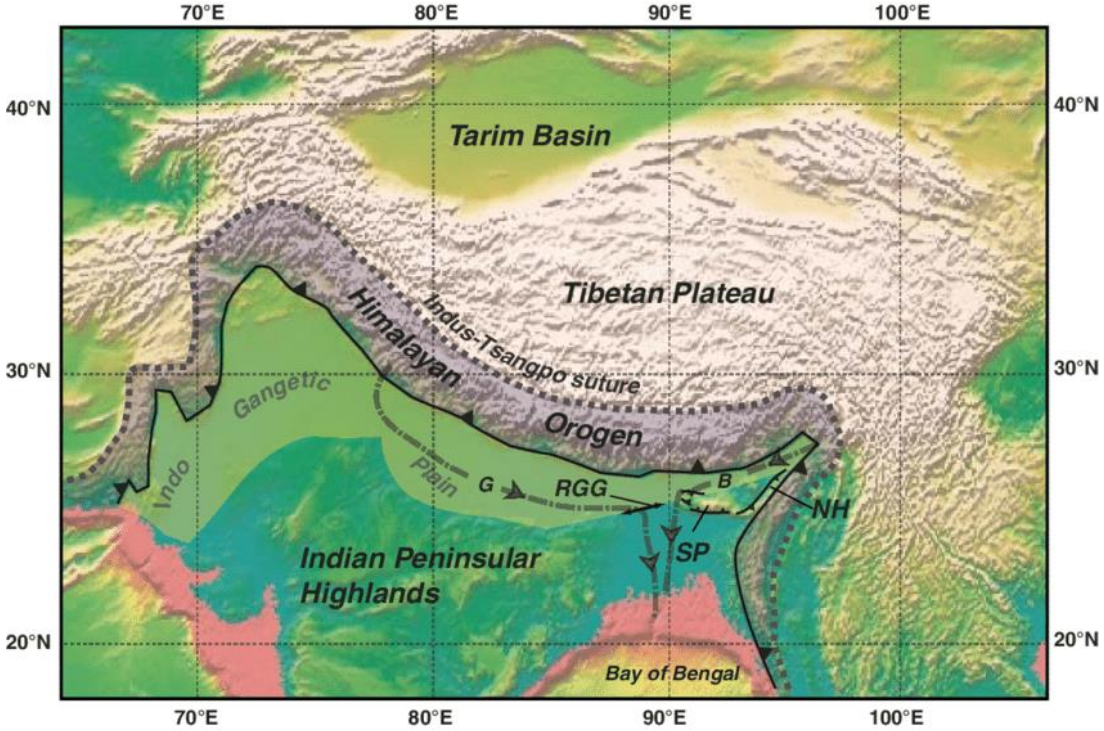
Geological Feature and Tectonic Activity

- Geological Feature: Three sites along the Denali Fault in southern Alaska were once part of a united geologic feature.
- Tectonic Activity: The feature was separated due to millions of years of tectonic activity

Horizontal Movement and Terminal Suture Zone

- 📏 Horizontal Movement: A historical reconstruction revealed 483 km of horizontal movement on the Denali Fault.
- 🔗 Terminal Suture Zone: The three locations once formed a terminal suture zone, indicating the final integration of tectonic plates.

- A suture zone is a region where two tectonic plates collide and merge, or "suture" together.
- Suture zones can form mountain ranges, volcanic activity, and seismic events.
- They can also be marked by the presence of ophiolites, mélanges, and accretionary complexes.



Land Masses and Research Significance

🌍 **Land Masses:** The study highlights the joining of two land masses in the region.

📊 **Research Significance:** The findings contribute to understanding the geological history and tectonic processes in Alaska

Summary: A study reveals that three sites along the Denali Fault in Alaska were once part of a united geologic feature, later separated by tectonic activity, indicating significant horizontal movement and the final integration of tectonic plates

Topic → Nature-Inspired Ammonia Production

- Researchers have developed a reactor inspired by nature for ammonia production.

- The reactor produces ammonia from nitrogen in the air and water, with zero carbon footprint.

- It utilizes a plasma-electrochemical process for ammonia synthesis.

- The reactor can sustain a production rate of about 1 gram of ammonia per day.

It operates effectively for over 1,000 hours at room temperature.

This technology represents a significant advancement toward green ammonia synthesis.

The production rate is competitive for industrial applications.

Summary: Researchers have created a carbon-free reactor that efficiently produces ammonia from air and water, marking a significant step towards sustainable industrial practices

Key Features of the Reactor

Nature-Inspired Design: The reactor mimics natural processes to produce ammonia.

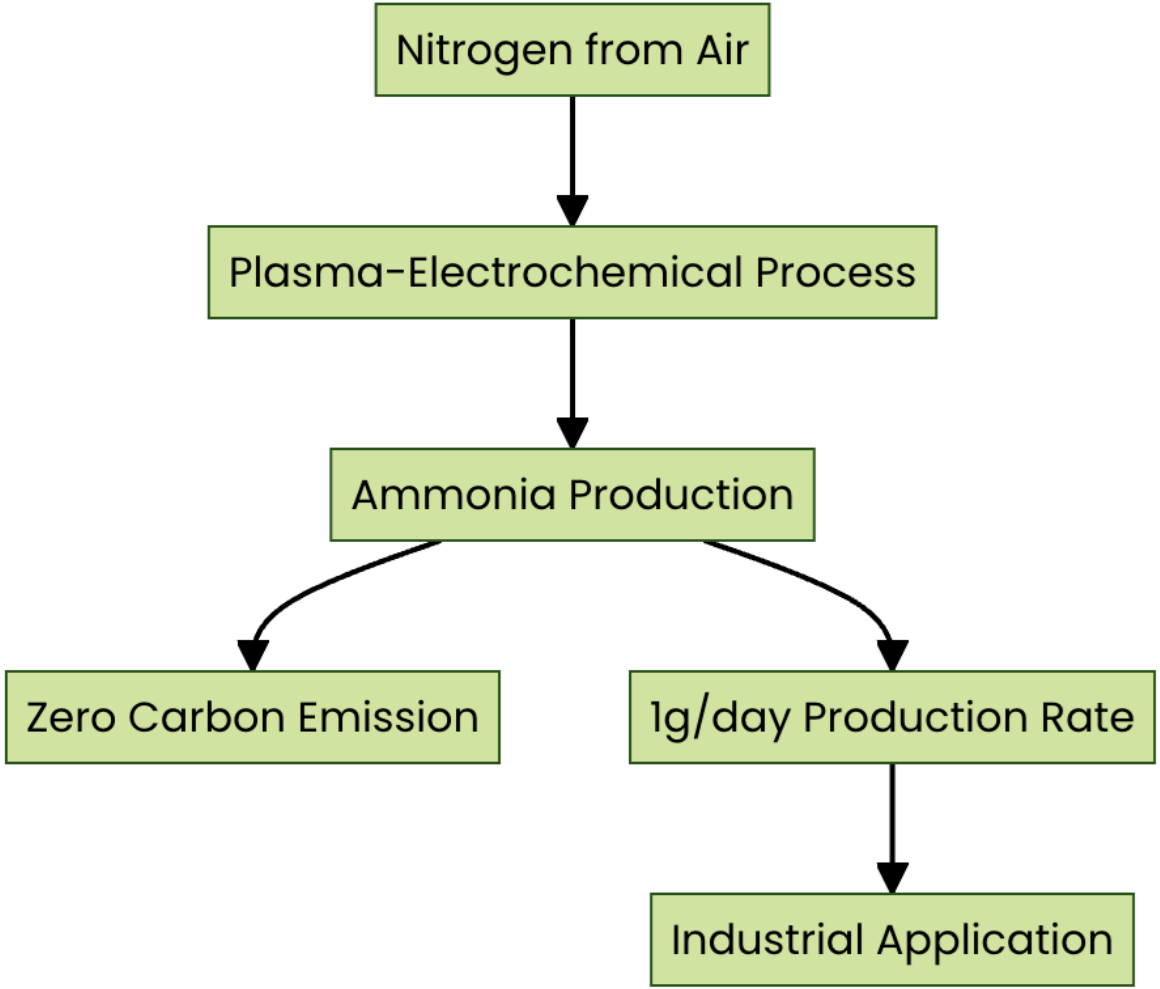
Zero Carbon Footprint: Utilizes air and water, ensuring an environmentally friendly process.

Plasma-Electrochemical Process: Innovative method for efficient ammonia synthesis.

Sustained Production: Capable of producing 1 gram of ammonia daily.

Long Operational Life: Functions effectively for over 1,000 hours at room temperature.

Industrial Relevance: Production rate is suitable for industrial applications


Nitrogen from Air
Plasma-Electrochemical Process
Ammonia Production
Zero Carbon Emission
1g/day Production Rate
Industrial Application

Implications for Industry

Sustainable Practices: Supports the shift towards eco-friendly industrial processes.

Innovation in Technology: Represents a breakthrough in green technology for ammonia synthesis.

Competitive Edge: Offers a viable alternative to traditional ammonia production methods

Q. Chancay port has recently been in news on account of Chinese involvement in its development through Border and Road Initiative. In this context the given port is located in which among the following Country. (ToI)

A) Ethiopia

B) Argentina

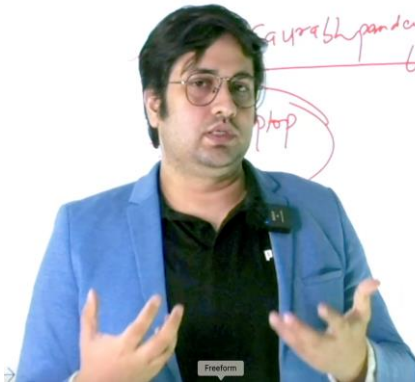
C) Venezuela

D) Peru

. Ans: D

Topics - MINDS MAPS included (Daily current affairs 23rd December 2024

- Target UPSC CSE Prelims 2025
- India-Kuwait Relations.
- SpaDeX Mission
- The Disappointing Outcome of COP29
- The Indian Navy in 2024
- The Controversy Surrounding Starlink in India
- The New Telecommunications Rules:
- The Broadband Dilemma in India
- Green Deposits in India:
- Erg Chebbi
- Mains



By saurabh Pandey

THE HINDU

India, Kuwait lift ties to 'strategic partnership'

The two sides sign a memorandum of understanding for exchange of defence personnel, exercises, supply of military equipment; they ink an MoU on cultural exchange and agreement on sports cooperation; Prime Minister holds discussions with Kuwaiti Amir, invites the Gulf country's investment body to 'look at new opportunities' in India

Kallol Bhattacherjee
NEW DELHI

India and Kuwait on Sunday signed a memorandum of understanding (MoU) on defence cooperation that will allow for exchange of defence personnel, joint exercises, and supply of military equipment.

The MoU was part of the outcomes firmed up during Prime Minister Narendra Modi's two-day visit to the energy-rich Gulf kingdom, which bestowed its highest honour on him.

Mr. Modi announced that the two sides had lifted the relationship to the level of "strategic partnership". The conversation between Mr. Modi and the Amir of Kuwait, Sheikh Meshal Al-Ahmad Al-Jaber Al Sabah, covered areas such as pharmaceuticals, IT, fintech, infrastructure, and security.

Earlier, India hosted the Foreign Minister of Kuwait, Abdullah Ali Al-Yahya, in New Delhi on December 3 and 4.

Economic ties

Mr. Modi met with the Prime Minister of Kuwait, Sheikh Ahmad Al-Abdullah Al-Ahmad Al-Sabah, and discussed ways to deepen economic ties.

He invited a delegation from the Kuwaiti Investment Authority and other notables in the Kuwaiti economy to visit India and "look at new opportunities in the fields of energy, defence, medical devices, pharma, foodparks," the External Affairs Ministry said in a press note.

Prime Minister Narendra Modi receiving Kuwait's highest honour from the Amir, Sheikh Meshal Al-Ahmad Al-Jaber Al Sabah. PTI

The two Prime Ministers witnessed the signing of the MoU on bilateral defence cooperation. The press note said the MoU will "institutionalize bilateral cooperation in the area of defence."

Apart from the MoU on defence, the two sides signed an MoU on cultural exchange and agreement on sports cooperation. They welcomed the recent sealing of the Joint Commission for Cooperation under which new Joint Working Groups in trade, investment, education, technology, agriculture, security and culture have been set up.

The two sides already have Joint Working Groups (JWGs) on health, manpower, and hydrocarbons.

Mr. Modi reached Kuwait on Saturday and visited the Gulf Spic Labour Camp where more than 90% of the inhabitants are from India.

Cultural connection

He also met translators Abdulla Al Baroun and Abdul Lateef Al Nesef who have translated the Ramayana and Mahabharata into Arabic. Over the decades, several Gulf and Arab countries have translated the Indian epics and the work of the two translators have added to that tradition.

"I am honoured to be conferred the Mubarak Al-Kabeer Order by His Highness the Amir of Kuwait, Sheikh Meshal Al-Ahmad Al-Jaber Al Sabah. I dedicate this honour to the people of India and to the strong friendship between India and Kuwait," Mr. Modi said after receiving the honour during the visit.

The honour is bestowed generally on Heads of state and foreign sovereigns and to members of foreign royal families as a sign of friendship. Former U.S. President Bill Clinton and King Charles were among the previous recipients of the honour.

Mr. Modi also met the Crown Prince of Kuwait Sheikh Sabah Al-Khaled Al-Hamad Al-Mubarak Al-Sabah.

Professor Zikrur Rahman, former diplomat who has served in multiple Arab countries, pointed out that Kuwait was the only Gulf Cooperation Council country that Mr. Modi had not visited earlier and the visit therefore was significant as Kuwait has maintained a friendly policy towards India over the past several decades.

"PM Modi has visited all other Gulf countries barring Kuwait and it was time that he also covered Kuwait. Starting with the end of the Cold War and the first Gulf war, Kuwait has maintained a positive attitude towards India and therefore the visit at this time will be helpful for India," said Prof. Rahman.

Topic → India-Kuwait Relations: A Strategic Partnership

Key Developments in India-Kuwait Relations

IN Defense Cooperation MoU: India and Kuwait have signed a memorandum of understanding to enhance defense cooperation, which includes personnel exchange, joint exercises, and military equipment supply.

Strategic Partnership: The bilateral relationship has been elevated to a "strategic partnership" during Prime Minister Narendra Modi's visit to Kuwait.

Sectoral Discussions: Key discussions between Mr. Modi and the Amir of Kuwait covered pharmaceuticals, IT, fintech, infrastructure, and security.

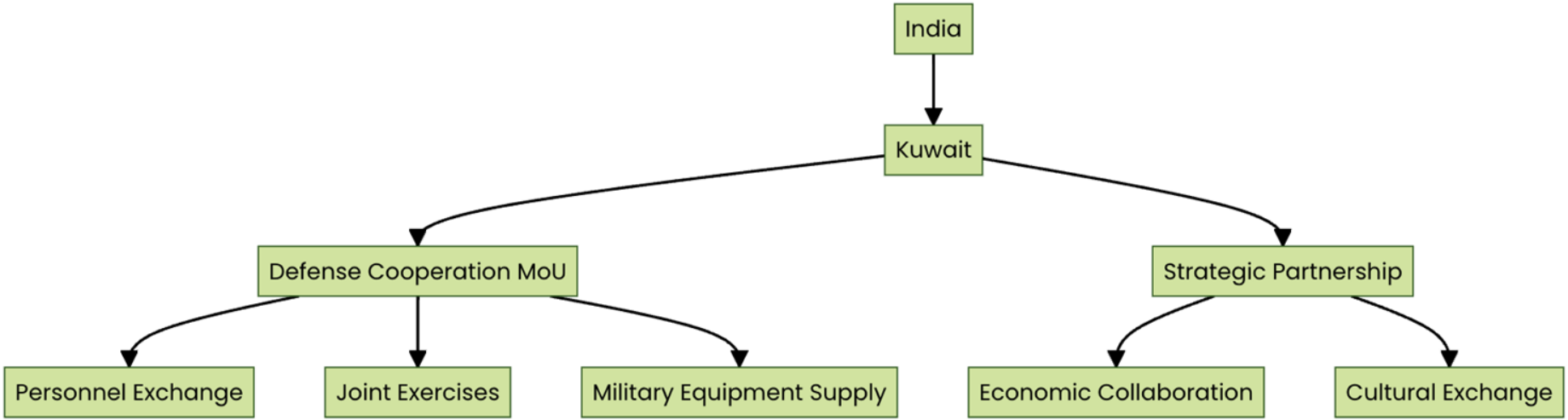
Investment Opportunities: Mr. Modi invited Kuwaiti investors to explore opportunities in India's energy, defense, medical devices, pharma, and food parks sectors.

 Recognition: Mr. Modi was awarded the Mubarak Al-Kabeer Order, Kuwait's highest honor, highlighting the strong friendship between the two nations.

🌍 Significant Visit: This visit marked Mr. Modi's first to Kuwait, the only Gulf Cooperation Council country he had not previously visited.

📚 Cultural Exchanges: Emphasis was placed on cultural exchanges, with MoUs signed for cultural and sports cooperation, and discussions on translating Indian epics into Arabic.

Strategic Partnership Overview:



Summary: India and Kuwait have strengthened their ties through a defense cooperation MoU and elevated their relationship to a strategic partnership during PM Modi's visit, which also included discussions on economic and cultural collaboration.

What is Strategic Partnerships??

- Strategic Partnership: A formal alliance between two or more organizations to pursue shared objectives.

🎯 Leveraging Strengths: Focus on utilizing each other's strengths for mutual benefits.

📈 Enhancements: Can improve market reach, product offerings, and foster innovation.

🔄 Resource Sharing: May involve sharing resources, joint marketing, or collaborative R&D.

- Flexibility: Partnerships can evolve over time with changing business needs.
- 🌍 Industry Presence: Common in technology, healthcare, and finance sectors.
- 📊 Success Factors: Effective communication and trust are crucial.

Summary: A strategic partnership is a collaborative alliance between organizations aimed at achieving shared goals and mutual benefits

Topic → SpaDeX Mission Overview

Mission Details

🚀 Mission Name: SpaDeX, a pioneering mission by the Indian Space Research Organisation (ISRO), focuses on demonstrating in-space docking technologies.

🛰️ Satellite Launch: The mission involves launching two satellites into Earth's orbit, scheduled for December 30, 2024.

🔗 In-Space Docking: Achieving in-space docking is essential for connecting satellites launched separately, facilitating more complex operations and aiding the development of the Bharatiya Antariksh Station.

🌍 Global Standing: Success in this mission would position India as the fourth country to achieve in-space docking capabilities.

🎁 Launch Vehicle: The satellites will be launched via the PSLV C60 mission, each with a weight of approximately 220 kg.

🌐 Orbit Details: The satellites will be placed in a 470-km-wide circular orbit at a 55° inclination, with a local time cycle of about 66 days.

⚡ Secondary Objectives: Post-docking, the satellites will transfer electric power, crucial for future applications like in-space robotics and payload operations.

Summary: The SpaDeX mission by ISRO is set to demonstrate in-space docking with two satellites, marking a significant leap in India's space capabilities.

Topic → The Disappointing Outcome of COP29

Context of COP29

The Political Landscape: A significant shift in American politics has influenced global climate negotiations, with potential U.S. withdrawal from agreements.

The Urgency of Climate Action: The need to reduce emissions is critical as the planet continues to warm. Developed countries target 2050 for net-zero, while China and India aim for 2060 and 2070

Emission Reduction Goals

Developed Countries' Commitments: Reaffirmed net-zero by 2050, but questions about the adequacy of these targets remain.

China's and India's Targets: China aims for emission peaking by 2030, India by 2070, highlighting disparities in global efforts

Key Developments Impacting Transition

- The EU's Carbon Border Adjustment Mechanism: Set for 2026, it will impose duties on imports unless carbon taxes match EU levels.
- Pressure for Emission Peaking: G-7 and upcoming summits push for 2025 peaking, especially targeting China and India.

India's Energy Needs and Challenges

- Current Energy Consumption: India's electricity use is a third of the global average, necessitating increased production.
- The Need for Growth and Diversification: India must balance growth with diversification, requiring significant investment

The Path to Net Zero Emissions

Understanding Emission Peaking: Emission peaking is crucial for India, requiring a cap within the next decade.

The Role of Technology: Leveraging existing technologies is essential, but development of new tech like small modular reactors is needed

The Energy Mix: Renewables vs. Nuclear

Cost Analysis: Nuclear power is often more cost-effective due to unaccounted storage and transmission costs in renewables.

Land Requirements: Renewables require significant land, while nuclear needs less, as per the VIF report.

Financing the Energy Transition

The COP29 Financial Commitments: Developed countries pledged $300 billion annually by 2035, far short of the $1.3 trillion needed.

The Role of Private Investment: Essential for transition, contingent on tariff increases and DISCOM health

Conclusion

The outcomes of COP29 were disappointing, but the fight against climate change continues. Balancing development with emission reduction is crucial for a sustainable future

Topic → The Indian Navy in 2024: A New Era of Undersea Warfare

Introduction

2024 marks a significant leap for the Indian Navy in operational capabilities and strategic posture.

Operation Sankalp expands, reinforcing the Navy's role in maritime security.

Operation Sankalp: A Commitment to Maritime Security

Expanding Operations: From the Strait of Hormuz to the Red Sea, ensuring vital shipping lane safety.

Addressing Piracy and Threats: Indian Navy as a preferred security partner against piracy and drone attacks

Pivotal Developments in Undersea Warfare

- Commissioning of INS Arighaat: Enhances India's nuclear deterrence with advanced systems.
- Project-77: Construction of two nuclear-powered attack submarines with high indigenous content

The Role of Conventional Submarines

- Project-75 and Scorpene Class: Commissioning of INS Vaghsheer to fill gaps left by older boats.
- Air Independent Propulsion (AIP): Enhances conventional submarines' stealth and range.

Advancements in Unmanned Underwater Vehicles

- Strategic Importance of UUVs: Construction of 100-tonne UUVs with a budget of ₹2,500 crore

Challenges Ahead

Budgetary Constraints: Need for alignment between acquisitions and modernization allocations.

Need for Streamlined Processes: Essential for creating a balanced blue-water force.

Conclusion

The Indian Navy is poised to become a formidable force in undersea warfare, integrating cutting-edge technologies for a secure maritime future.

Topic → The Controversy Surrounding Starlink in India

Introduction

The satellite internet landscape is abuzz with Starlink, a project by Elon Musk.

Recent events in India have sparked controversy, with allegations of misuse by militants in Manipur.

What is Starlink?

Starlink is a satellite internet constellation by SpaceX, offering high-speed broadband globally.

Operates via thousands of low Earth orbit satellites, providing low latency and high-speed access.

Especially beneficial for remote areas, sea vessels, and regions with limited traditional internet.

How Starlink Works

Satellites orbit Earth at ~550 km, creating a global network.

Allows internet access without traditional ground infrastructure.

Not authorized in certain regions, including India.

Benefits of Starlink

Offers high-speed internet and low latency.
Connects areas where other services fail.
Ideal for gamers, remote workers, and streamers.

The Recent Controversy

Indian Army seized weapons and a Starlink-branded device in Manipur.
Raised concerns about potential misuse by militants.

The Seizure Incident

On December 16, Indian Army shared images of seized items, including a SpaceX-branded router.
Sparked outrage and concern over Starlink's misuse.

Elon Musk's Response

Musk denied allegations, stating Starlink beams are off over India.
Aimed to clarify non-operational status despite seized device.

Can Starlink Internet Be Controlled?

Complex issue of controlling satellite internet within borders.
Devices may function if not properly restricted, even if service is prohibited.

The Challenge of International Borders

Satellite coverage doesn't align perfectly with national boundaries.
Devices purchased abroad may still work if unrestricted.

The Role of Geographic Location

Devices may work unless they have a geographic location identifier.
Similar to set-top boxes restricting channels based on location.

Previous Controversies Involving Starlink

SpaceX has faced scrutiny in India before.

Smuggling Incidents

Smugglers caught with meth and a Starlink device in Andaman and Nicobar Islands.
Highlights challenges of regulating satellite technology.

Equipment Sales on IndiaMART

Starlink equipment spotted for sale on IndiaMART.
Raises questions about availability and legality in India.

Understanding Indian Law on Satellite Communication

India has strict regulations on satellite communication devices.

Regulations and Restrictions

Indian Wireless Act and Indian Telegraph Act make satellite phones illegal.
Laws combat potential misuse by militants, ensuring secure communication.

Conclusion

Starlink controversy raises questions about technology, regulation, and security.
Musk denies misuse claims, but satellite internet complexities remain.
Future impact on Starlink in India as it plans launches in neighboring countries.

Topic → The New Telecommunications Rules: A Deep Dive

Introduction

On December 6, 2024, the Union Government introduced the Telecommunications (Procedures and Safeguards for Lawful Interception of Messages) Rules, 2024.

These rules empower certain enforcement and security agencies to intercept phone messages under specific conditions.

The implications for the average citizen are significant

What Are the New Rules?

The new rules replace Rule 419A of the Indian Telegraph Rules, 1951.
They introduce a more structured approach to message interception.

Key Authorities Involved

Union Home Secretary and State Home Department Secretary are designated as competent authorities.
An officer not below the rank of a Joint Secretary can issue interception orders in 'unavoidable circumstances'.

Conditions for Interception

Authorized under Section 20(2) of the Telecommunications Act, 2023.
In remote areas or for operational reasons, senior officers can issue orders, but must confirm within three working days.

Changes from Previous Rules

Relaxation of Conditions: Interception can occur without waiting for competent authority in certain situations.

Limitations on Authorized Officers: Only the head of the agency and one other senior officer can authorize interceptions.

Confirmation of Interception Orders: Orders must be confirmed within seven days, or intercepted messages cannot be used.

Historical Context

The Indian Telegraph Act of 1885: Allowed rule creation to prevent improper interception.

Supreme Court's Influence: 1996 PUCL case emphasized the need for safeguards against privacy violations.

Concerns and Criticisms

Lack of Accountability: Critics argue there's no accountability for misuse of interception powers.

Potential for Misuse: Relaxed conditions could lead to unauthorized surveillance.

Conclusion

The 2024 rules mark a significant shift in message interception regulation in India.

While introducing safeguards, they raise concerns about misuse and lack of accountability.

Citizens must stay informed about the impact on privacy and rights.

Topic → The Broadband Dilemma in India: A 25-Year Journey

Understanding the Current State of Broadband in India

48% Broadband Penetration Gap: Nearly half of India's population lacks broadband access, limiting economic growth and access to essential services.

Role of Terrestrial Mobile Services: Despite advancements, mobile networks alone are insufficient for India's vast and diverse landscape.

Voices from the Industry: A Heated Debate

Debashish Bhattacharya's Concerns: Stagnation risk without new market entrants.
Ravi Gandhi's Perspective: Existing operators bear financial burdens; new entrants receive preferential treatment.

The Race for Satellite Broadband Connectivity

- Spectrum Allocation: A controversial topic with high stakes for India's broadband future.
- Need for Satellite Communication: Essential for bridging the digital divide in remote areas

Bridging the Digital Divide

- Lt. Gen. A.K. Bhatt's Insights: Satellites as "fiber in space" for enhanced connectivity.

The Financial Landscape of Satcom

- KPMG's Valuation Report: Satcom sector valued at $2.23 billion, projected to reach $20 billion by 2028.
- Legacy Telcos vs. New Players: Concerns over fair spectrum auction processes.

The Administrative Method of Spectrum Allocation

Global Perspectives: Many countries use administrative methods for spectrum management, raising questions about India's approach.

The Future of Satellite Communication in India

Use Cases and Potential: Vast potential but faces challenges in pricing and competition.

Challenges in Pricing and Competition: High costs and competition from existing technologies.

Conclusion: The Path Forward for Broadband in India

A collaborative approach is essential to bridge the digital divide and achieve a Viksit Bharat.

Why green deposits failed to take-off in India

Piyush Shukla

Considering the threat that climate change poses globally, the Reserve Bank of India (RBI) in April last year issued a comprehensive framework for lenders to accept green deposits. The regulator's intent was noble: to enable lenders and customers to further the green cause. However, more than 20 months after the framework has been issued, lenders have made little to no progress in garnering green deposits.

What is green deposit?

Green deposits are essentially interest-bearing deposits, received by the lenders for a fixed period and the proceeds of which are earmarked for being allocated towards green finance. Lenders shall issue cumulative/non-cumulative deposits. On maturity, the deposits would be renewed or withdrawn at the option of the depositor. The deposits shall be denominated only in Indian rupees as per RBI norms.

Capital raised via green deposits can be used in funding projects related to solar, wind, biomass, and hydropower energy projects that integrate energy generation and storage. Further, the funds can be used in sectors which enable energy efficiency, clean transportation, climate change adaptation and sustainable water and waste management. Green deposits also can be used for funding green buildings, projects relating to coastal and marine environments, certified organic farming, among others.

No so green: Despite noble intentions, green deposits have failed to take off due to many reasons. GETTY IMAGES/ISTOCK

To ensure compliance, the regulator said that allocation of funds raised through green deposits during a financial year shall be subject to an independent third-party audit done on an annual basis.

In an interaction with *businessline*, C.S. Setty, Chairman, SBI said while there is obviously some interest in green deposit, it is not very significant. He said currently there is not much traction in the deposits and the price differential will take time to grow.

"Philosophically somebody should align. As we go forward, people are trying to create awareness but currently the attraction is not there.

Green deposits at our bank currently is less than ₹100 crore. I think we need to see various ways of engaging with the GenZ on this product," he said.

HDFC Bank, meanwhile, has not even raised green deposits on or after June 1, 2023 based on the RBI's framework for the acceptance of green deposits, according to its FY24 annual report.

While most public sector banks have started accepting green deposits, private banks are slow adopters to such deposits.

During the SBI Banking & Economics Conclave last month, Department of Financial Services (DFS) Secretary M. Nagaraju was asked about steps the government is taking to promote green deposits.

Challenges ahead

He responded by saying demand is not lower just for green deposits, but for a country the size of India, bond issuances too have minimal volumes. Accordingly, mobilising higher green deposits is "some time away", he said.

"We need a framework about measuring which industry and activity is green, and how to account for that. These are the questions which we need to finalise. Before that, we also have our own priorities, every year we have about millions of people coming for jobs, small and medium businesses also need funds. I think we need to prioritise our lending," he said.

Another core challenge bankers face in mobilising green deposits is lower rate of interest. For instance, SBI offers 7% for general pubic on 2-3 year tenor retail domestic term deposit, whereas if a customer opts for green deposit at a similar tenor, they get 6.65%.

"Customers usually do not consider the nature of deposit, they need higher returns," says a senior official at a mid-sized bank. The bank is yet to launch a comprehensive green deposit product.

Bankers say a reduction in cash reserve ratio (CRR) requirement for green deposit will help them garner more customers. "We have asked (the regulator) for a reduction in CRR for green deposits and second, if at all as a policy it can be incorporated," former SBI Chairman Dinesh Khara had said earlier this year.

Besides, more customer awareness is required to boost volumes.

"All large corporate have medium to long term environmental, social and governance (ESG) commitments to fulfil.

"By parking ESG funds in green deposits with banks, lenders can on-lend to green field projects which will further the green cause, and help corporates meet ESG requirements," according to a senior public sector banker.

(The writer is with The Hindu businessline)

Topic → Green Deposits in India: A Pathway to Sustainable Financing or a Missed Opportunity?

Introduction to Green Deposits

- Green deposits are a burgeoning concept in the financial sector, representing a commitment to sustainability.
- These are essentially interest-bearing deposits that banks accept for a fixed period, with the proceeds earmarked for financing environmentally friendly projects.
- The Reserve Bank of India (RBI) has mandated that these deposits be denominated only in Indian Rupees, targeting funding towards initiatives like solar, wind, and hydropower energy projects.

The Reserve Bank of India's Initiative

In April of last year, the RBI issued a comprehensive framework aimed at encouraging lenders to accept green deposits. The initiative's noble intent was to mobilize resources for green finance, enabling both banks and customers to contribute to environmental sustainability. However, despite more than 20 months since its launch, progress has been sluggish, with many lenders still hesitant to fully embrace green deposits.

Key Features of the RBI Framework:

- **Independent Audits:** All funds raised through green deposits must undergo annual third-party audits to ensure compliance and proper allocation.
- **Project Funding:** Capital raised can fund projects related to energy efficiency, clean transportation, and sustainable water management, among others.

Challenges in Mobilizing Green Deposits

The journey towards widespread adoption of green deposits is fraught with challenges. One significant hurdle is the lower interest rates associated with these deposits compared to traditional savings accounts, which often offer higher returns.

Challenges Identified:

- **Interest Rates:** For example, SBI offers 7% for a general deposit of 2-3 years while the green deposit rate stands at 6.65%. This disparity discourages customers who prioritize higher returns.
- **Lack of Awareness:** Many potential investors are unaware of the benefits of green deposits, limiting the market's growth.

Bankers suggest that reducing the cash reserve ratio (CRR) requirement for green deposits might incentivize more customers to invest.

The Future of Green Deposits

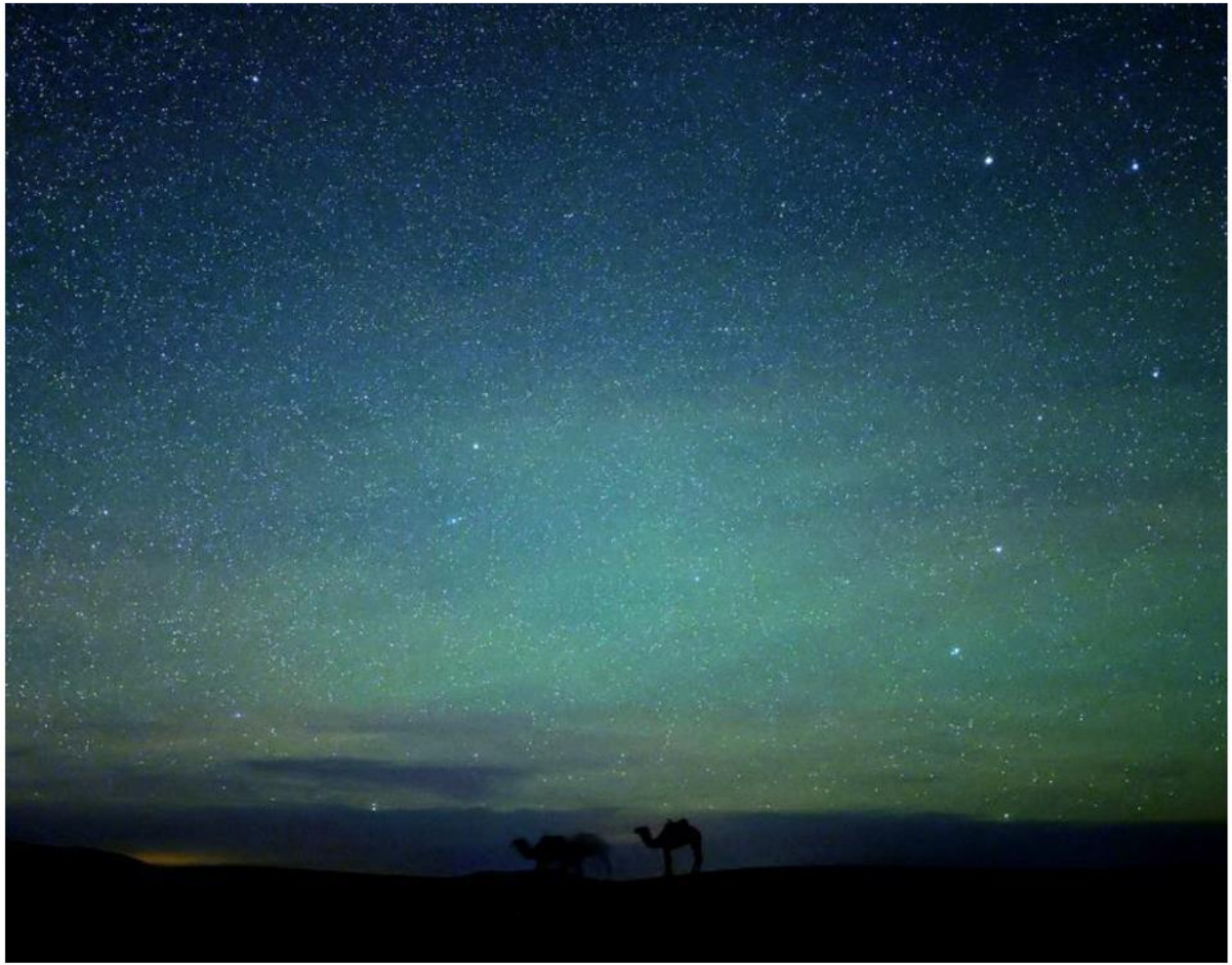
Looking forward, there is potential for green deposits to become a vital tool in sustainable financing. Banks must innovate and engage with younger generations, particularly Gen Z, who are more environmentally conscious.

Potential Strategies:

- **Increased Engagement:** Banks need to find innovative ways to connect with customers, particularly younger demographics.
- **Technology Utilization:** Leveraging technology to enhance customer experience and provide better information about green deposits could drive growth.

Ultimately, aligning with corporate environmental, social, and governance (ESG) commitments will be essential for banks to attract more deposits.

Burning bright



Star-lit Sahara: Camels at the Erg Chebbi sand dunes in the Sahara desert under the night sky outside Merzouga, Morocco. REUTERS

Topic → Erg Chebbi: A Desert Marvel

Overview

- Location: Erg Chebbi is a notable sand dune area in the vast Sahara Desert.

🌍 Geography: Known for its towering sand dunes, some reaching up to 150 meters, making it one of Morocco's highest.

☀️ Climate: Characterized by extreme temperatures, with scorching days and cooler nights typical of desert environments.

🐫 Tourism: A favored spot for tourists interested in camel trekking and experiencing the desert's allure.

🌄 Scenic Views: Offers breathtaking vistas, particularly at sunrise and sunset, drawing photographers and nature enthusiasts.

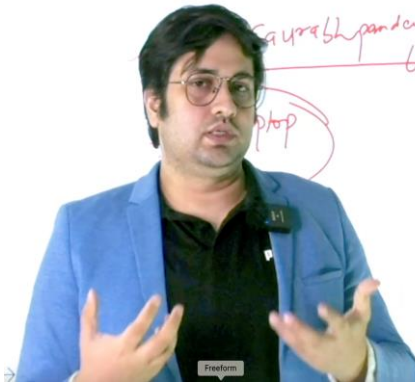
- Cultural Significance: Inhabited by Berber communities, adding to its cultural depth and heritage.

🏃 Activities: Visitors can enjoy activities like sandboarding, quad biking, and stargazing.

Summary: Erg Chebbi is a magnificent sand dune region in the Sahara Desert, celebrated for its towering dunes, harsh climate, and vibrant cultural experiences

Topics - MINDS MAPS included (Daily current affairs 24th December 2024

- Target UPSC CSE Prelims 2025
- Cephalopod Insights
- India’s Steel frame
- The WTO's Dispute Settlement Crisis
- India and critical minerals
- Reimposition of the Protected Area Regime in Manipur, Mizoram, and Nagaland:
- Switzerland and EFTA-
- Rooppur Nuclear Power Plant Overview
- The Philippines' Acquisition of the U.S. Typhon Missile System
- Mains



By saurabh Pandey

THE HINDU

Topic → Cephalopod Insights

Cephalopod Classification

- Cephalopod Classification: Cephalopods are a diverse class of molluscs that includes coleoids (cuttlefish, octopus, squid) and the chambered nautilus.

Size Range

- Size Range: Coleoids vary significantly in size, from tiny adult squid (Idiosepius) to the giant squid (Architeuthis) and colossal squid (Mesonychoteuthis), which can exceed 40 feet in length and weigh over 450 kg.

Habitat Diversity

- Habitat Diversity: Some cephalopods inhabit the dark depths of the ocean alone, while others thrive socially in vibrant coral reef environments.

Feeding Strategies

- Feeding Strategies: Cephalopods exhibit a range of feeding behaviors, from skilled hunting to passive feeding on floating debris.

- The class now contains two, only distantly related, extant subclasses: Coleoidea, which includes octopuses, squid, and cuttlefish; and Nautiloidea, represented by *Nautilus* and *Allonautilus*.
- In the Coleoidea, the molluscan shell has been internalized or is absent, whereas in the Nautiloidea, the external shell remains.
- About 800 living species of cephalopods have been identified. Two important extinct taxa are the Ammonoidea (ammonites) and Belemnoidea (belemnites).

Behavioral Complexity

- Behavioral Complexity: The diversity of cephalopods leads to significant variations in brain size, complexity, and behavior.

Welfare Considerations

- ⚖️ Welfare Considerations: When assessing the welfare of captive octopuses, it is crucial to avoid relying on data from unrelated evolutionary species.

Summary: Cephalopods are a diverse group of molluscs with varying sizes, habitats, feeding strategies, and cognitive abilities, necessitating careful consideration in research and welfare assessments.

India's 'steel frame' does need a check

Vinod Bhanu

the Director of the Centre for Legislative Research and Advocacy, New Delhi

India's governance challenges demand urgent reforms to modernise its bureaucracy. The country's economic story, which is marked by significant strides in growth and innovation, is juxtaposed with enduring issues of income inequality, underinvestment in critical sectors, and bureaucratic inefficiency. Central to this narrative is the Indian Administrative Service (IAS), which has for long held sway over the nation's governance. However, persistent challenges within the IAS and the wider bureaucracy have highlighted the urgent need for administrative reforms to unlock India's true economic potential.

The legacy and challenges of the IAS

The IAS, often called India's "steel frame", traces its origins to the colonial Indian Civil Service (ICS). Post-Independence, it became the backbone of India's administrative machinery, with officers occupying pivotal roles in governance. Yet, this legacy has not been without its cracks. Political interference, lack of specialisation, and outdated personnel practices have gradually eroded its effectiveness.

One of the pressing issues is the politicisation of the IAS. Frequent transfers, suspensions, and promotions influenced by political loyalty rather than merit, have undermined morale and professionalism. Officers often struggle to develop domain expertise due to frequent rotations across departments, preventing them from becoming effective policy specialists in an increasingly complex governance landscape.

Corruption and inefficiency plague the bureaucracy further. According to the World Bank's measure of government effectiveness, India ranks only moderately, reflecting the poor quality of policy implementation and administrative independence. Without reform, these systemic inefficiencies threaten to stymie India's economic growth and governance objectives.

Executive-led governance in India, characterised by centralised decision-making, has yielded mixed results. While it has facilitated rapid economic reforms and infrastructure development, it has also led to bottlenecks in policy implementation and a lack of accountability. The centralised power structure often sidelines bureaucrats' insights and expertise, reducing their ability to act as effective policy executors.

Under Prime Minister Narendra Modi's leadership, the government has attempted to address some of these shortcomings by curbing politicised transfers and introducing measures to enhance bureaucratic accountability. However, critics argue that centralising power in the Prime Minister's Office (PMO) risks undermining the autonomy of senior bureaucrats, leading to further disempowerment of the IAS.

> Persistent challenges within the Indian Administrative Service and the wider bureaucracy have highlighted the urgent need for administrative reforms

The need for administrative reforms in India is not new. Since Independence, over 50 commissions and committees have been tasked with reimagining the country's administrative apparatus. The First Administrative Reforms Commission (ARC) in 1966 and subsequent commissions, have consistently emphasised the need for specialisation, accountability, and merit-based promotions within the bureaucracy.

The Second ARC, set up in 2005, laid out a blueprint for administrative reforms. It included recommendations for lowering the permissible age of entry into the civil services, introducing performance-based promotions and lateral entry, and establishing safeguards against arbitrary transfers. However, many of these recommendations remain unimplemented, stalled by bureaucratic inertia and political resistance.

Government's push for reform

Recognising the limitations of the IAS-centric administrative model, the Modi government has sought to diversify governance by introducing lateral entry into senior bureaucratic positions. This move is aimed at bringing domain experts from the private sector and other government services into key policymaking roles, infusing fresh perspectives and specialised knowledge.

Since 2018, the central government has pursued lateral recruitment to bring individuals with specialised knowledge and domain expertise into specific assignments. By 2023, this initiative saw the appointment of 57 officers, many of whom were drawn from the private sector, reflecting a deliberate effort to infuse fresh talent and perspectives into governance. The Union Public Service Commission (UPSC) recently advertised 45 posts for lateral entry, including positions for Joint Secretaries and Directors across various ministries. This shift has disrupted the IAS's traditional dominance, with only 33% of Joint Secretaries at the Centre now belonging to the IAS, compared to near-total dominance a decade ago.

However, the lateral entry initiative has faced resistance. Critics, including retired civil servants, argue that it could undermine incumbent morale and distort promotion incentives. Opposition parties have also voiced concern about the lack of reservation provisions for marginalised groups in these appointments. The Modi government's recent U-turn on lateral entry appointments, reportedly due to political pressure from political allies, underscores the contentious nature of this reform.

The U.S.'s proposed Department of Government Efficiency (DOGE), under U.S. President-elect Donald Trump, offers an intriguing model for reforming India's administrative apparatus. DOGE aims to streamline government operations, reduce inefficiency, and eliminate redundant agencies, all while leveraging the expertise of leaders such as Elon Musk and Vivek Ramaswamy.

DOGE's focus on cutting wasteful expenditures and introducing accountability mechanisms resonates with the challenges faced by the Indian bureaucracy. A similar advisory body in India could help identify inefficiencies within the civil service, promote data-driven decision-making, and develop metrics to assess bureaucratic performance. A time-bound commission, such as the DOGE's expiration date tied to the U.S. semi-quincentennial, could also ensure that reform initiatives remain focused and actionable.

Challenges to reform

Reforming India's bureaucracy is no small task. Despite its flaws, the IAS remains deeply entrenched in the country's governance structure. Proposals for lateral entry, performance-based promotions, and specialised training often face resistance from within the service, where seniority-based progression and generalist approaches are deeply institutionalised. Political interference further complicates reform efforts. Proposals such as the Civil Services Standards, Performance, and Accountability Bill (2010), which sought to protect bureaucrats from arbitrary transfers, have languished in legislative limbo. Even judicial interventions, such as the Supreme Court of India's directive to establish civil services boards in 2013, have had limited impact due to lack of enforcement.

A multifaceted approach to administrative reform is vital to address the challenges of India's bureaucracy. Recruitment must prioritise merit and domain expertise, with promotions tied to measurable performance rather than seniority. Protecting bureaucrats from politically motivated transfers and fostering specialisation in policymaking roles would enhance accountability and efficiency. Further, the government should invest in a robust data infrastructure to track bureaucratic performance, enabling informed decisions on placements, promotions, and policy implementation. Reform is essential for India's economic aspirations and ensuring governance effectively serves its people.

Topic → India’s Steel frame

Introduction

India is a land of contrasts, where rapid economic growth and innovation coexist with deep-rooted issues like income inequality and bureaucratic inefficiency.

At the heart of this paradox lies the Indian Administrative Service (IAS), a body that has long been the backbone of governance in the country.

However, the persistent challenges within the IAS and the broader bureaucracy highlight an urgent need for reforms to unlock India's true economic potential.

The Legacy and Challenges of the IAS

Historical Context of the IAS

The IAS, often referred to as India’s “steel frame,” has its roots in the colonial Indian Civil Service (ICS).

After Independence, it became the cornerstone of India’s administrative framework, with officers playing crucial roles in governance.

However, this legacy is marred by significant challenges that have emerged over the years.

Current Issues Facing the IAS

Politicisation of the IAS

One of the most pressing issues is the politicisation of the IAS. Frequent transfers and promotions based on political loyalty rather than merit have eroded morale and professionalism. This constant rotation prevents officers from developing domain expertise, which is essential in today’s complex governance landscape.

Corruption and Inefficiency

Corruption and inefficiency further plague the bureaucracy. According to the World Bank, India ranks only moderately in government effectiveness, indicating poor policy implementation and a lack of administrative independence. Without reform, these systemic issues threaten to stifle India’s economic growth and governance objectives.

The Role of Executive-Led Governance

Centralised Decision-Making

Executive-led governance in India, characterised by centralised decision-making, has produced mixed results. While it has facilitated rapid economic reforms, it has also created bottlenecks in policy implementation and accountability. The centralised structure often sidelines bureaucratic insights, limiting their effectiveness as policy executors.

Impact on Bureaucratic Effectiveness

The concentration of power in the Prime Minister’s Office (PMO) has raised concerns about the autonomy of senior bureaucrats. Critics argue that this centralisation undermines the IAS, further disempowering it in the governance process.

Recent Government Initiatives

Lateral Entry into Bureaucracy

Recognising the limitations of an IAS-centric model, the Modi government has introduced lateral entry into senior bureaucratic positions. This initiative aims to bring in domain experts from the private sector and other government services, infusing fresh perspectives into policymaking.

Successes and Challenges

Since 2018, the government has appointed 57 officers through lateral recruitment, disrupting the IAS’s traditional dominance. However, this initiative has faced resistance, with critics arguing it could undermine morale and distort promotion incentives. The lack of reservation provisions for marginalised groups has also raised concerns.

Learning from Global Models

The U.S. Department of Government Efficiency

The proposed U.S. Department of Government Efficiency (DOGE) offers an intriguing model for reforming India’s administrative apparatus. DOGE aims to streamline operations and reduce inefficiency while leveraging expertise from various sectors. A similar advisory body in India could help identify bureaucratic inefficiencies and promote data-driven decision-making.

Challenges to Reform

Resistance within the Bureaucracy

Reforming India’s bureaucracy is no small feat. Despite its flaws, the IAS remains entrenched in the governance structure. Proposals for lateral entry and performance-based promotions often face resistance from within, where seniority-based progression is the norm.

Political Interference

Political interference complicates reform efforts. Proposals like the Civil Services Standards, Performance, and Accountability Bill (2010) have languished in legislative limbo, and judicial interventions have had limited impact due to lack of enforcement.

A Multifaceted Approach to Reform

Prioritising Merit and Specialisation

A multifaceted approach is essential for addressing the challenges of India’s bureaucracy. Recruitment should prioritise merit and domain expertise, with promotions tied to measurable performance rather than seniority.

Investing in Data Infrastructure

Additionally, the government should invest in robust data infrastructure to track bureaucratic performance, enabling informed decisions on placements and policy implementation. Reform is crucial for India’s economic aspirations and ensuring governance effectively serves its people.

Conclusion

In conclusion, India’s governance challenges are significant, but they are not insurmountable. By modernising its bureaucracy through urgent reforms, the country can unlock its true economic potential and create a more effective governance structure that serves all its citizens.

Topic → The WTO's Dispute Settlement Crisis

Introduction

The World Trade Organization (WTO), based in Geneva, is facing a significant challenge as it is set to miss yet another crucial target for revitalizing its dispute settlement system by the end of 2024. This situation has been brewing for five long years, primarily due to the persistent blocking of the Appellate Body (AB) by the United States. So, what does this mean for global trade?

The Role of the WTO

A Multilateral Trade Referee

The WTO serves as a multilateral trade referee, ensuring that trade flows as smoothly and predictably as possible. It provides a platform for negotiating trade agreements and resolving disputes between member countries. However, the effectiveness of this system is now in jeopardy.

The Appellate Body's Non-Operational Status

A Five-Year Standstill

For five years, the Appellate Body, which acts as the second tier in the WTO's two-tier dispute settlement system, has been non-operational. This is largely due to the U.S. blocking the appointment of new members. The implications of this are profound, as it stalls the adjudicatory process and leaves countries in limbo.

U.S. Political Dynamics

The Obama Era to Biden Administration

The obstruction began during Barack Obama’s administration, escalated under Donald Trump, and has continued under President Joe Biden. This bipartisan consensus reflects a significant shift in U.S. trade policy, with a growing hostility towards the Appellate Body.

The Implications of a Dysfunctional WTO

The Stalling of Trade Disputes

While WTO panels continue to operate and resolve disputes, the losing country can appeal to a non-operational Appellate Body, effectively stalling the process. This situation raises questions about the WTO's relevance in global trade.

The Historical Context

The Promise of the WTO

To understand the current crisis, we must reflect on the WTO's establishment in 1995. It was a milestone in international law, promising a comprehensive system of rules governing trade. The WTO was seen as a beacon of international rule of law, even outshining the International Court of Justice.

Transition from GATT to WTO

The transition from the General Agreement on Tariffs and Trade (GATT) to the WTO marked a significant shift from diplomacy-based trade to a rule-based system. Countries willingly accepted restrictions on their state conduct, subjecting themselves to the WTO's jurisdiction.

The Unraveling of WTO's Effectiveness

The Rise of China

However, the global landscape began to change with China's significant rise over the last two decades. The U.S. had hoped that China's accession to the WTO in 2001 would lead to the dismantling of its state-led industrial policies. Unfortunately, this expectation did not materialize.

U.S. Perception of China

Many in the U.S. believe that China has exploited the WTO system to its advantage, leading to a desire to "wreck" the WTO system to address the perceived Chinese threat.

The U.S. Strategy

Wrecking the WTO System

The U.S. can now employ trade remedial measures and develop industrial policies to counter the Chinese challenge, even if these actions violate WTO law. This shift indicates that international politics, rather than international law, will dictate trade.

The Concept of Regime Change

Thinning of Legality

International lawyers argue that we are witnessing a regime change rather than a mere crisis in the WTO. The legal revolution of international trade that began in 1995 is being reversed, moving us back to the era of GATT diplomacy.

The Future of International Trade

GATTification of the WTO

Understanding this "GATTification" of the WTO is crucial for grasping the current state of international trade. No amount of technical negotiations in Geneva can obscure this fact.

Conclusion

In conclusion, the WTO is at a crossroads. The ongoing dysfunction of the Appellate Body and the shifting dynamics of international trade raise serious questions about the future of global trade governance. As countries reclaim control over their trade policies, the promise of a rule-based international trading system hangs in the balance.

Topic → India and critical minerals

Introduction

The significance of critical minerals for a nation’s economic development and security cannot be overstated. In 2023, the Ministry of Mines in India identified 30 critical minerals that are essential for the country's growth. Alarmingly, India is completely dependent on imports for 10 of these minerals, raising concerns about national security and economic stability. However, the most pressing issue is the extent of India's dependency on China, the dominant player in the critical minerals market.

China’s Dominance in Critical Minerals

China exhibits an unparalleled grip on the global critical minerals landscape, thanks to its extensive resource base and strategic investments. Here are some salient points:

Enormous Resource Base: As the world's largest mining nation, China has discovered 173 types of minerals. This includes:

- 13 energy minerals
- 59 metallic minerals
- 95 non-metallic minerals

Significant Reserves: China controls nearly 40% of global reserves of essential minerals such as copper, lead, zinc, nickel, cobalt, lithium, gallium, germanium, and crystalline graphite.

Investment in Exploration: An investment of $19.4 billion in exploration has led to the discovery of 132 new mineral deposits, including 34 large ones.

Processing Power: China dominates mineral processing, controlling:

- 87% of rare earth processing
- 58% of lithium refining
- 68% of silicon processing

Strategic Overseas Investments: By investing in overseas mining projects, China has fortified its position in the global minerals supply chain.

China's prowess in critical minerals is not just about reserves; it extends to processing and refining capabilities, creating supply chain vulnerabilities for countries like India.

India’s Dependency on China

An analysis of India’s import data reveals an acute vulnerability to Chinese supplies. For six critical minerals, the dependency exceeds 40%:

Bismuth: 85.6% dependency; primarily used in pharmaceuticals.
Lithium: 82% dependency; crucial for electric vehicle batteries.
Silicon: 76% dependency; essential for semiconductors.
Titanium: 50.6% dependency; vital in aerospace.
Tellurium: 48.8% dependency; important for solar power.
Graphite: 42.4% dependency; indispensable for EV batteries.

The implications of this dependency are profound, as India faces significant challenges in diversifying its supply sources.

Challenges in India’s Mineral Sector

Despite being resource-rich, India's reliance on imports is attributed to several structural challenges:

Deep-Seated Minerals: Many critical minerals are located deep underground, necessitating high-risk investments in exploration and mining technologies.

Limited Processing Capabilities: A stark example is India’s inability to exploit newly discovered lithium deposits in Jammu and Kashmir, which contain 5.9 million tonnes of resources but lack the technology for extraction.

Private Sector Participation: The absence of adequate incentives and policy support has deterred private sector investment in the mining ecosystem.

Strategic Moves to Mitigate Dependency

India is embarking on a multi-faceted strategy to reduce its reliance on China, including:

KABIL Initiative: The establishment of KABIL, a joint venture of three state-owned companies aimed at securing overseas mineral assets.

Global Partnerships: Joining initiatives like the Minerals Security Partnership and the Critical Raw Materials Club to diversify supply sources.

Research Investments: Investing in research through the Geological Survey of India and promoting recycling practices to minimize dependency on virgin minerals.

Incentives for Recycling: Implementing production-linked incentives for extracting critical minerals through recycling, which shows promise for a sustainable future.

Topic →Reimposition of the Protected Area Regime in Manipur, Mizoram, and Nagaland: What You Need to Know.

Introduction

The Indian government has once again tightened its grip on foreign visitors in the northeastern states of Manipur, Mizoram, and Nagaland by reinstating the Protected Area Regime (PAR) on December 17, 2023.

This drastic shift comes amid increasing security concerns and ethnic tensions, making it imperative for potential visitors to understand the implications of this decision.

Historical Context of the Protected Area Regime

The Protected Area Regime was initially established under the Foreigners (Protected Areas) Order of 1958. This legislation mandated that no foreigner could enter or remain in designated protected areas without a permit from the Central government. Key aspects of the order include:

- **Permit Requirements:** Foreigners must obtain a permit detailing their place of entry, residence, and duration of stay.
- **Geographical Scope:** The regime covered several regions, including parts of Himachal Pradesh, Jammu and Kashmir, and the entirety of Manipur, Mizoram, and Nagaland.

The regime was relaxed in 2010, allowing freer movement to promote tourism, but recent developments have necessitated a re-evaluation of this policy.

Reasons for the Reimposition

The recent resurgence of violence in Manipur—particularly ethnic clashes between the Kuki-Zo and Meitei communities—has been a pivotal factor in the reimposition of the PAR. Contributing factors include:

- **Growing Security Concerns:** The MHA's circular cited rising tensions and safety issues as primary reasons for the restrictions.
- **Impact of the Myanmar Crisis:** The influx of refugees from Myanmar, following the military coup in February 2021, has exacerbated tensions in the region, leading to increased scrutiny of foreign presence.

The Chief Minister of Manipur, N. Biren Singh, has publicly attributed the ongoing violence to "outsiders and foreign hands," highlighting the political implications of foreign visits.

Obtaining a Protected Area Permit (PAP)

For foreign tourists wishing to visit these states, obtaining a Protected Area Permit is essential. Here’s how to navigate the process:

Where to Apply: Permits can be secured from Indian missions abroad, the MHA, district magistrates, or the Foreigners Regional Registration Office (FRRO).

Who Needs a PAP: Citizens from Afghanistan, China, and Pakistan, as well as foreign nationals with origins in these countries, will continue to require prior approval from the MHA.

Registration Requirement: Upon arrival, all foreigners must register with the local Foreigners Registration Officer within 24 hours.

This process ensures that the government can monitor foreign visitors and maintain security in sensitive areas

Conclusion

The reimposition of the Protected Area Regime in Manipur, Mizoram, and Nagaland highlights the delicate balance between security and tourism in the region. As tensions continue to rise, foreigners must stay informed about the regulations that govern their travel plans.

Topic → Switzerland and EFTA-India Trade Agreement Overview

Key Developments in the EFTA-India Trade Agreement

CH Suspension of MFN Clause: Switzerland has temporarily suspended the Most Favoured Nation (MFN) clause in its Double Taxation Avoidance Agreement. This decision will not hinder the ratification of the EFTA-India trade agreement.

TEPA Signing: The Trade and Economic Partnership Agreement (TEPA) was signed in March between India and the European Free Trade Association (EFTA), which includes Iceland, Liechtenstein, Norway, and Switzerland.

📈 Impact on Investments: The Swiss government assures that the suspension of the MFN status will not adversely affect Swiss investments in India or the trade relations between the two nations.

💰 Investment Commitment: India is projected to receive a $100 billion investment commitment from the EFTA over the next 15 years as part of the trade agreement.

📊 Trade Balance: In the fiscal year 2023-24, India's imports from Switzerland amounted to $21.24 billion, while exports were only $1.52 billion, leading to a trade deficit of $19.72 billion.

💵 Foreign Direct Investment: From April 2000 to September 2023, India received approximately $10.72 billion in foreign direct investments from Switzerland.

□ Tariff Reductions: The trade agreement facilitates lower or zero duties on several Swiss products, including watches, chocolates, and cut and polished diamonds.

Summary: Switzerland's suspension of the MFN clause will not impact the EFTA-India trade agreement, which is set to bring substantial investment and trade advantages.

Topic → Rooppur Nuclear Power Plant Overview

Key Highlights

- ⚛️ Rooppur Nuclear Power Plant: Bangladesh's first nuclear power facility.
- 📍 Location: Situated in the Pabna district of Bangladesh.
- 🌍 Objective: Enhance energy security and reduce reliance on fossil fuels.
- 💡 Capacity: Designed for a total of 2,400 megawatts with two reactors.
- 🤝 Collaboration: Developed with Russian technology and financial support.
- 📅 Timeline: Construction started in 2017; first reactor expected operational by 2024.
- 🌱 Impact: Contributes to sustainable development and meets growing energy demands.

Summary: The Rooppur Nuclear Power Plant marks Bangladesh's entry into nuclear energy, aiming to bolster energy security and sustainability with a 2,400 MW capacity, leveraging Russian expertise.

Bangladesh anti-graft panel to probe Russia-backed Rooppur nuclear project

Kallol Bhattacherjee
NEW DELHI

An anti-corruption outfit in Bangladesh has initiated an investigation into the $12.65 billion Rooppur nuclear powerplant that is being constructed with Russian assistance. A statement from the Anti-Corruption Commission of Bangladesh has alleged that around $5 billion financial irregularities have been discovered in the project that has been progressing for more than a decade.

The Rooppur nuclear power plant is located 160 km from Dhaka and is one of the largest nuclear projects built by Russia. FILE PHOTO

'$5 billion'

The Anti-Corruption Commission said in its statement that "Bangladesh's ousted Prime Minister Sheikh Hasina, her son Sajeeb Ahmed Wazed Joy and niece Tulip Siddiq – who have embezzled $5 billion from overpriced $12.65 billion Rooppur nuclear power plant through various offshore bank accounts in Malaysia".

The commission further said that Tulip Siddiq who is a Labour MP in the United Kingdom and has been facing scrutiny in the U.K. since the fall of the government of her aunt Sheikh Hasina was involved in an elaborate scheme to launder money that involved her paternal uncle Tarique Ahmed Siddique.

Money laundering

"Tulip Siddiq and her family members are stakeholders in a company named Prochchaya which along with another entity Destinty Group had laundered $900 million," it has been alleged.

Earlier, *Sunday Times* in the U.K. reported that U.K. Treasury Economic Secretary Tulip Siddiq was questioned by the Cabinet Office's propriety and ethics team over allegations of siphoning around £3.9 billion from the Rooppur nuclear power plant project.

Ms. Siddiq's mother Sheikh Rehana is the younger sister of Sheikh Hasina and was evacuated by a Bangladesh military helicopter to India on August 5 when the Awami League government fell in Dhaka.

The under-construction Rooppur nuclear power plant is located 160 km from Dhaka and is one of the largest nuclear projects that Russsian nuclear major Rosatom has been building.

Topic → The Philippines' Acquisition of the U.S. Typhon Missile System

🇵🇭 The Philippines is planning to acquire the U.S. Typhon missile system to enhance its maritime security.

🚀 Earlier this year, the U.S. Army deployed the Typhon missile system in the northern Philippines for joint military exercises.

⚠️ China has issued warnings that this acquisition could trigger a regional "arms race."

🗣️ Philippine Army chief Lieutenant-General Roy Galido highlighted the missile system's feasibility and functionality for archipelagic defense.

Key Developments and Implications

Military Exercises: The deployment of the Typhon missile system in the northern Philippines for joint exercises underscores the strategic military collaboration between the U.S. and the Philippines.

Regional Tensions: China's warning about a potential "arms race" highlights the geopolitical sensitivities in the region.

Economic Considerations: The acquisition cost will be influenced by economic conditions, impacting the Philippines' defense budget.

Sovereignty Protection: The Philippines' focus on military capability development is crucial for maintaining sovereignty amid territorial disputes.

Topic → Human-Wildlife Interaction and Its Impact on Lion-Tailed Macaques

Overview of Human Encroachment

🌳 Human Encroachment: Expansion of roads and plantations into natural habitats is a growing concern, affecting wildlife interactions.

Endangered Species: Lion-Tailed Macaque

- Endangered Status: The lion-tailed macaque, native to the Western Ghats, is critically endangered with a population of approximately 4,200.

Risks of Food Provisioning

- Food Provisioning: Human interaction leads to food provisioning, resulting in malnutrition, disease, and reliance on non-natural food sources.

Surveyed Locations in the Western Ghats

🗺 Survey Locations: Research was conducted in eight significant areas, including Anamalai Hills and Sabarimala, known for frequent human-macaque interactions.

Hotspot Behavior in Valparai

 Hotspot Behavior: Valparai is a notable hotspot with a history of human-macaque interactions, involving over 180 macaques.

Health Risks from Human Interaction

 Health Concerns: Increased interaction heightens the risk of zoonotic diseases and diet-related health issues for the macaques.

Population Decline Factors

- Population Decline: Human interactions contribute to injuries, road accidents, and stress-induced mortality, leading to a decline in macaque populations.

Summary: The lion-tailed macaque is under severe threat due to escalating human interactions, which pose health risks and contribute to population decline in the Western Ghats.

lion-tailed macaque

Habitat and Distribution

The lion-tailed macaque predominantly inhabits the Western Ghats, a UNESCO World Heritage site in India. These primates are arboreal, spending most of their lives in the canopy of tropical evergreen forests.

- Geographic Range: Found primarily in states like Kerala, Tamil Nadu, and Karnataka, their habitat spans around 3,500 square kilometers.
- Population Status: Estimates suggest fewer than 2,500 individuals remain in the wild, elevating their status to critically endangered.

Behavior and Social Structure

Lion-tailed macaques exhibit intricate social behaviors that enhance their survival in the wild.

- Social Dynamics: They live in matriarchal troops, typically comprising 20 to 30 individuals. The bonds formed within these groups are vital for foraging and protection.
- Unique Behaviors: Their distinctive vocalizations and grooming habits play a crucial role in maintaining social cohesion and reducing stress within the troop.

Topic → The Impact of Deletion Mutations on Aging and Mitochondrial Function

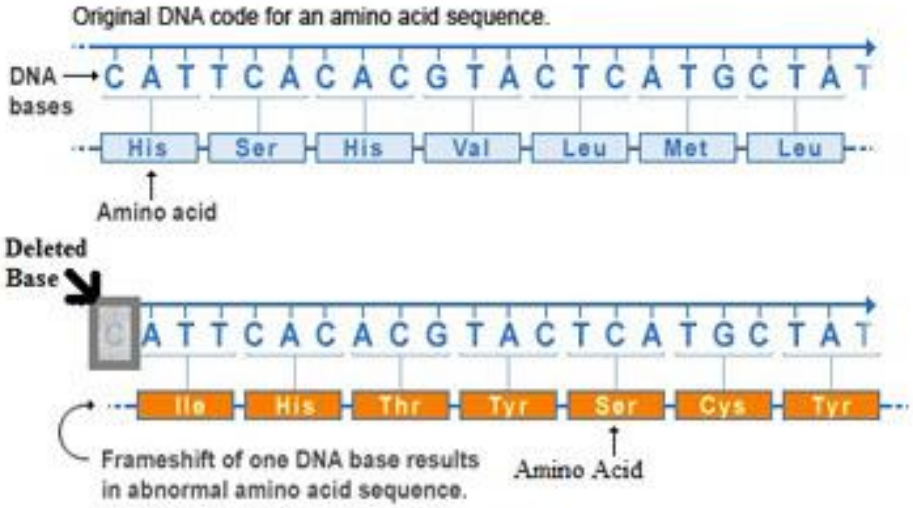
What Are Deletion Mutations?

Deletion mutations refer to the loss of segments of DNA, particularly in mitochondrial DNA (mtDNA), which becomes increasingly prevalent as we age. These mutations erode the functional capacity of mitochondria, the cell's powerhouses responsible for generating adenosine triphosphate (ATP), the energy currency of the cell.

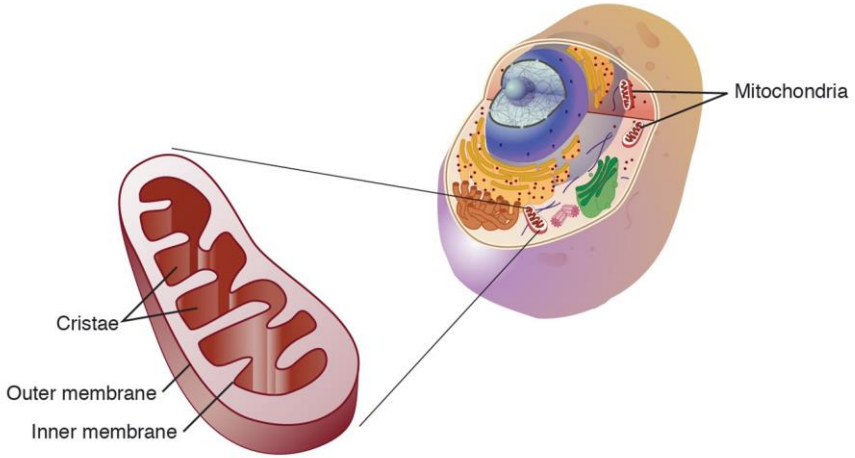
Mitochondrial Function: Mitochondria play a crucial role in energy production.

Muscle Cells: A deficit in functional mitochondria leads to muscle cell death, contributing to muscle mass loss.

Frameshift mutation



U.S. National Library of Medicine



Understanding Mitochondrial Biology

Mitochondria, often dubbed the cell's powerhouses, are the sites of ATP synthesis. Although mtDNA constitutes a mere fraction of our total genome, its integrity is vital for cellular health. Loss of functional mtDNA can lead to severe cellular consequences, particularly in energy-demanding tissues such as skeletal muscle.

The Genetic Ancestry of Mitochondria

Mitochondria have a unique genetic heritage, tracing back to free-living bacteria that were engulfed by ancestral eukaryotic cells. This endosymbiotic event led to the integration of some bacterial genes into the host cell's nuclear genome while retaining a limited number of genes in mtDNA.

- **Maternal Inheritance:** Mitochondria are passed down exclusively from mothers to offspring.
- **Genome Structure:** Unlike the nuclear genome, which consists of 23 chromosome pairs, mtDNA is circular and encodes only a small number of genes.

The Role of Genes in Cellular Function

Each gene within mtDNA plays a pivotal role in mitochondrial function. When deletion mutations occur, the resultant mtDNA can become less effective at synthesizing essential proteins, leading to an energy deficit in muscle cells.

Consequences of Deletion Mutations

As deletion mutations accumulate in mtDNA, their impact becomes pronounced. These mutations lead to the production of chimeric genes, which can interfere with normal mitochondrial function and exacerbate the degradation of muscle tissue.

- **Chimeric Genes:** Abnormal fusion of different mtDNA sequences can disrupt normal gene expression.
- **Muscle Mass Loss:** The inability to generate sufficient ATP leads to muscle cell death, which is often observed in older individuals.

Conclusion

Understanding deletion mutations and their implications for mitochondrial function is crucial in combating age-related decline. By focusing on the integrity of mtDNA, we may uncover ways to preserve muscle mass and enhance overall health as we age

Topic → Speed of Light: Historical and Modern Perspectives

Overview

- 📏 The speed of light is precisely defined as 299,792,458 m/s by scientists using advanced instruments.
- 🔬 Historical measurements relied on the time light took to travel a known distance.
- 🌌 The first practical estimate was made in 1676 by Danish astronomer Ole Roemer.
- ● Roemer's observations of Jupiter's moons led to conclusions about light's velocity causing apparent delays in eclipses.
- 📊 Roemer estimated the speed of light to be around 225,300 km/s, significantly lower than modern measurements.
- □ □ Modern estimates use laser beams and atomic clocks for greater accuracy.
- 🔄 The definition of the meter is now based on the speed of light.

Historical Context

1676: Ole Roemer's pioneering work on light speed using astronomical observations.

Jupiter's Moons: Key to understanding light's velocity through observed delays.

Modern Measurement Techniques

Laser Beams: Provide precision in measuring light speed.

Atomic Clocks: Enhance accuracy in time measurement, crucial for calculating light speed.

Evolution of Definitions

Meter Redefined: Now based on the constant speed of light, reflecting advancements in measurement techniques.

Summary: The speed of light is precisely defined as 299,792,458 m/s, a measurement that has evolved from historical estimates, notably by Ole Roemer in 1676

BIG SHOT

This photo provided by the U.S. Geological Survey shows an eruption on the summit of the Kilauea volcano in Hawaii on December 23. AP

Topic →Kilauea: A Dynamic Natural Wonder

Overview

🌋 Kilauea is among the most active volcanoes globally, situated on Hawaii's Big Island.

🏝 It forms part of the Hawaii Volcanoes National Park, a recognized UNESCO World Heritage Site.

🌋 The volcano has been in a state of continuous eruption since 1983, with notable events in 2018 and 2020.

Environmental and Economic Impact

🌱 Known for its lava flows, Kilauea contributes to land formation and affects local ecosystems.

 It draws numerous tourists, boosting the local economy and offering avenues for scientific exploration

Kauai
Niihau
Kaula
Oahu
Molokai
Lanai
Maui
Kahoolawe
HAWAII
PACIFIC OCEAN
PACIFIC OCEAN
Hawaii
Kilauea
0
40
80 mi
0
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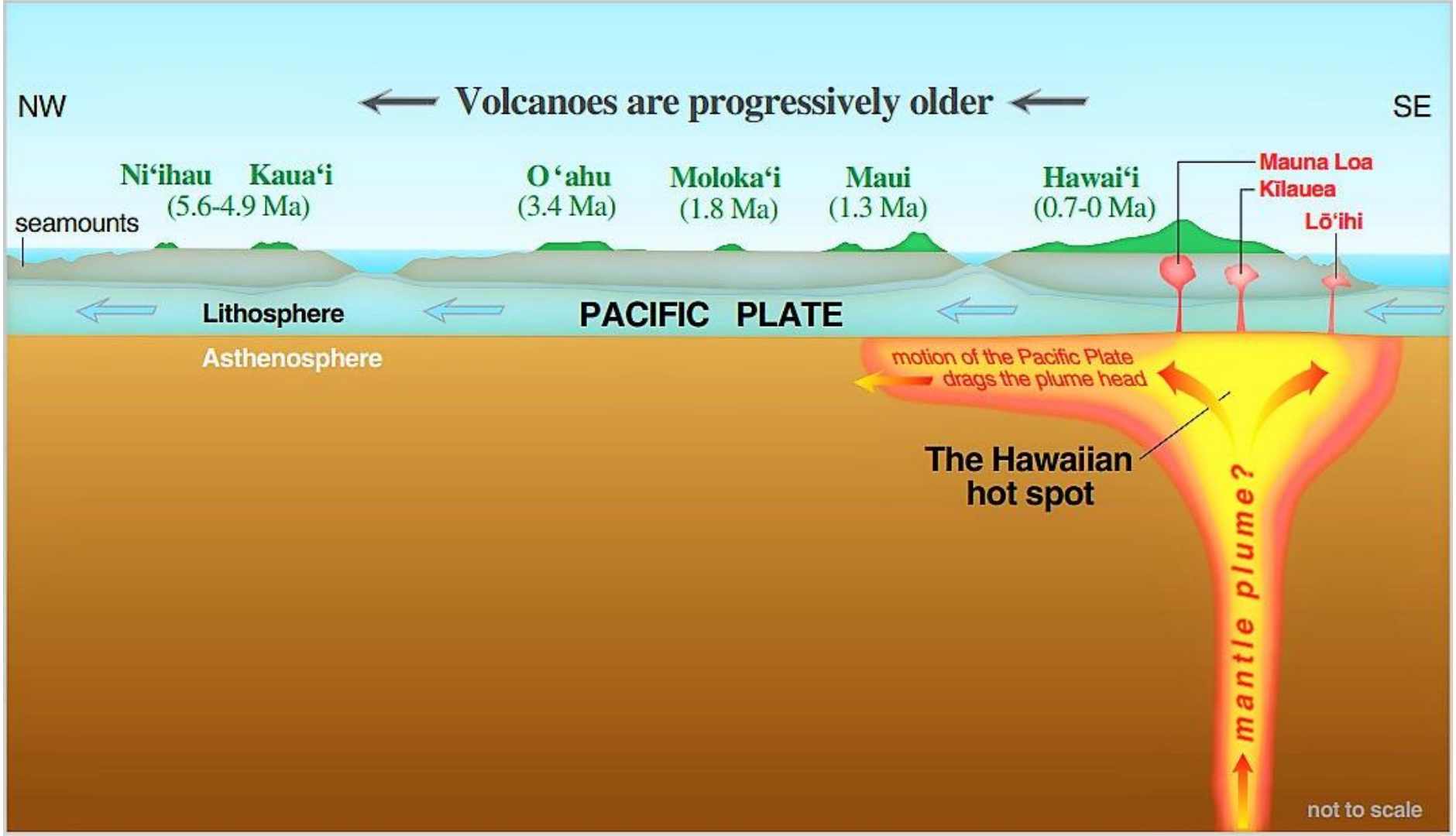
80 km
© Encyclopædia Britannica, Inc.


NW
Volcanoes are progressively older
SE
Ni'ihau
Kaua'i
(5.6-4.9 Ma)
O'ahu
(3.4 Ma)
Moloka'i
(1.8 Ma)
Maui
(1.3 Ma)
Hawai'i
(0.7-0 Ma)
Mauna Loa
Kīlauea
Lō'ihi
seamounts
Lithosphere
PACIFIC PLATE
Asthenosphere
motion of the Pacific Plate
drags the plume head
The Hawaiian
hot spot
mantle plume?
not to scale

Kilauea Volcano: A Dynamic Natural Wonder

Overview of Kilauea 🌋

Location: Situated on the Big Island of Hawaii, Kilauea is renowned as one of the most active volcanoes globally.

Geological Formation: Part of the Hawaiian-Emperor seamount chain, it results from the Pacific tectonic plate's movement over a hotspot.

Volcanic Activity 🔥

Eruption Characteristics: Known for frequent eruptions, primarily of basaltic lava, which continuously reshapes the landscape.

Environmental Impact: Eruptions release volcanic gases like sulfur dioxide, affecting air quality and climate

Topic → Quantum Computing: Unraveling Its Enigmatic Potential

Introduction to Quantum Computing

At its core, quantum computing leverages the principles of quantum mechanics, enabling computations at speeds and efficiencies previously thought impossible.

Historical Context: The genesis of quantum computing can be traced back to the early 1980s when physicist Richard Feynman proposed a novel approach to computational challenges posed by quantum systems.

Unlike classical computers, which utilize bits (0s and 1s), quantum computers employ qubits, capable of existing in multiple states simultaneously due to superposition.

Fundamental Principles of Quantum Computing

Understanding quantum computing requires a grasp of two fundamental principles: superposition and entanglement.

Superposition

Definition: Superposition allows qubits to exist in a state of 0, 1, or both simultaneously. This is akin to a spinning coin, which embodies both heads and tails until it lands.

Implications: This property empowers quantum computers to process vast amounts of information simultaneously, exponentially increasing their computational power.

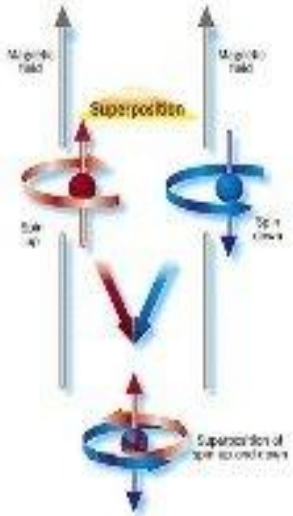
Entanglement

Definition: Entangled qubits exhibit a unique linkage, such that the state of one qubit can instantaneously affect the state of another, regardless of the distance separating them.

Analogy: Picture a pair of gloves sent to different locations; knowing the state of one glove informs you of the other. This interconnectedness enhances computational efficiency.

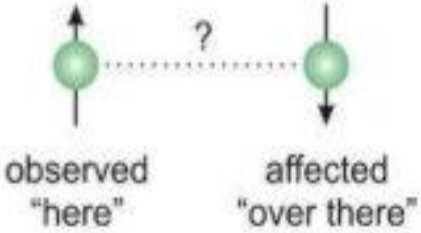
Quantum Properties

Superposition



Simultaneus "existence" (pre-measurement) of different states

Entanglement



Correlation of two different systems

Notable Advancements in Quantum Technology

The strides made in quantum computing are nothing short of revolutionary.

Shor's Algorithm:

Developed by Peter Shor in 1994, this algorithm revolutionizes data security by enabling quantum computers to factor large numbers at lightning speed. Classical computers would take eons to perform similar tasks.

IBM Q System One:

Unveiled in 2019, it represents a significant advancement in quantum computing architecture, utilizing quantum gates to manipulate qubits, thereby mimicking classical logic gates.

Google Sycamore:

Google’s 53-qubit processor achieved quantum supremacy by completing a task in a mere 200 seconds, a feat that would take classical supercomputers approximately 10,000 years.

Recent Breakthroughs

Willow: Google recently announced Willow, a quantum chip that employs error-corrected qubits, enhancing stability during calculations. It can perform complex tasks in five minutes, a process that would take current supercomputers trillions of years!

Challenges and Future Prospects

Despite the technological prowess, quantum computing faces significant hurdles:

Cost and Complexity: Building quantum computers is an expensive endeavor, requiring sophisticated technology and expertise.

Error Rates: Maintaining stable qubits is vital for reliable computations, yet qubits are susceptible to decoherence and environmental noise.

Need for Scalability: Real-world applications, such as drug discovery and complex simulations, demand millions of qubits.

National Quantum Mission

In response to the burgeoning field, India launched the National Quantum Mission in 2023, earmarking ₹6,000 crore for quantum research and development over eight years, emphasizing the global race in quantum technology.

केन्द्रीय बजट
UNION BUDGET 2020

Budget 2020 announced Rs 8,000 crore over the next 5-yrs in the National Mission on Quantum technology and its applications

- The areas of focus for the NM-QTA Mission will be in fundamental science, translation, technology development and towards addressing issues concerning national priorities
- The mission can help prepare next generation skilled manpower, boost translational research and also encourage entrepreneurship and start-up ecosystem development.
- Quantum principles will be used for engineering solutions to extremely complex problems in computing, communications, sensing, chemistry, cryptography, imaging and mechanics

- Their applications which will be boosted include those in aero-space engineering, numerical weather predictions, simulations, securing the communications & financial transactions, cyber security, advanced manufacturing, health, agriculture, education
- It can bring India in the list of few countries with an edge in this emerging field will have a greater advantage in garnaring multifold economic growth and dominent leadership role

Why are activists opposing EC's election rule amendment?

How has the Election Commission defended its decision to limit access to election documents?

Sreeparna Chakrabarty

The story so far:

The Centre on December 20 amended the Conduct of Election Rules to restrict access for the public to a section of poll documents. This was done by the Union Law Ministry following a recommendation from the Election Commission (EC). While the EC said the amendment aims to restrict access to electronic data, the Opposition and transparency activists have been up in arms, branding it as an attack on the right to information and electoral freedom.

What is the Conduct of Election Rules?

The Conduct of Election Rules,1961, is a set of rules which provide for provisions on how to conduct the elections as per the Representation of People Act.

What is the amendment?

This amendment was brought into effect through a notification issued by the Ministry of Law and Justice on December 20. Rule 93(2)(a) of the 1961 Conduct of Election Rules had earlier stated that "all other papers relating to the election shall be open to public inspection" but after the amendment, it reads, "all other papers as specified in these rules relating to the election shall be open to public inspection."

Why has the amendment been brought in now?

The move comes after a recent direction to the EC by the Punjab and Haryana High Court to share all documents related to the Haryana Assembly election, including treating CCTV footage also as permissible under Rule 93(2) of the Conduct of Election Rules, to petitioner Mahmoud Pracha.

According to a senior official of the EC, "The rule mentioned election papers. The election papers and documents does not specifically refer to electronic records. In order to remove this ambiguity and considering the serious issue of violation of secrecy of vote and potential misuse of CCTV footage of inside the polling station using artificial intelligence by a single person, the rule has been amended. The EC argues that sharing of CCTV footage may have serious repercussions, especially in sensitive areas where secrecy is important. All election papers and documents are otherwise available for public inspection."

Why are the transparency activists protesting?

According to transparency activist Anjali Bharadwaj, Rule 93 is akin to the Right to Information Act as far as elections are concerned and, any change hurts the citizen's right to know about the process.

Venkatesh Nayak, Director Commonwealth Human Rights Initiative explained further that "upon initial examination, the amendment appears to be aimed at restricting citizen-voters' right to access a large number of documents created during Parliamentary and State Assembly elections many of which are not specifically mentioned in the Conduct of Election Rules, instead, they are mentioned in the handbooks and manuals published by the Election Commission from time to time".

He said that given the controversy about voter turnout in recent Lok Sabha and Assembly polls, access to the Presiding Officers' diaries which contain detailed data about voter turnout and the number of tokens they distribute to voters who are in the queue at the hour scheduled for closing of polling are not mentioned specifically in the Conduct of Election Rules. "The amendment seeks to prevent access to such documents and many other reports and returns that are filed by various election officials".

What does the Opposition say?

The Congress claimed that a change in rules regarding the conduct of elections vindicated their assertions regarding the rapidly eroding integrity of the electoral process managed by the EC.

The Congress moved the Supreme Court against the amendments on Tuesday.

Congress President Mallikarjun Kharge has said it was part of a "systematic conspiracy to destroy the institutional integrity of the EC", while the Samajwadi Party and the Left parties accused the EC of "undermining multi-party democracy" by taking "unilateral" decisions without consulting all political parties.

THE GIST

- The Centre amended the Conduct of Election Rules on December 20 to restrict public access to certain election-related documents, following a recommendation from the Election Commission.
- The amendment has sparked controversy, with the Opposition and transparency activists accusing the EC of undermining transparency, the right to information, and electoral freedom.

Topic → The Recent Amendment to the Conduct of Election Rules: A Deep Dive

Introduction

On December 20, a significant change was made to the Conduct of Election Rules, stirring up a storm of controversy. The Union Law Ministry, following a recommendation from the Election Commission (EC), amended the rules to restrict public access to certain poll documents. While the EC claims this is a necessary step to protect electronic data, critics argue it undermines the right to information and electoral freedom. **What are the Conduct of Election Rules?**

Historical Context

The Conduct of Election Rules, established in 1961, are a set of guidelines that dictate how elections should be conducted in India, in accordance with the Representation of People Act. These rules have been the backbone of electoral processes, ensuring transparency and fairness.

Purpose of the Rules

The primary aim of these rules is to provide a framework for conducting free and fair elections. They outline everything from the nomination process to the counting of votes, ensuring that the electoral process is transparent and accountable.

The Amendment Explained

Details of the Amendment

The recent amendment specifically alters Rule 93(2)(a) of the Conduct of Election Rules. Previously, it stated that “all other papers relating to the election shall be open to public inspection.” Post-amendment, it now reads, “all other papers as specified in these rules relating to the election shall be open to public inspection.” This seemingly minor change has raised significant eyebrows.

Implications of the Change

By narrowing the scope of what documents are available for public inspection, the amendment could limit access to crucial information that voters and civil society rely on to hold the electoral process accountable. This has led to fears that the amendment could be a step towards greater opacity in the electoral process.

Why Now?

Court Directives and Their Impact

The timing of this amendment is particularly noteworthy. It follows a directive from the Punjab and Haryana High Court, which ordered the EC to share all documents related to the Haryana Assembly election, including CCTV footage. This court ruling seems to have prompted the EC to clarify the rules regarding what can be shared.

The EC's Justification

According to a senior official from the EC, the amendment was necessary to eliminate ambiguity regarding electronic records. They argue that sharing CCTV footage could lead to serious violations of voter secrecy and potential misuse of data, especially in sensitive areas. The EC maintains that all other election papers remain available for public inspection.

Reactions from Various Stakeholders

Opposition's Response

The opposition parties, particularly the Congress, have been vocal in their criticism of the amendment. They argue that this change is indicative of a broader erosion of the integrity of the electoral process. Congress President Mallikarjun Kharge has labeled it a “systematic conspiracy” to undermine the EC’s institutional integrity.

Transparency Activists' Concerns

The Right to Information

- Transparency activists, like Anjali Bharadwaj, have drawn parallels between Rule 93 and the Right to Information Act, asserting that any changes to this rule directly impact citizens' rights to know about the electoral process.
- They argue that the amendment restricts access to vital documents that ensure transparency.

Potential Consequences

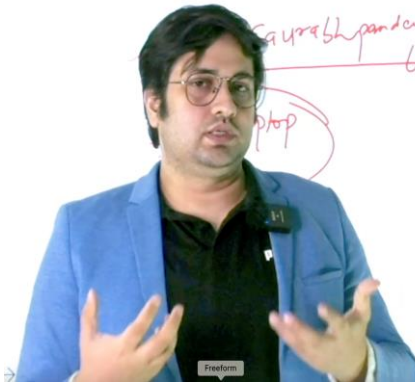
Venkatesh Nayak, Director of the Commonwealth Human Rights Initiative, has pointed out that the amendment could prevent access to important documents, such as Presiding Officers’ diaries, which contain data on voter turnout. This could hinder efforts to ensure accountability in the electoral process.

Conclusion

The amendment to the Conduct of Election Rules has sparked a heated debate about transparency and accountability in India's electoral process. While the EC argues that the change is necessary for protecting sensitive data, critics see it as a dangerous step towards limiting public access to information. As citizens, it’s crucial to stay informed and engaged in these discussions to safeguard our democratic rights.

Topics - MINDS MAPS included (Daily current affairs 26th December 2024

- Target UPSC CSE Prelims 2025
- The Ken-Betwa Link Project .
- 20 Years After the Indian Ocean Tsunami:
- Bacteria in brain
- Tsunami and further steps
- The Disaster Management (Amendment) Bill, 2024:
- U.S. and China renew S&T Agreement
- Understanding the Online Safety Amendment (Social Media Minimum Age) Bill
- Mains



By saurabh Pandey

THE HINDU

Topic → The Ken-Betwa Link Project

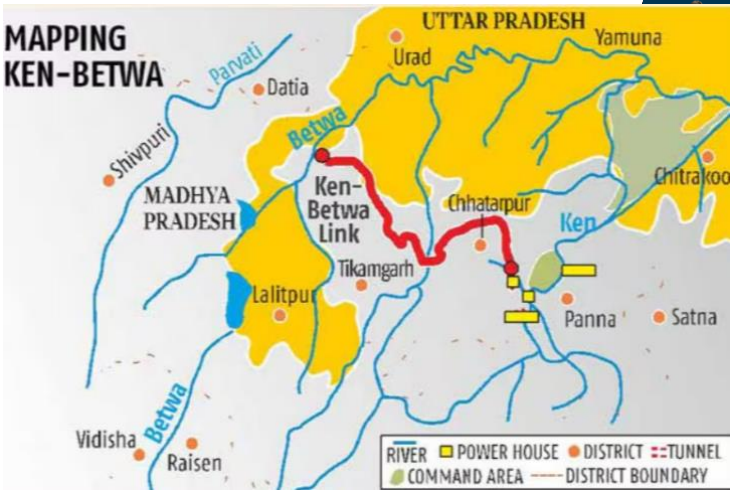
The Ken-Betwa Link Project stands as a monumental initiative aimed at resolving water scarcity issues in Madhya Pradesh. Launched by Prime Minister Narendra Modi, this ambitious project seeks to enhance irrigation facilities, boost agricultural productivity, and foster economic growth in the region. As climate challenges intensify, the project emerges as a beacon of hope for local farmers and communities.

Historical Context

River Linking in India: The concept of linking rivers to ensure equitable water distribution is not new in India. Previous attempts have often met with limited success due to environmental challenges and political hurdles.

Past Initiatives: Several river linking proposals were introduced over the years, but only a few have been implemented, leading to skepticism about new projects.

Key Features of the Ken-Betwa Link Project



Project Components:

Construction of the Daudhan Dam.

Canal systems for effective water distribution.

Irrigation Benefits:

Expected to irrigate around 1.5 million hectares of farmland.

Aims to increase agricultural yield and improve farmers' livelihoods.

Challenges Ahead

Environmental Concerns: Critics highlight potential ecological impacts, including habitat disruption and water quality issues.

Implementation Hurdles: The complexity of the project's execution raises questions about timely completion and effective resource allocation.

Conclusion

The Ken-Betwa Link Project promises to be a transformative force in Madhya Pradesh. While it carries immense potential for improving irrigation and agricultural productivity, it also faces challenges that need to be addressed thoughtfully. As the project progresses, its true impact on the region and its people will unfold.

Topic → 20 Years After the Indian Ocean Tsunami: Lessons Learned and Future Preparedness

The Catastrophic Event: A Timeline

The 2004 Indian Ocean tsunami stands as a harbinger of nature's ferocity, a seismic event that irrevocably altered the landscape of disaster management.

- Magnitude & Location: On December 26, 2004, a colossal earthquake of 9.1 magnitude erupted off the Sumatran coast, generating the third-largest tsunami since 1900.
- Geological Context: The earthquake emanated from a depth of 30 km in the Sunda Trench, where the Indo-Australian plate subducts beneath the Burma microplate.
- Widespread Impact: The tsunami ravaged coastlines across 17 countries, including Indonesia, Thailand, and Sri Lanka, leading to an unparalleled loss of life and property.

Scientific Advancements Post-2004

In the aftermath of the tsunami, the scientific community rallied to enhance our understanding of tsunami dynamics and develop more effective monitoring systems.

Indian Tsunami Early Warning Centre (ITEWC): Established in 2007, ITEWC has become a cornerstone of tsunami monitoring in the Indian Ocean. Utilizing a network of seismological stations and bottom pressure recorders, it can transmit early warnings within minutes.

Tsunami Geology: The disaster prompted significant advancements in tsunami geology research, leading to the discovery of historical tsunami events through sediment analysis. This research has illuminated our understanding of past geological events that shaped the coastal landscape.

Lessons Learned for Future Preparedness

The 2004 tsunami underscored the importance of preparedness and risk management in the face of natural disasters.

Community Engagement: Involving local communities in preparedness programs has proven crucial. Educational initiatives and drills can significantly enhance response times and effectiveness during actual events.

Disaster Risk Reduction Strategies: Nations bordering the Indian Ocean have implemented comprehensive disaster risk reduction strategies, focusing on infrastructure resilience and community preparedness.

Current Risks and Global Vigilance

Despite advancements, the threat of tsunamis remains. Ongoing vigilance and research are paramount.

Identifying Vulnerable Regions: Areas such as the Makran Coast and the northern Arabian Sea are potential hotspots for future tsunamis.

International Cooperation: Enhanced collaboration among nations is essential for sharing data and resources to mitigate tsunami risks.

Topic -- Bacteria in brain

For decades, scientists have held the view that the human brain is a sterile fortress, impervious to microbial intrusions thanks to the formidable blood-brain barrier. However, a groundbreaking study published in *Science Advances* has turned this assumption on its head, revealing that not only can bacteria infiltrate the brain, but they can also thrive there. This revelation stems from research conducted by a team at the University of New Mexico, led by biologist Irene Salinas.

Key Highlights

Study Findings: Identification of living bacteria in the olfactory bulbs and deeper brain tissues of salmon and trout.

Significance: Challenges the long-standing belief about brain sterility and opens new avenues for research on brain health and microbiomes.

Study Findings: Bacteria in Fish Brains

The research team employed DNA extraction and microscopic imaging to uncover the presence of bacteria in various brain regions of salmon and trout. The olfactory bulb, which is directly connected to the nasal cavity, was found to harbor bacteria, along with deeper-lying brain tissues.

Bacteria Identification: Living bacteria were discovered in the olfactory bulbs, indicating a complex relationship between the brain and microorganisms.

Quotes from Researchers: "Our findings demonstrate that microorganisms redefine the boundaries between microbiota and the healthy vertebrate brain."

Mechanisms of Bacterial Survival

The study reveals that bacteria have developed unique adaptations enabling them to cross the blood-brain barrier. Some bacteria produce molecules called polyamines that help to open tight junctions in the barrier, while others evade immune responses, ensuring their survival in the delicate brain environment.

Key Mechanisms:

Production of polyamines to breach the barrier.

Ability to outcompete rival microbes and evade immune detection.

Implications for Human Health

The implications of this study extend beyond fish, raising significant questions about the potential existence of a human brain microbiome. If bacteria can thrive in fish brains, it opens the door to the possibility that similar dynamics exist in humans.

Potential Health Implications:

- Influence on mood, immunity, and overall brain function, similar to how the gut microbiome regulates various physiological processes.
- Possible links to neurological diseases and conditions.

Topic - Tsunami and further steps

The 2004 tsunami was not just a natural disaster; it was a global catastrophe that affected numerous countries, leaving behind a trail of destruction and lessons that we must not forget.

As we reflect on this tragic event, it’s crucial to consider the six critical lessons that emerged from the aftermath.

These lessons not only highlight the vulnerabilities exposed by the tsunami but also emphasize the importance of proactive measures to mitigate future disasters

| Lesson 1: The Importance of Mangroves

Natural Protection Against Waves

One of the most significant lessons learned from the tsunami is the vital role that mangroves play in protecting coastal areas. These natural barriers serve as buffers against powerful waves, absorbing their energy and reducing the impact on human settlements. Unfortunately, the destruction of mangroves in countries like India, primarily for shrimp farming and tourism, has disrupted this natural ecosystem. Ironically, the construction of artificial barriers, such as brick and mortar walls, can sometimes increase vulnerability to wave damage rather than provide protection. |

Lesson 2: Keeping Common Resources Public

The Impact of Privatisation in Thailand

The tsunami also taught us about the importance of keeping common resources, like beaches, in the public domain. In Thailand, the privatisation of coastlines during the 1980s and 1990s led to the development of hotels and leisure activities, displacing local communities. This shift not only altered the social fabric but also resulted in significant changes in labor dynamics, including the rise of the sex industry. The lesson here is clear: when public resources are privatized, the local population often bears the brunt of the consequences. |

| Lesson 3: Winners and Losers in the Market

Economic Disruption Post-Tsunami

The tsunami created a stark divide between winners and losers in the market. While rents and prices for goods and services skyrocketed, benefiting asset owners and service providers, many local communities faced economic hardship.

The disruption of local markets led to a reliance on externally sourced goods, undermining traditional livelihoods.

The push for mechanized fishing displaced artisanal practices, leading to overfishing and environmental degradation. Addressing these economic shifts is crucial for rebuilding resilient communities. |

Lesson 4: Worsening Inequalities

Access to Relief and Rehabilitation

The tsunami highlighted the existing social inequalities that often worsen during disasters. In countries like India, relief efforts can inadvertently reinforce discrimination and marginalization.

Vulnerable groups, including laborers, ethnic minorities, and women, often find their needs overlooked in the distribution of aid.

For instance, undocumented migrants in Thailand faced significant barriers to accessing medical care, while Tamil minorities in Sri Lanka received less assistance despite greater devastation. This underscores the need for equitable relief efforts that consider the diverse needs of affected populations.

| Lesson 5: Gender-Insensitive Policies

The Vulnerability of Women

Gender insensitivity in relief and rehabilitation policies often exacerbates the vulnerability of women. In fishing communities, women play crucial roles in processing and marketing fish, yet they rarely own property or assets. During the tsunami recovery, many women found their livelihood needs overlooked, as relief packages were distributed based on lists that often excluded them. This highlights the importance of addressing social divisions and ensuring that women have equal access to relief measures.

| Lesson 6: Engagement with Local Structures

Respecting Community-Based Institutions

Finally, the tsunami revealed the importance of engaging with local structures and respecting community-based institutions. In coastal communities, democratic practices often rely on active debate rather than formal elections. However, outside agencies frequently impose their own notions of democracy, undermining local capacities and resilience. A long-term engagement with local structures is essential for addressing issues like gender insensitivity and fostering community resilience.

| Conclusion

The 2004 tsunami was a wake-up call for the global community. The lessons learned from this disaster are not just historical footnotes; they are essential guidelines for building more resilient societies. By prioritizing natural protections, ensuring equitable access to resources, and respecting local institutions, we can better prepare for future disasters and mitigate their impacts. |

Topic → The Disaster Management (Amendment) Bill, 2024: A Cause for Concern

Introduction

The Disaster Management (Amendment) Bill, 2024, has stirred up quite a bit of controversy. Instead of addressing the gaps in the Disaster Management Act (DMA) of 2005, it seems to have taken a step back, removing essential elements like participatory governance, accountability, and efficiency. So, what’s really going on here? Let’s dive into the details.

The Gaps in the Disaster Management Act (DMA)

Semantic Issues

Top-Down Terminology

One of the first red flags in the Bill is its use of guarded terminology. Words like "monitor" and "guidelines" create a top-down approach that feels more bureaucratic than collaborative. Wouldn't it be better to use terms like "supervision" and "direction"? This could foster a sense of trust and partnership with local communities and governments.

Definitions Without Substance

While the Bill does define terms like "hazard," "resilience," and "vulnerability," these definitions feel hollow. They lack the acknowledgment of the vital roles that local communities, panchayats, and NGOs play in disaster management. Remember Cyclone Aila in 2009? Villagers were rescuing people long before the National Disaster Response Force could arrive. This shows the importance of local knowledge and capacity.

The Role of Local Communities

First Responders in Action

Local communities are often the first responders during disasters. They have the knowledge and experience to act quickly and effectively. Ignoring their contributions in the Bill is a significant oversight. It’s like trying to build a house without a solid foundation—good luck with that!

Intersectional Discrimination

Ignoring Vulnerability

The Bill also falls short in addressing intersectional discrimination. It’s crucial to recognize that women, the disabled, lower castes, and LGBTQIA communities face unique challenges during disasters. By ignoring these layers of vulnerability, the Bill weakens its claim to be holistic and inclusive.

Accountability and Performance Evaluation

The Omission of Key Sections

Another glaring issue is the lack of accountability measures. The Bill omits critical sections from the DMA that ensured minimum standards of relief for disaster victims. What happened to provisions for widows, orphans, and the homeless? Without these, the Bill leaves a significant gap in support for those who need it most.

Law and Order Exclusion

The Role of Police in Disaster Management

Interestingly, the Bill excludes "law and order" from its scope. Yet, it still includes State Director Generals of Police in the State Executive Committees. This contradiction raises questions about the Bill's coherence and effectiveness in managing disasters.

Speciesism in Disaster Management

The Neglect of Animal Welfare

Let’s not forget about our furry friends. The Bill fails to mention the thousands of animals that perish during disasters. The District Disaster Management Authorities seem to have little responsibility in implementing animal welfare rules. This oversight is not just a gap; it’s a moral failing.

Urban Disaster Management Authority (UDMA)

The Need for UDMA

The introduction of an Urban Disaster Management Authority (UDMA) raises eyebrows. What’s the need for this additional authority? Municipal Corporations already control land and property taxation. How can they improve disaster management when they often contribute to urban flooding through poor planning?

Regional Collaboration

The Importance of International Cooperation

In a world grappling with zoonotic diseases and other global challenges, regional collaboration is more important than ever. The Bill could have mentioned regional groupings like SAARC and BIMSTEC to enhance disaster response. Ignoring these opportunities for international cooperation is a serious oversight.

Conclusion

In summary, the Disaster Management (Amendment) Bill, 2024, raises serious concerns. Instead of filling the gaps in the DMA, it seems to have created new ones. By sidelining local communities, ignoring intersectional vulnerabilities, and lacking accountability, the Bill risks undermining effective disaster management. It’s time for a rethink—because when it comes to disaster management, we can’t afford to get it wrong.

Topic → U.S. and China renew S&T Agreement

The world of science and technology is ever-evolving, and the relationship between two of its major players, the United States and China, has been a focal point of global attention. On December 13, 2023, these two nations agreed to extend their Agreement on Cooperation in Science and Technology for another five years, effective from August 27, 2024. This decision has been met with optimism, as it signifies a commitment to collaboration in a field that is crucial for both countries' futures.

Historical Context of the Agreement

The First Signing in 1979

The roots of this agreement trace back to January 31, 1979, when Chinese leader Deng Xiaoping and U.S. President Jimmy Carter signed the original pact. This was a time when both nations were just beginning to establish diplomatic relations, and they recognized the potential benefits of cooperating on agricultural research and technology.

Evolution Over the Years

Since its inception, the agreement has been renewed every five years, expanding its scope to include various fields, from agriculture to nuclear fusion. Governed by the U.S.-PRC Joint Commission on Scientific and Technological Cooperation, the agreement has seen the appointment of co-chairs and executive agents from both countries, along with numerous sub-agreements. |

Importance of Bilateral Science and Technology Agreements

Facilitating Cooperation

Bilateral agreements like this one are essential for promoting cooperation in science and technology. They often serve as frameworks for more specific agreements and pacts, paving the way for collaboration that extends beyond state institutions.

The Role of Joint Research

These agreements facilitate joint research initiatives, allowing scientists and researchers from both countries to work together on projects that can lead to groundbreaking discoveries.

Mobility for Students and Scientists

Additionally, they encourage the mobility of students and scientists, fostering an environment where knowledge and expertise can flow freely between nations. |

Key Features of the Renewed Agreement

Addressing Conflicts

The renewed agreement comes at a time when tensions between the U.S. and China have been rising, particularly regarding technology exports and concerns about China's growing prowess in science and technology.

Enhanced Researcher Safety

To address these issues, the amended agreement includes measures to enhance researcher safety and ensure data reciprocity.

Data Reciprocity Measures

The collaboration will now focus on intergovernmental levels, basic research, and previously identified themes of mutual benefit, while excluding cooperation in critical and emerging technologies. |

| Concerns and Challenges

Intellectual Property Rights Issues

Despite the positive aspects, there are concerns regarding intellectual property rights and China's ability to leverage the research ecosystem. Reports have indicated that China has commercialized U.S. research without providing benefits to American counterparts.

U.S. Response Options

Before renewing the agreement, the U.S. faced three options: renew as usual, rescind, or renew with new restrictions. Ultimately, the U.S. chose the latter, indicating a desire to maintain some level of cooperation while addressing concerns. |

Gains for the U.S.

China's Rise in Global Science

Since the 1970s, China has transformed from a junior partner to a formidable competitor in global science. Its R&D spending skyrocketed from $375 million in 1979 to $442 billion in 2021, making it a significant player in the field.

The Value of Cooperation

The U.S. has also benefited from this agreement, as evidenced by the increasing number of co-authored papers and the growing presence of Chinese students in American universities. This cooperation has proven valuable for both nations, allowing them to leverage each other's strengths. |

| Conclusion

The renewed U.S.-China Agreement on Cooperation in Science and Technology is a testament to the importance of collaboration in an increasingly interconnected world. While challenges remain, the agreement provides a framework for addressing concerns and fostering innovation. As both countries navigate their complex relationship, the focus on science and technology cooperation will be crucial for their mutual growth and global leadership. |

Topic → Understanding the Online Safety Amendment (Social Media Minimum Age) Bill

The Online Safety Amendment (Social Media Minimum Age) Bill, 2024, marks a pivotal shift in Australia's approach to online safety. This legislation mandates that certain social media platforms must take reasonable steps to prevent Australian children under the age of 16 from creating accounts. The primary goal? To mitigate the risks and potential harms associated with social media use among young users.

->The bill inserts a new part in the existing Online Safety Act of 2021, aimed at reducing harm to age-restricted users.

->It specifically targets age-restricted social media platforms (ARSMP), encompassing popular services such as TikTok, Facebook, and Instagram.

-> As articulated by the Australian Minister of Communication, the legislation aims to safeguard children from the potential dangers of online interactions.

Implementation of Age Restrictions

The enforcement of this law will be a significant challenge for social media providers.

- Social media platforms must implement robust age verification mechanisms to ensure compliance.
- The bill outlines penalties for failure to meet these obligations, with fines reaching up to $49.5 million for non-compliance.
- However, the term "reasonable steps" remains ambiguous, leading to uncertainties about implementation.

Key Points of Enforcement:

- **Guidelines from the eSafety Commissioner:** The Commissioner will draft guidelines to clarify what constitutes reasonable steps for preventing underage accounts.
- **Age Verification Requirement:** All users on ARSMPs will need to verify their age.
- **Consultation with Stakeholders:** The government will engage with various stakeholders to determine acceptable age assurance technologies.

Privacy Concerns and Age Assurance Technologies

While the intent behind the bill is to protect children, there are significant privacy concerns tied to the implementation of age assurance technologies.

- **Data Collection Risks:** These technologies may gather extensive personal information, raising alarms over data privacy and security.
- **Legal Obligations:** Entities holding personal information will face new privacy obligations, including the destruction of data after its intended use.
- **Potential Penalties:** Violations of privacy regulations may trigger penalties under the Privacy Act of 1988.

Considerations Regarding Privacy:

The need for a delicate balance between user safety and privacy rights is paramount.

The government plans to legislate a Digital Duty of Care, holding platforms accountable for user safety and online harms.

Debate: Is Social Media Harmful to Children?

The question of whether social media is harmful to children remains contentious. Emerging research highlights both the benefits and pitfalls of digital interaction.

- Some experts argue that a blanket ban may not effectively address the nuanced risks associated with social media use.

- Critics of the legislation describe it as "rushed" and "reckless," advocating for more tailored solutions rather than sweeping restrictions.

Key Arguments Against the Ban:

- **Impact on Mental Health:** Studies indicate that social media can adversely affect children's mental health, yet complete exclusion may not be the remedy.

- **Call for Evidence-Based Approaches:** Advocates suggest that more nuanced, evidence-based strategies should guide legislative efforts to protect children online.

Topic → African Wild Cat: Leptailurus Serval

Overview

- 🐾 The African wild cat is scientifically known as **`Leptailurus serval`**.
- 🌍 Native to Africa, primarily inhabiting **`savannas`** **and** **`grasslands`**.
- 🦵 Known for its long legs and large ears, aiding in effective hunting.
- 🕊️ Preys on **`small mammals`**, **`birds`**, **and** **`insects`**.
- 🌿 Features a distinctive coat pattern with spots and stripes for camouflage.
- 🐾 Solitary and territorial, marking territory with scent.
- 📉 Faces threats from **`habitat loss`** **and** **`hunting`**.

Conservation Status

The African wild cat is under threat due to habitat destruction and poaching. Conservation efforts are crucial to protect this species and its habitat.

Range
Africa

Size
Up to 18 kg

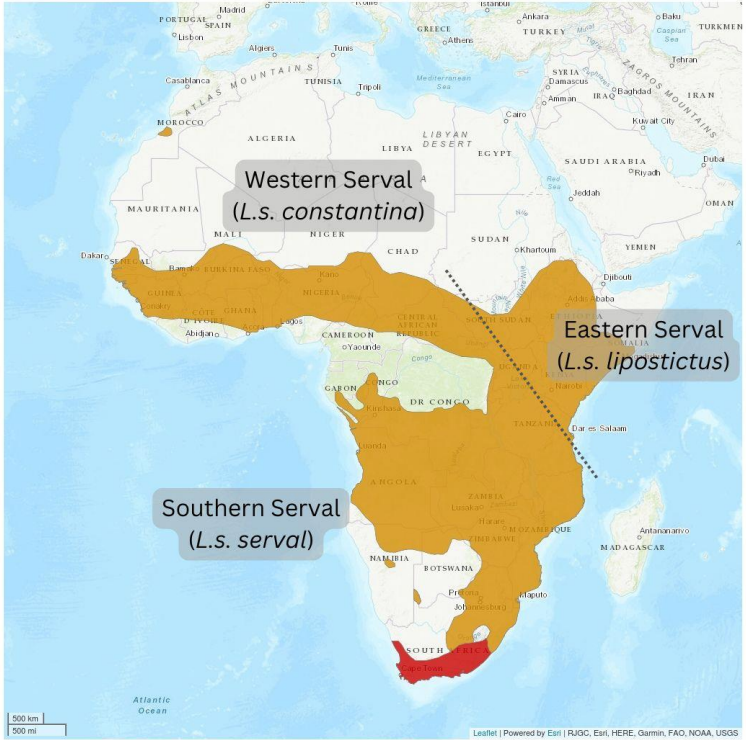
Status
Least Concern

- serval, (*Felis serval*), long-limbed cat, family Felidae, found in Africa south of the Sahara, especially in grass- and bush-covered country near water. A swift, agile cat, the serval climbs and leaps very well. It is a nocturnal hunter preying on birds and small mammals such as rodents and hares.
- The coat is typically long and whitish on the underparts and yellowish to reddish brown above, liberally marked with black spots and stripes. These bold markings are replaced by smaller spots or specks on some individuals, which are known as servaline cats and were once considered a distinct species (*Felis brachyura* or *servalina*).
- The Serval conservation status is Least Concern (LC) globally as the cat is widespread throughout sub-Saharan Africa. However, it is listed as Critically Endangered (CR) for the Mediterranean region due to regional extinctions in North Africa.

Distribution Map

Leptailurus serval

Serval



Legend

- EXTANT (RESIDENT)
- EXTANT & REINTRODUCED (RESIDENT)
- EXTANT & INTRODUCED (RESIDENT)
- EXTINCT
- Approximate Subspecies Border

Compiled by:

IUCN (International Union for Conservation of Nature) 2015

The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

Topic -The Growing Demand for Rare Earths in India

Introduction

- The global shift to cleaner energy has increased the demand for rare earth elements (REEs).
- India, a major carbon emitter, is moving towards renewable energy, increasing its need for REEs.
- Despite being a significant holder of REEs, India relies heavily on imports, especially from China.

The Shift to Cleaner Energy

Transition to renewable energy is essential due to climate change.
Technologies for this transition depend on REEs.
India must secure a stable supply of these materials.

Importance of Rare Earth Elements

REEs are crucial for modern technology, including batteries and electronics.
India's renewable energy goals will increase the demand for these elements.

India’s Current Position

India has vast reserves but struggles with domestic production.
Lacks advanced extraction technologies to fully utilize its resources.

India’s Rare Earth Holdings

Fifth-largest holder of REEs but faces production challenges.
Insufficient domestic output for sectors like electronics and defense.

Dependence on China

India imports 60% of its REEs from China, posing significant risks.
Geopolitical tensions could disrupt supply chains.

The Risks of Reliance

China's control over the REE market is a concern for India.
Recent supply disruptions highlight vulnerabilities.

China’s Monopoly on Rare Earths

China dominates the REE sector, influencing global supply and prices.
This control poses challenges for countries like India.

Production and Supply Chain Control

China holds over one-third of global REEs, affecting availability.
India struggles to secure necessary supplies.

Recent Supply Disruptions

Geopolitical events have complicated the supply chain.
India seeks diversified sources to mitigate risks.

Kazakhstan: A Strategic Alternative

Kazakhstan offers rich REE resources and advanced technologies.
A promising partner for India to reduce dependence on China.

Rich Resources of Rare Earths

Kazakhstan has 15 of the 17 known REEs.
Its mining potential and extraction capabilities are significant.

India-Kazakhstan Relations

Strengthening ties through initiatives like ‘Connect Central Asia’.
Potential economic benefits in the REE sector.

Economic Benefits of Collaboration

Collaboration could provide India with essential REEs.
Supports India's renewable energy goals and reduces reliance on China.

The Future of Rare Earths in India

India's renewable energy targets emphasize the need for REEs.
Must address supply chain capacity issues.

India’s Renewable Energy Goals

Aims for 500 GW of renewable energy by 2030.
Plans to increase mining output to meet these goals.

Diversification Strategies

Diversifying REE sources through global agreements.
Essential for resource security and sustainability.

Conclusion

Collaboration with Kazakhstan offers a promising path for India.
Enhances resource security and supports renewable energy ambitions.
The proposed ‘India-Central Asia Rare Earths Forum’ could foster beneficial partnerships.

Topic →Legalizing Assisted Dying in the UK

Introduction

On November 29,, the House of Commons in Britain voted to legalize assisted dying.
This decision reflects a significant shift in societal attitudes towards this sensitive issue.
The implications for England and Wales are profound, prompting a deeper exploration of the topic.

A Major Shift in Public Opinion

The Vote in the House of Commons:

Represents not just a legislative change but a reflection of evolving public sentiment.
Advocates argue it offers a humane option for those with terminal illnesses.

Public Support for Assisted Dying:

A survey by the U.K. National Centre for Social Research shows 75% support for liberalization.

Understanding Assisted Dying

What is Assisted Dying?

Involves a terminally ill person receiving help from a medical professional to end their life.
Typically involves prescribed medication for self-administration.

The Difference Between Assisted Dying and Euthanasia:

Assisted dying: Individual self-administers medication.
Euthanasia: Medical professional administers the lethal dose.

The Current Legal Landscape

Existing Laws on Assisted Suicide:

Suicide and attempted suicide are not criminal offenses in England and Wales.
Assisting suicide is a criminal act, punishable by up to 14 years under the 1961 Assisted Suicide Act.

The Proposed Bill:

Allows terminally ill, mentally competent adults with less than six months to live to end their lives.
Requires authorization from two doctors and a High Court judge.

The Ethical Debate

Arguments For Assisted Dying:

- Emphasizes personal choice and autonomy.
- Advocates argue for the right to decide how and when to die.

Arguments Against Assisted Dying:

- Concerns about pressure on vulnerable individuals.
- Opponents argue it should not be easier to die than to live.

The Role of the Judiciary

Court Rulings on Assisted Dying:

- U.K. courts have deemed the issue too sensitive for judicial intervention.
- The Supreme Court in 2014 acknowledged the law's incompatibility with certain rights but deferred to Parliament.

International Perspectives

Assisted Dying in India:

- In Common Cause vs. Union of India (2018), The Supreme Court recognized the "right to die with dignity" under Article 21.
    - Legalized passive euthanasia, allowing withdrawal of life support under guidelines.
- In September, the Health Ministry released draft guidelines on withdrawing medical support for terminally ill patients, addressing a regulatory gap that had left healthcare professionals in the lurch. These specify that doctors must refrain from initiating life-support measures when they offer no benefit to the patient and are likely to cause suffering and a loss of dignity

Conclusion

The House of Commons vote is pivotal in the assisted dying debate.
The path forward involves balancing individual rights, healthcare responsibilities, and societal values.

Topic → Article: Empowering Fish Farmers: The Role of Extension Services in India's Aquaculture Revolution

Introduction

- India boasts a cornucopia of fisheries resources, offering livelihoods to approximately three crore fishers and fish farmers.
- With a staggering 83% increase in national fish production since 2013-14, culminating in a record 175 lakh tons in 2022-23, the country stands as the second-largest fish and aquaculture producer globally.
- In this vibrant landscape, enhancing last-mile fisheries and aquaculture extension services is crucial.
- This article delves into the instrumental role of initiatives like Matsya Seva Kendras and Sagar Mitras, focusing on how they provide tailored support to fishers in their quest for sustainable practices.

Understanding Matsya Seva Kendras (MSKs)

Matsya Seva Kendras (MSKs) are envisioned as one-stop solutions under the Pradhan Mantri Matsya Sampada Yojana. These centers are pivotal in offering diverse extension services by trained aquaculture professionals.

Key Services Provided by MSKs:

- Request-based assistance on improved species cultivation and water quality management.
- Addressing challenges faced by seed growers and hatcheries.
- Conducting training sessions to promote sustainable aquaculture practices.

MSKs have become a beacon of hope for fishers, particularly women and marginalized groups, with government assistance covering up to 60% of the setup costs.

The Role of Sagar Mitras

Sagar Mitras serve as an innovative bridge between the government and coastal fishers, ensuring vital information flows effectively.

Functions of Sagar Mitras:

->Compiling daily marine catch data and price fluctuations.

-> Disseminating crucial information on local regulations and weather forecasts.

-> Promoting hygienic fish handling practices and identifying potential fishing zones.

This initiative not only empowers fishers with knowledge but also fosters a sense of community and cooperation among them.

Strengthening Extension Services

To fortify extension and advisory services in fisheries and aquaculture, a dual approach is necessary:

Convergence of Existing Networks:

Integrating MSKs with the Indian Council of Agricultural Research-driven Krishi Vigyan Kendras and state extension services.

Promoting Digital Outreach:

Initiatives like the AquaBazaar platform facilitate virtual learning, enabling fishers to access expert guidance on breeding and seed production.

These enhancements are vital for creating a robust framework that supports fishers in navigating the complexities of modern aquaculture.

Case Studies: Successful MSKs and Sagar Mitras

Examining specific instances, such as the MSK in Thrissur, Kerala, which features a lab for water, soil, and microbial analysis, highlights the practical benefits of these centers. Meanwhile, in Maharashtra, MSKs focus on capacity building, ensuring fishers are well-equipped with the latest technologies and practices.

Future of Fisheries Extension Services in India

Looking ahead, the future of fisheries extension services hinges on addressing current gaps and leveraging technology to enhance service delivery. Recommendations for improvement include:

- Expanding training programs to cover emerging aquaculture practices.
- Strengthening partnerships between government, cooperatives, and fishers to foster innovation.

Out of control

A forest fire management vehicle on a road near a bushfire in the Grampians National Park in Australia's Victoria state. Victorians have been on high alert as the State faced one of its most dangerous fire in years. AFP

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FROM BASICS TO UPSC BRILLIANCE

Topic → Grampians National Park Overview

Highlights of Grampians National Park

- Location: Situated in Victoria, Australia.
- Wildlife: Home to diverse species such as kangaroos and emus.
- Hiking Trails: Offers a variety of trails for different skill levels.
- Landscapes: Features rugged mountains and lush forests.
- Cultural Heritage: Known for Aboriginal rock art sites.
- Activities: Includes rock climbing, camping, and birdwatching.
- Climate: Mediterranean climate with hot, dry summers and cool, wet winters

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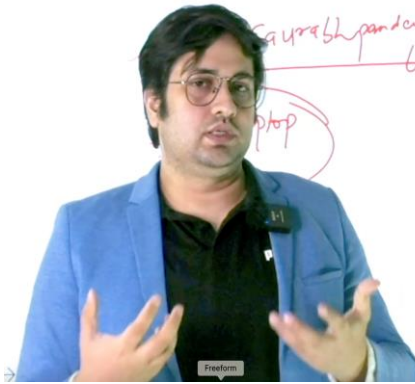
Topics - MINDS MAPS included (Daily current affairs 28th December 2024

- Target UPSC CSE Prelims 2025
- China building DAM
- Why is the Rupee's Value Falling?
- Understanding the Current Account Deficit:
- Impeachment of the South Korean President:
- UN Security Council Approves AUSSOM Mission
- Mains



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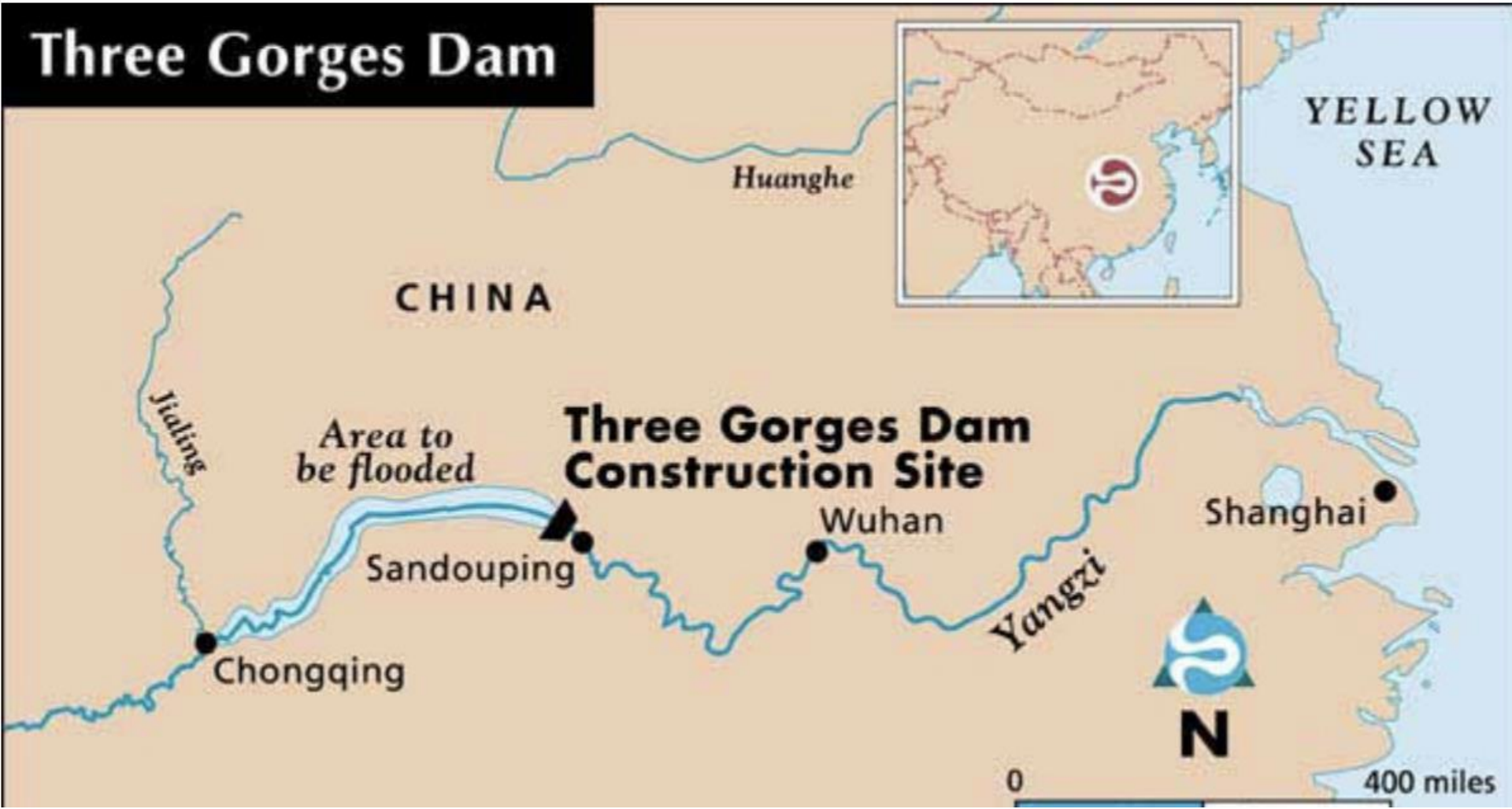
THE HINDU

Topic → China building DAM

China's recent approval to construct the world's largest dam on the Brahmaputra River in Tibet has stirred significant discourse, not only about hydropower potential but also regarding regional geopolitical dynamics.

The $137 billion project, touted as a beacon of clean energy advancement, is set against the backdrop of pressing concerns from neighboring countries, particularly India and Bangladesh.

Great Wall
Beijing
Sanmenxia Dam
Yellow River
YELLOW SEA
Banqiao reservoir
Three Gorges Dam
Jialing River
Reservoir
Wuhan
Yangtze River
Chongqing
Sandouping
Shanghai
Poyang Lake
0
500
Kilometres
C H I N A


Three Gorges Dam
YELLOW SEA
Huanghe
CHINA
Jialing
Area to be flooded
Three Gorges Dam Construction Site
Wuhan
Shanghai
Sandouping
Yangzi
Chongqing
N
0
400 miles

China's Justification for the Project

Official Statements: China’s Foreign Ministry spokesperson, Mao Ning, has asserted that the dam will not adversely impact downstream nations, emphasizing that extensive studies have been conducted to assess the environmental ramifications.

Historical Context: The project is rooted in decades of hydropower development studies in the ecologically sensitive Himalayan region, specifically designed to harness renewable energy effectively.

Safety Measures: Mao has highlighted that measures have been instituted to ensure the dam's safety, addressing concerns about the region's seismic activity due to its position along a tectonic plate boundary.

Concerns from Neighboring Countries

India and Bangladesh's Apprehensions: Both nations have voiced serious concerns regarding potential alterations in water flow, which could jeopardize their agricultural and drinking water supplies.

Environmental Impacts: Environmentalists warn of the ecological consequences of such a massive construction, which could disrupt local ecosystems and the livelihoods that depend on them.

The Economic Implications of the Dam

Investment and Anticipated Benefits: The total investment could surpass $137 billion, with expectations that the dam will significantly bolster China's clean energy output and contribute towards combating climate change.

Job Creation and Economic Growth: The project is poised to create thousands of jobs and stimulate economic growth in the region, potentially transforming the local economy.

International Relations and Cooperative Efforts

- **Communication with Lower Riparian States:** Mao assured that China intends to maintain robust communication with India and Bangladesh, aiming to foster cooperation on disaster prevention and relief efforts.
- **Regional Collaboration:** The emphasis on collaborative water management could pave the way for improved relations and joint efforts to mitigate risks associated with hydrological disasters.

Conclusion

The Brahmaputra Dam project symbolizes a critical juncture in China's renewable energy ambitions, yet it also brings to light the intricate web of regional politics and environmental stewardship. As the construction progresses, the eyes of the world will be on China and its neighboring countries to see how these dynamics unfold.

Topic → Why is the Rupee's Value Falling?

The Indian Rupee (INR) has been facing significant challenges recently, leading to a notable decline in its value. Understanding the intricate dynamics at play can help us navigate this financial phenomenon.

Understanding Currency Value

The value of a currency is a reflection of its purchasing power and stability within the global market. A stable currency is crucial for economic growth, trade, and investment. When the value of the rupee falls, it has far-reaching implications for the economy, impacting everything from inflation to foreign investments.

Rupee's Record Low Against the U.S. Dollar

- The rupee fell to a lifetime intraday low of 85.80, marking its steepest decline in nearly two years.
- It settled at a record low of 85.48 against the U.S. dollar after a suspected intervention by the Reserve Bank of India (RBI).
- The decline was influenced by a strong U.S. dollar and increased month-end demand from banks and importers.
- The RBI's strategy to hold dollar payments in short-term forward contracts contributed to a shortage of dollars.
- Despite positive sentiment in domestic equity markets, the rupee faced pressure from foreign fund outflows and rising crude oil prices.
- The rupee opened at 85.31 and dropped 53 paise to reach its lowest intraday level.
- Rising U.S. bond yields increased the dollar's attractiveness, further impacting the rupee's value.

Summary: The rupee hit a record low of 85.80 against the U.S. dollar due to strong dollar demand, RBI policies, and external economic pressures.

Factors Influencing the Rupee's Decline

Strong U.S. Dollar: Increased demand from banks and importers.

RBI's Intervention: Holding dollar payments in short-term forward contracts.

External Pressures: Foreign fund outflows and rising crude oil prices.

U.S. Bond Yields: Increased attractiveness of the dollar

Current Economic Landscape

The Indian economy is currently grappling with various challenges, including:

High Inflation Rates: Persistently high inflation has eroded the purchasing power of the rupee.

Interest Rate Fluctuations: Changes in interest rates by the Reserve Bank of India (RBI) can influence foreign capital flows.

Trade Deficits: A growing trade deficit puts downward pressure on the currency.

Factors Contributing to the Rupee's Decline

The depreciation of the Indian Rupee can be attributed to several key factors:

Inflation Rates:
Inflation erodes the value of money, leading to decreased purchasing power.

Interest Rates:
Lower interest rates may deter foreign investment, affecting the demand for the rupee.

Trade Deficits:
A higher import bill than exports creates a negative balance of payments, weakening the currency.

Global Economic Influences:
External factors such as global market volatility, geopolitical tensions, and changes in foreign investment policies also play a crucial role.

Impact of the Falling Rupee

The decline in the value of the rupee has significant implications for various sectors:

- **Effects on Imports and Exports:**
  - A weaker currency makes imports more expensive, while exports may become cheaper for foreign buyers.
- **Implications for Foreign Investments:**
  - Foreign investors may be deterred by currency instability, leading to reduced inflows.
- **Consequences for the Average Consumer:**
  - Higher prices for imported goods can lead to increased living costs, affecting the daily lives of consumers.

Topic → India's Economic Overview for Q2 2024-25

📉 **Current Account Deficit (CAD):**

$11.2 billion, or 1.2% of GDP

Slight decrease from $11.3 billion (1.3% of GDP) a year ago

🎁 **Merchandise Trade Deficit:**

Increased to $75.3 billion from $64.5 billion in Q2 2023-24

💼 **Net Services Receipts:**

Rose to $44.5 billion, up from $39.9 billion a year ago

Growth in computer, business, travel, and transportation services

🌍 **Net Foreign Direct Investment (FDI):**

Recorded an outflow of $2.2 billion, compared to a $0.8 billion outflow last year

📈 **Net Inflows from Foreign Portfolio Investments:**

Surged to $19.9 billion, up from $4.9 billion a year ago

💰 **Foreign Exchange Reserves:**

Increased by $18.6 billion on a BoP basis, compared to $2.5 billion a year ago

Understanding the Current Account Deficit: Implications and Trends

What is a Current Account Deficit?

A current account deficit occurs when a country's total imports of goods, services, and transfers exceed its total exports. This imbalance can signify various economic conditions, including higher domestic consumption or lower production capacity. Understanding this concept is crucial for grasping the nuances of international trade.

Components of the Current Account:

Goods: Tangible products traded across borders.

Services: Intangible offerings such as banking, tourism, and technology.

Income: Earnings from investments and wages.

Transfers: Remittances and aid.

Current Trends in Global Economies

Recent reports highlight significant trends in current account deficits, especially in countries like India and the U.S. For instance, India’s current account gap narrowed to 1.2% of GDP in the latest quarter, reflecting improving trade balances and economic recovery. Similarly, the U.S. has faced persistent deficits, raising concerns about its long-term economic sustainability.

- **India's Current Account Gap:**
  - Narrowed to 1.2% of GDP (July-September).
  - Factors contributing include rising exports and decreased imports.
- **U.S. Trends:**
  - Ongoing deficits affecting currency value.
  - Impact on international investment flows.

Factors Influencing the Current Account Deficit

The current account deficit is influenced by multiple factors, including trade balances, currency strength, and economic policies. A country that imports more than it exports will typically run a deficit, which can lead to depreciation of its currency.

Trade Balances: A direct correlation exists between a nation’s imports and exports.

Role of Services Exports: Countries focusing on services can mitigate deficits despite lower goods exports.

Currency Fluctuations: A weaker currency can make imports more expensive, potentially increasing the deficit.

Implications of a Persistent Current Account Deficit

A prolonged current account deficit can have significant implications for a country's economy. It may lead to increased foreign debt, affect currency stability, and influence inflation rates.

Economic Consequences:

Increased foreign borrowing.

Potential vulnerability to external shocks.

Long-term Sustainability:

Continuous deficits could lead to a loss of investor confidence.

Measures such as improving exports and reducing imports are essential.

Topic → Impeachment of the South Korean President: A Political Turmoil Unfolds

In a dramatic twist, South Korean lawmakers have voted to impeach acting president Han Duck-soo amid escalating political turmoil. As the nation grapples with this upheaval, we delve into the intricacies of the situation, exploring the motives behind the impeachment and its potential ramifications

Details of the Impeachment

The impeachment vote was a significant moment in South Korean politics, reflecting deep divisions among lawmakers.

- **Voting Process:** A decisive majority supported the impeachment, highlighting the growing discontent with Han's leadership.
- **Party Dynamics:** The Democratic Party rallied behind the impeachment, while the Conservative Party staunchly opposed it.

Consequences of the Impeachment

The fallout from Han Duck-soo's impeachment raises questions about the future of South Korean governance.

- Governance and Stability: The interim government faces challenges in maintaining order and public confidence.
- Public Sentiment: Mass protests have erupted, reflecting both support and opposition to the impeachment.

"The political landscape is charged with emotion, as citizens express their views through protests and public discourse."

Looking Ahead

The future of South Korea remains uncertain as the nation contemplates its next steps post-impeachment.

- **Upcoming Elections:** Speculation surrounds who might emerge as the next presidential candidate.

- **Political Stability:** The nation must address the underlying issues that led to the crisis.

Impeachment Process in South Korea

Overview of the Impeachment Process

📜 **Initiation:** The impeachment process is initiated by the National Assembly of South Korea.

⚖️ **Voting Requirement:** A two-thirds majority vote is necessary in the National Assembly to pass the impeachment motion.

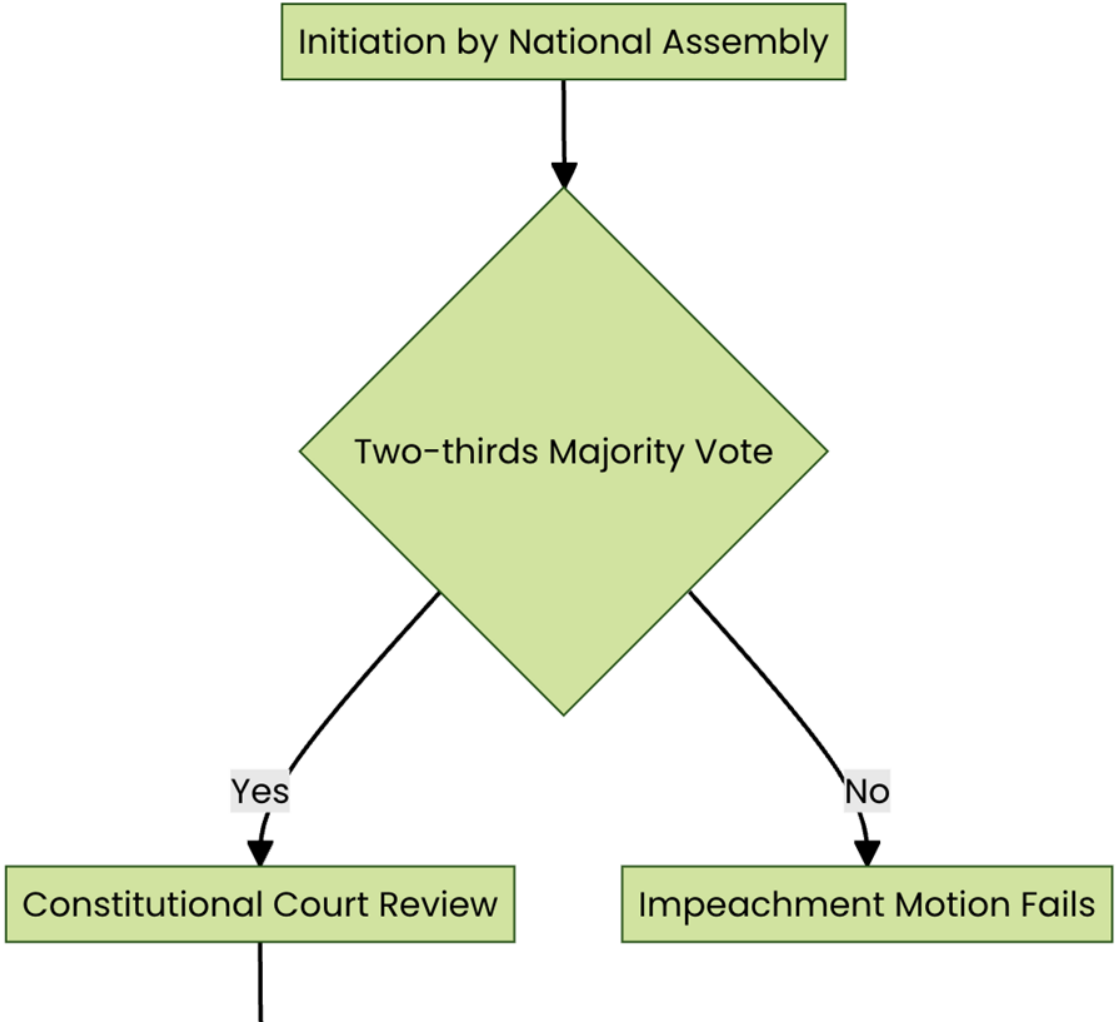
 Judicial Review: The Constitutional Court of South Korea reviews and decides on the validity of the impeachment.

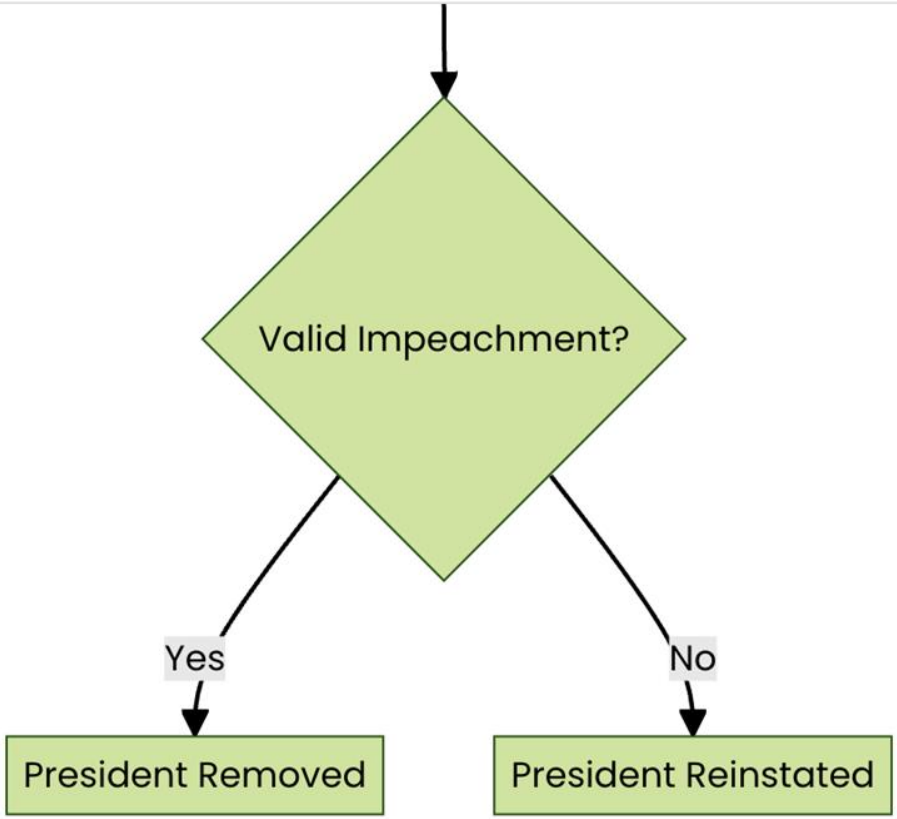
 Suspension of Duties: The President is suspended from duties during the impeachment process until a final decision is reached.

📋 **Grounds for Impeachment:** Charges can include corruption, abuse of power, or violation of the Constitution.

 Public Influence: Public opinion and protests often significantly influence the impeachment process.

🔍 **Outcome**: The process can result in either the reinstatement of the President or removal from office.


Initiation by National Assembly
Two-thirds Majority Vote
Yes
No
Constitutional Court Review
Impeachment Motion Fails



Summary: The impeachment of the South Korean President is a formal process requiring a two-thirds vote from the National Assembly, followed by a review from the Constitutional Court.

Topic → UN Security Council Approves AUSSOM Mission for Somalia

Overview of AUSSOM Mission

🌍 The UN Security Council has authorized the African Union Stabilisation and Support Mission in Somalia (AUSSOM) to begin on January 1, 2025.

🔄 AUSSOM will replace the existing larger AU anti-terrorism operation.

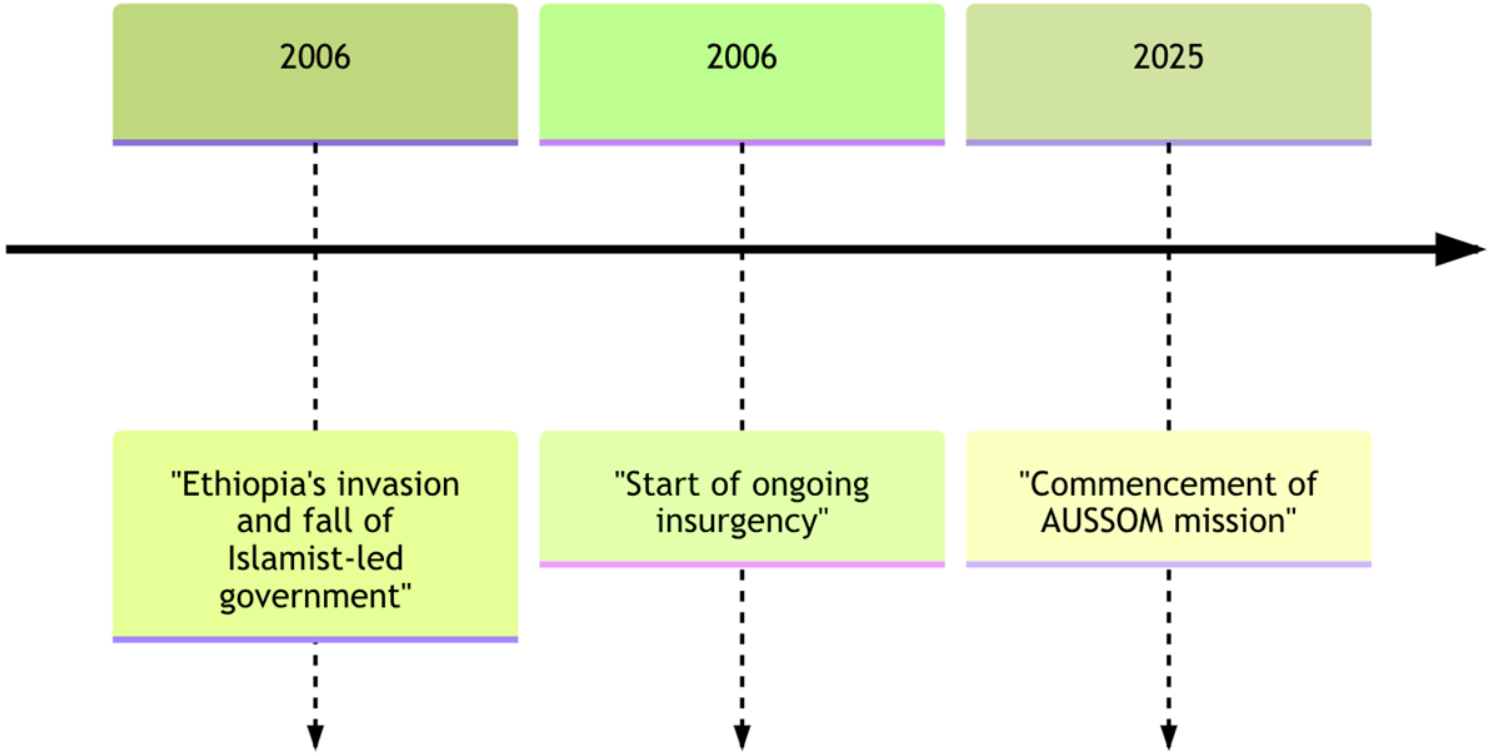
ET Somalia's security has been dependent on foreign resources since Ethiopia's invasion in 2006, which led to the fall of an Islamist-led government and sparked an ongoing insurgency.

Funding and International Concerns

- 💰 The EU and US, major funders of AU forces in Somalia, are worried about the sustainability and long-term financing of peacekeeping efforts, leading to a desire to reduce troop numbers.

- Negotiations regarding the new AUSSOM force have been complex, highlighting the challenges in establishing a stable security framework.

Timeline of Somalia's Security Events



UN Security Council Vote

- The US abstained from the UN Security Council vote due to funding concerns, while the other 14 council members supported the resolution.
- The ongoing insurgency in Somalia has resulted in tens of thousands of deaths since 2006.

Summary

The UN Security Council has approved the AUSSOM mission to stabilize Somalia, set to replace the current AU operation in 2025, amid funding concerns from key international supporters.

Target UPSC CSE PRELIMS 2025

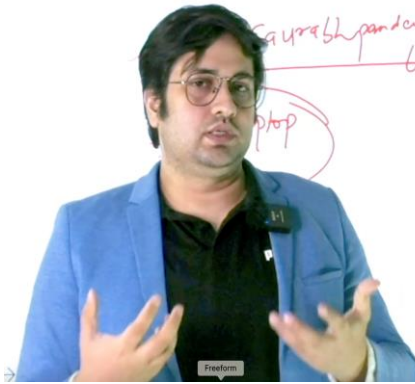
Prelims Crash course - starting - 4th JAN

Science and tech course - 10th jan

Prelims current affairs course - 15th JAN

Topics - MINDS MAPS included (Daily current affairs 29th December 2024

- Target UPSC CSE Prelims 2025
- Pacific Marine Heatwave and Seabird Decline.
- Lithocholic Acid and Lifespan Extension
- Neanderthal DNA and Human Genomes: New Insights
- Human Skin's Immune Capabilities
- Durian Flowering and Climate Impact
- Tropical Cyclones: Impacts and Predictions
- Mains



By saurabh Pandey

THE HINDU

Topic → Pacific Marine Heatwave and Seabird Decline

Impact of the 2014-2016 Pacific Marine Heatwave

🌊 The 2014-2016 Pacific marine heatwave resulted in the death of over four million common murre seabirds in Alaska, marking the largest vertebrate die-off linked to ocean warming.

📉 A study revealed a 52-78% decline in murre populations across 13 colonies from 2008-2014 to 2016-2022, indicating a significant and rapid impact of climate change.

🔍 This research is the first to document swift and intense climate impacts on marine birds, contrasting with previous gradual changes observed over years to decades.

Broader Ecosystem Implications

🌐 Marine heatwaves, which are becoming more frequent due to climate change, disrupt marine ecosystems by causing mass mortality of key species like kelps and corals.

□ The study found no evidence of population recovery for the common murre since the heatwave, suggesting long-term shifts in the ecosystem and reduced capacity to support seabird populations.

⚠□ The decline of a major upper trophic predator like the common murre may indicate a new threshold of ecological response to global warming.

📊 The findings highlight the need for further understanding of broader population impacts and the cascading effects of marine heatwaves on marine ecosystems.

Summary: The 2014-2016 Pacific marine heatwave led to a dramatic decline of over four million common murre seabirds in Alaska, indicating severe and potentially long-lasting impacts of climate change on marine ecosystems

Topic→ Lithocholic Acid and Lifespan Extension

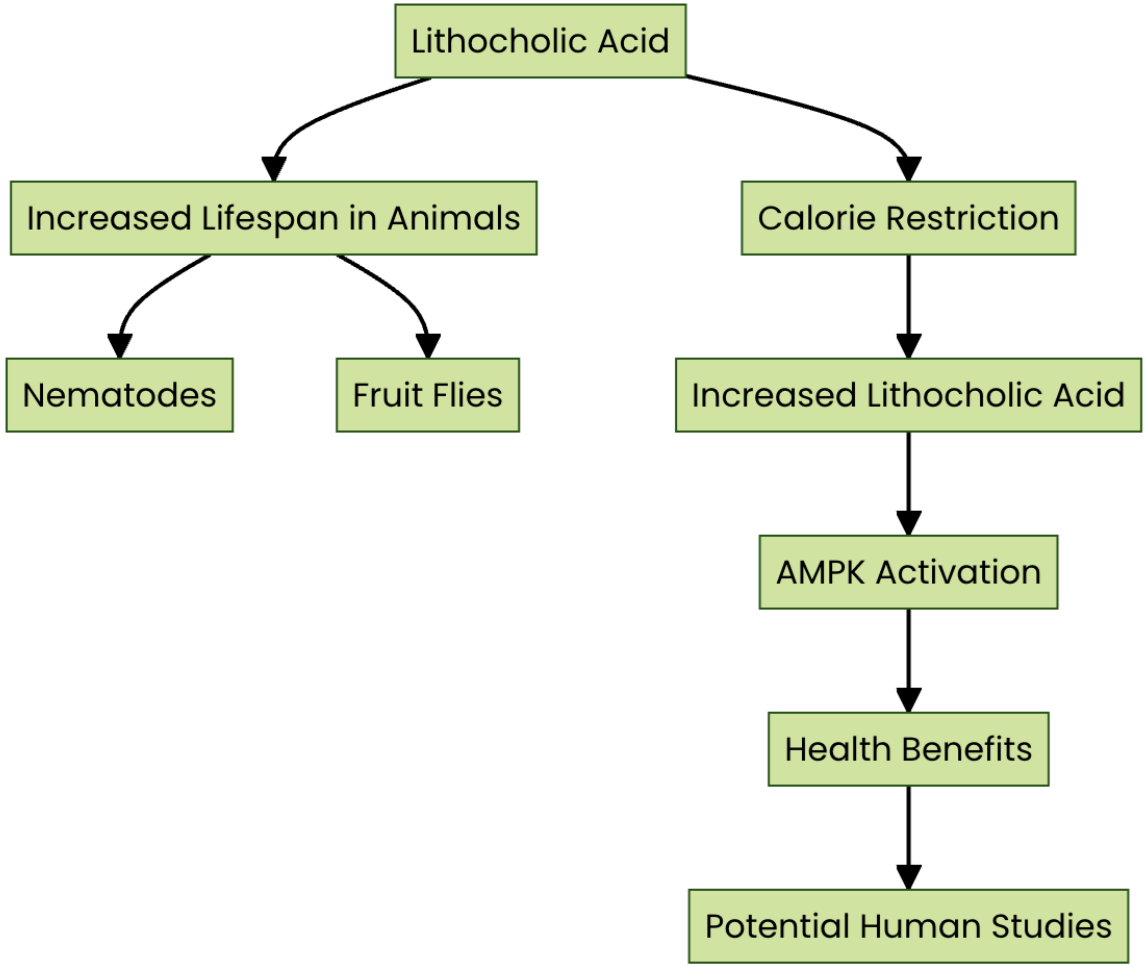
Overview

- Lithocholic acid, a bile component, has been shown to extend the lifespan of certain animals.
- 🐭 In mice studies, lithocholic acid levels rise during calorie restriction.
- ⚙️ It activates the AMPK protein, linked to health benefits from reduced food intake.
- Nematodes and fruit flies fed lithocholic acid lived significantly longer than those not receiving it.
- ❓ No current evidence supports similar lifespan-extending effects in humans.
- 🔬 Research suggests a potential link between calorie restriction and increased lithocholic acid levels.
- Further studies are necessary to explore its effects on human longevity.

Research Insights

Animal Studies: Positive lifespan extension observed in nematodes and fruit flies.
Human Implications: Effects remain unproven; more research is needed

Conceptual Diagram:



Topic → Neanderthal DNA and Human Genomes: New Insights

Recent Discoveries in Neanderthal DNA

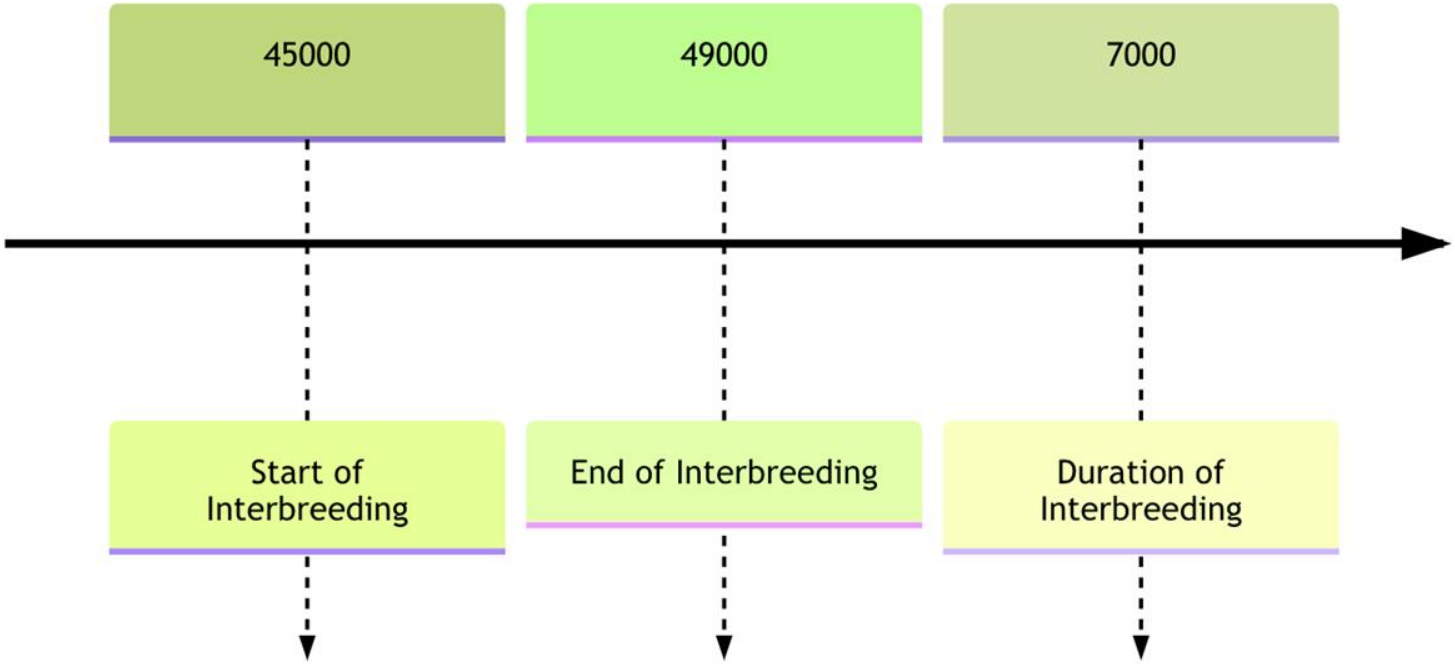
- Neanderthal DNA has been found to enter human genomes more recently than previously believed.
- Interbreeding Period: Occurred over approximately 7,000 years.
- Timeline: Interbreeding events are dated between 45,000 and 49,000 years ago.
- Research Basis: Findings are based on the oldest human genomes ever sequenced.

DE German Discovery: A male Homo sapien genome was discovered near Ranis, Germany.

CZ Czech Discovery: A female Homo sapien genome was found in the Czech Republic.

New Insights: These studies provide fresh perspectives on the timeline of human-Neanderthal interactions

Neanderthal and Human Interbreeding



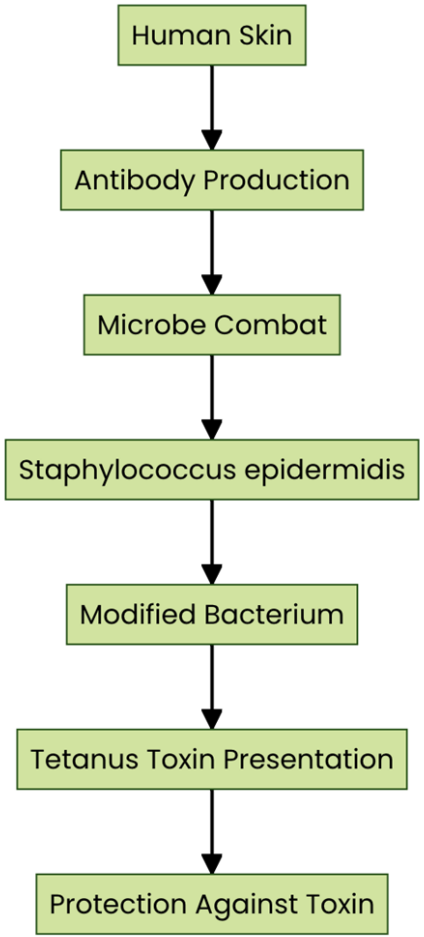
Summary: Recent studies reveal that Neanderthal DNA entered human genomes much more recently than thought, with interbreeding occurring between 7,000 and 49,000 years ago, based on ancient human genomes from Germany and the Czech Republic.

Topic → Human Skin's Immune Capabilities

Skin's Antibody Production

- Human skin has the ability to produce its own antibodies to combat microbes.
- In mice studies, skin generated antibodies even when other immune system parts were disabled.
- Staphylococcus epidermidis, a skin bacterium, is crucial in this antibody production process.
- Researchers modified S. epidermidis to present a part of the tetanus toxin.
- The modified skin response protected mice against a lethal dose of the toxin.
- This discovery suggests potential for harnessing skin's immune capabilities to fight pathogens.
- The findings could lead to new strategies in immunology and pathogen defense.

Antibody Production Process:



Summary: Human skin can autonomously produce antibodies, offering potential for innovative pathogen defense strategies.

Topic → Durian Flowering and Climate Impact

□ Dry Weather Trigger

Observation: 110 durian plants studied.
Trigger: 15 days of dry weather initiates flowering.

✿ Flowering Timeline

Occurrence: 50 days post 15-day dry spell.
Consistency: Applies to both grafted and seed-grown plants.

▥ Rainfall Measurement

Definition: Dry spells are periods with <1 mm rainfall over 15 days.

🌍 Tropical Flowering Connection

Insight: Links durian flowering to tropical flowering bursts post-dry spells

□ Longer Dry Spells for Synchronization

Requirement: 30-day dry spells needed for synchronized flowering across species.

🌱 Multiple Flowering Events

Durian: Flowers multiple times annually.
Other Species: Synchronized flowering occurs once every few years.

🔍 Research Significance

Impact: Highlights climatic influence on durian flowering patterns.

Summary: Research indicates a 15-day dry spell triggers durian flowering 50 days later, offering insights into tropical flowering dynamics.

Durian Plants: The King of Fruits

Overview

🌳 Durian plants are tropical trees renowned for producing the durian fruit, often dubbed the "king of fruits."

🥥 The scientific name for the durian plant is Durio, with multiple species cultivated for their edible fruit.

🌏 These plants thrive in Southeast Asia, especially in countries like Thailand, Malaysia, and Indonesia.

☀️ They require a warm, humid climate and well-drained soil for optimal growth.

🐝 Pollination is carried out by bats and insects, which are vital for their reproduction.

 The fruit is famous for its strong odor, which can be off-putting to some, but is highly valued for its unique taste.

🌱 Durian plants can grow up to 50 meters tall and typically take 4-5 years to bear fruit after planting.

Summary: Durian plants are tropical trees that produce the highly sought-after durian fruit, thriving in warm, humid climates of Southeast Asia.

Topic →Tropical Cyclones: Impacts and Predictions

Overview of Tropical Cyclones

- Tropical cyclones are among the most devastating natural phenomena 🌀
- Significant potential for destruction and loss of life 💔
- The North Indian Ocean basin is particularly vulnerable due to dense populations 📍

Historical Context

- Bhola Cyclone of 1970: The deadliest tropical cyclone on record 📅
- Shifts in patterns, intensity, and frequency necessitate adaptive measures 🔄

Climatic Trends

Bay of Bengal: Higher frequency of cyclones compared to the Arabian Sea 🌊

Recent Increases:

- 52% increase in cyclonic storms in the Arabian Sea 📈
- Threefold rise in very severe cyclonic storms ⛈️

Accumulated cyclone energy is trending upward due to:

- Rising ocean heat content 🌡️
- Decreasing vertical wind shear

Future Projections

Climate change is expected to fuel more powerful cyclones 🔥
Increased precipitation rates due to higher atmospheric moisture ☔
Possible changes:
- More rapid intensification of cyclones □
- Poleward migration of maximum intensity 🌍
- Slower forward motion of cyclones 🐢

Case Study: Cyclone Fengal

Emerged as a low-pressure area over the southeast Bay of Bengal 📍

Unusual trajectory and significant impact on Tamil Nadu's coastline 🌅

Rainfall Impact:
- Locations recording 40-50 cm in a single day □
- Catastrophic losses for farmers and local livelihoods 🚜

Forecasting Challenges

IMD's strong prediction record but faced challenges with Fengal:

- Unconventional track and variable speed
- Struggles with predicting heavy rainfall, particularly during landfall

Need for continuous advancements in modeling techniques and real-time data assimilation 🔍

Critical Needs

Investment in Research: To address knowledge gaps in cyclone forecasting 💡

Prioritize safeguarding lives, livelihoods, and ecosystems from cyclone impacts 🌱

Topic → ISRO's PSLV C60/SpaDeX Mission Overview

🚀 Launch Details

Mission: PSLV C60/SpaDeX
Launch Time: Monday at 9:58 p.m.
Location: Satish Dhawan Space Centre, Sriharikota

□ Space Docking Experiment

Objective: First attempt at Space Docking Experiment (SpaDeX)
Significance: Demonstrates in-space docking with two small spacecraft

🔬 Technological Milestone

Goal: Advance India's space docking capabilities
Importance: Crucial for satellite servicing and interplanetary exploration

🧑‍🚀 Future Missions

Applications: Essential for lunar missions and Indian space station operations

⚖️ Spacecraft Specifications

Spacecraft: Chaser (SDX01) and Target (SDX02)
Weight: Each approximately 220 kg
Orbit: 470-km circular orbit

Separation and Docking Process

Timeline:

SDX02 separates 15 minutes post-launch

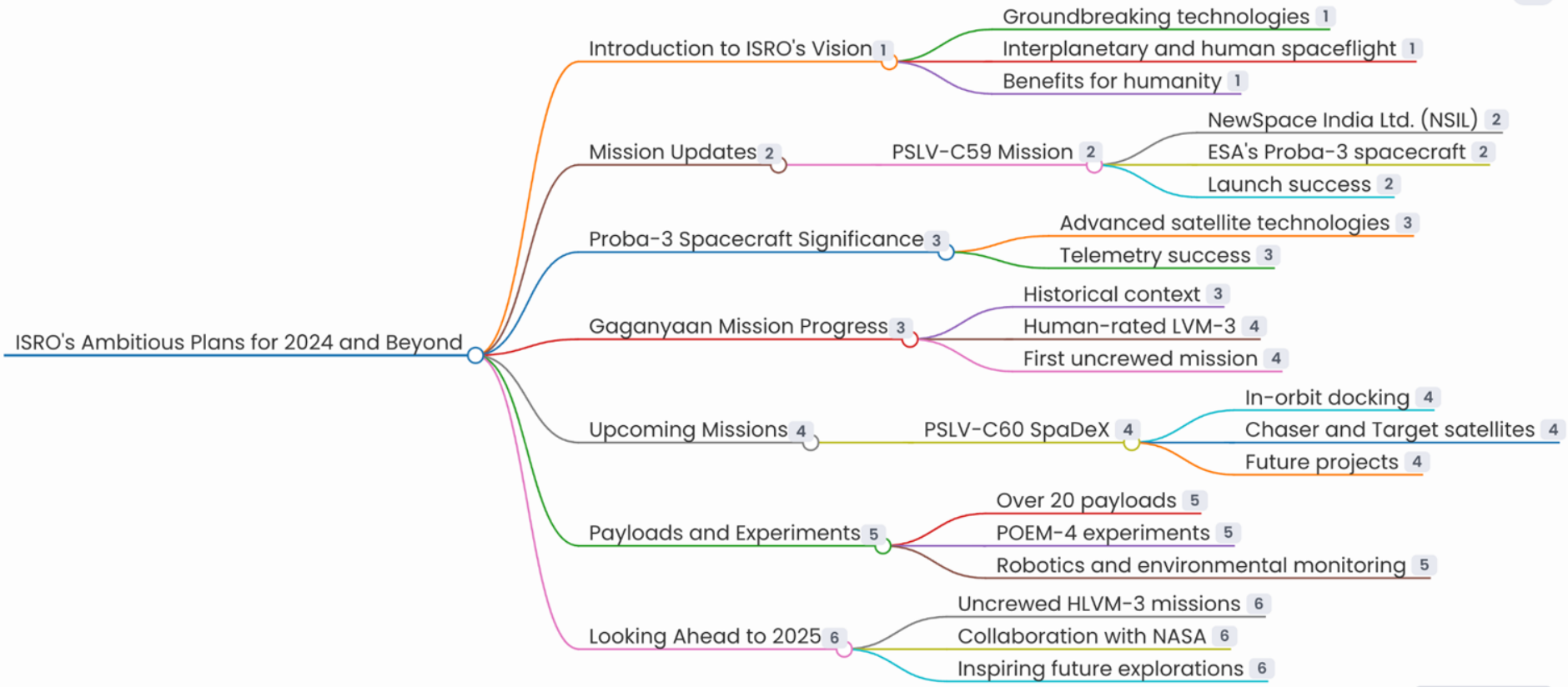
SDX01 follows

Docking expected in the first week of January

Additional Payloads

Payloads: 24 PS4-Orbital Experiment Module payloads

Summary: ISRO's PSLV C60/SpaDeX mission is set to launch two small spacecraft to demonstrate in-space docking technology, a critical step for future space exploration endeavors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Topic → The Indian Space Research Organisation (ISRO) and Its Ambitious Plans for 2024

Introduction to ISRO's Vision

The Indian Space Research Organisation (ISRO) is gearing up for an exhilarating end to 2024, with plans to launch missions that will not only test groundbreaking technologies but also lay the groundwork for future interplanetary and human spaceflight endeavors. With aspirations that have been delayed for years, ISRO is determined to make significant strides in the realm of space exploration.

The Importance of Human Spaceflight

Well, it’s not just about sending astronauts into space; it’s about pushing the boundaries of what we know and can achieve. Human spaceflight opens doors to new scientific discoveries, technological advancements, and even international collaborations. It’s a leap into the unknown that can yield benefits for humanity as a whole.

Mission Updates

PSLV-C59 Mission Overview

One of the most recent highlights in ISRO's journey is the PSLV-C59 mission. This mission was dedicated to NewSpace India Ltd. (NSIL) and successfully placed the European Space Agency’s (ESA) Proba-3 spacecraft into a highly elliptical orbit.

Launch Details

The PSLV-C59 lifted off from the Satish Dhawan Space Center at 4:04 PM IST on December 5, 2024. Just 18 minutes post-launch, the mission achieved its goal, showcasing ISRO’s prowess in launching spacecraft into complex orbits.

Significance of the Proba-3 Spacecraft

The Proba-3 mission, which stands for ‘Project for Onboard Autonomy,’ is a significant step in demonstrating advanced satellite technologies. The successful telemetry reception from the Yatharagga station in Australia right after separation is a testament to the mission's success.

Gaganyaan Mission Progress

Historical Context of Gaganyaan

The Gaganyaan mission is a cornerstone of ISRO's human spaceflight program. Back in 2014, ISRO aimed to test the capabilities of its Launch Vehicle Mark 3 (LVM-3) through a suborbital flight. This mission was crucial for understanding how to navigate through the Earth's atmosphere and safely return.

Current Developments

Fast forward to December 18, 2024, ISRO began assembling the human-rated LVM-3 (HLVM-3) for its first uncrewed mission. This marks a significant milestone in the Gaganyaan program, as it prepares for the first orbital module mission.

Upcoming Missions

PSLV-C60 SpaDeX Mission

As 2024 progresses, ISRO is also preparing for the PSLV-C60 mission, scheduled for December 30, 2024. This mission, known as SpaDeX (Space Docking Experiment), aims to demonstrate in-orbit docking capabilities.

Mission Objectives

The PSLV-C60 will carry two satellites, dubbed ‘Chaser’ and ‘Target,’ which will rendezvous in low Earth orbit. This mission is crucial for future projects like the Bharatiya Antariksh Station (BAS) and Chandrayaan-4.

Payloads and Experiments

The PSLV-C60 will also carry over 20 payloads designed by various ISRO centers and private companies. These payloads will conduct a range of experiments, further enhancing ISRO's capabilities in space technology.

POEM-4 and Its Payloads

Innovative Experiments

The PSLV Orbital Experimental Module (POEM-4) will carry 24 payloads, including innovative experiments like the ‘Walking Robotic Arm’ and the Debris Capture Robotic Manipulator. These experiments aim to push the boundaries of robotics and environmental monitoring in space.

Looking Ahead to 2025

The Significance of 2025 for ISRO

The year 2025 is poised to be a landmark year for ISRO, with the launch of the first uncrewed HLVM-3 missions. This could potentially lead to the first Indian in space since Rakesh Sharma in 1984.

Future Missions and Collaborations

In addition to the HLVM-3 missions, ISRO is also collaborating with NASA for the innovative SAR mission, promising an action-packed year ahead.

Conclusion

As we look forward to the end of 2024 and beyond, ISRO's ambitious plans are not just about reaching new heights in space; they are about inspiring a generation and paving the way for future explorations. With each mission, ISRO is not just launching rockets; it’s launching dreams.

One Nation One Election and representative democracy

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The process adopted for the One Nation One Election Bill had lapses that affect India's democratic fabric

The Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024, that was tabled in the Lok Sabha, proposes simultaneous elections for the Lok Sabha and State/Union Territory Legislative Assemblies with the insertion of Article 82(A). This ambitious reform seeks to synchronise elections, fix the tenure of the Lok Sabha, and simultaneously align elections to the State Assemblies. If the Lok Sabha or a State Assembly is dissolved before its five-year term, mid-term elections will only cover the remainder of the original tenure.

The Bill also amends Articles 83, 172, and 327, with changes effective from an 'appointed date', post-2029 general elections, thereby initiating simultaneous elections in 2034. A second Bill, the Union Territories Laws (Amendment) Bill, 2024, aligns the tenure of Union Territories' legislative Assemblies with the Lok Sabha and State Assemblies.

While the proposal seeks administrative efficiency and reduced election fatigue, critical questions arise: has the 'One Nation, One Election (ONOE)' process been truly inclusive and representative? Are there limits to our understanding of the representative spirit of Indian democracy?

Understanding representative democracy

Representative democracy is a system wherein citizens elect representatives to make decisions on their behalf. Rooted in the principles of free and fair elections, political accountability, and the protection of individual rights, it balances majority rule with the protection of minority interests. This form of governance becomes especially critical in diverse and populous countries such as India.

The theoretical underpinnings emphasise that elected representatives act as intermediaries, ensuring stable governance while accommodating competing interests. Citizens, being too numerous and diverse to participate directly in governance, delegate authority to their elected representatives. The system thrives on periodic elections, informed citizen participation, and institutional checks and balances.

Despite its theoretical merits, representative democracy faces growing challenges in practice. A 2024 Pew Research Center study across 24 nations, including Brazil, India, Nigeria, South Africa, the United Kingdom, and the United States, revealed widespread disillusionment with the system. Citizens increasingly questioned its effectiveness, with some exploring alternatives such as direct democracy, expert rule, or even authoritarian regimes.

In 13 countries, significant segments supported strong leaders bypassing parliamentary checks, reflecting frustration with institutional inefficiencies. Alarmingly, military rule garnered between 15% to 17% support in nations such as Greece, Japan, the U.K., and the U.S. Such trends underscore growing distrust in representative systems, driven by perceived inefficiencies, corruption, and unfulfilled promises.

Jayaprakash Narayan's critique

In India, debates about representative democracy are not new. Jayaprakash Narayan, in his seminal work, *A Plea for Reconstruction of Indian Polity* (1959), offered a deep critique of parliamentary democracy. JP argued that the reliance on individual voting created an 'atomized society', where fragmented, partisan politics overshadowed the collective national interest.

JP highlighted the following defects – risks of minority governments: In a multi-party system like India, he warned that parliamentary democracy risks unstable and unrepresentative governments.

First, demagoguery and populism: JP highlighted how political parties manipulate public opinion through half-truths, empty promises, and divisive rhetoric.

Second, centralisation of power: Parliamentary democracy, according to JP, concentrates power in the state, weakening intermediary institutions between citizens and the national government.

Third, financial costs of elections: JP critiqued the exorbitant cost of elections, tethering democracy to moneyed interests and large organisations.

While critical, JP's analysis aimed to reform and strengthen democracy. His concerns resonate today as India debates ONOE and its implications for democratic representation.

For a reform as significant as ONOE, an inclusive and representative process is crucial. In representative democracies, public opinion shapes policy, holding governments accountable to citizens' aspirations and concerns. To achieve this, pre-legislative consultation becomes indispensable, enabling policymakers to gather diverse views, address challenges, and enhance transparency.

The Pre-Legislative Consultation Policy, 2014, mandates a minimum 30-day period for public feedback on proposed legislation. It requires draft Bills to be accompanied by explanatory notes that clarify key provisions in accessible terms. However, the process adopted for ONOE fell short. First, inadequate consultation period: The high-level committee issued a public notice on January 5, 2024, inviting suggestions on ONOE. Citizens were given just 10 days – until January 15 – to respond, undermining the spirit of the 2014 policy. Second, lack of explanatory material: Despite the high-level committee being established in September 2023, no explanatory notes or background papers were provided, limiting citizens' understanding of the proposal's scope and challenges. Third, framing of questions: The high-level committee's approach, seeking 'yes/no' responses on supporting ONOE, appeared perfunctory, giving the impression the matter was already settled.

Such procedural lapses risk alienating citizens and stakeholders, undermining trust in the reform process. In a diverse democracy like India, meaningful public engagement is vital to ensure that policy reflects varied perspectives and fosters consensus.

Implications for representative democracy

The ONOE Bill raises critical questions about the representative nature of Indian democracy. First, centralisation versus federalism: synchronising elections risks a further centralising of power, potentially undermining the federal spirit of the Constitution. State-specific issues may be overshadowed by national narratives. Second, inclusivity and participation: by curtailing consultation and rushing reforms, the government risks sidelining citizens' voices, weakening democratic inclusivity. Third, electoral accountability: frequent elections, while resource-intensive, enhance accountability by enabling voters to evaluate governments regularly. Simultaneous elections could dilute this accountability.

India's democratic fabric thrives on citizen participation, inclusivity, and accountability. Reforms such as ONOE, while aimed at efficiency, must not compromise these principles. A rushed process undermines trust and risks centralisation. Only by adhering to the principles above can our democracy remain truly representative in letter and spirit.

The views expressed are personal

The Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024

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Topic --The Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024

Introduction to the Bill

The Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024, recently tabled in the Lok Sabha, is a significant legislative proposal that aims to revolutionize the electoral landscape in India. This ambitious reform seeks to synchronize elections for the Lok Sabha and State/Union Territory Legislative Assemblies by inserting Article 82(A) into the Constitution. But what does this mean for the average citizen? Let’s dive into the details.

Key Provisions of the Bill

Simultaneous Elections Explained

At its core, the Bill proposes that elections for the Lok Sabha and State Assemblies occur simultaneously. This means that if the Lok Sabha or a State Assembly is dissolved before its five-year term, mid-term elections will only cover the remainder of the original tenure. This could potentially streamline the electoral process and reduce the frequency of elections.

Amendments to Existing Articles

The Bill also amends Articles 83, 172, and 327, with changes set to take effect from an ‘appointed date’ after the 2029 general elections, initiating simultaneous elections in 2034. Additionally, a second Bill, the Union Territories Laws (Amendment) Bill, 2024, aligns the tenure of Union Territories’ legislative Assemblies with the Lok Sabha and State Assemblies.

The Rationale Behind the Bill

Administrative Efficiency

One of the primary motivations behind this proposal is to enhance administrative efficiency. By synchronizing elections, the government hopes to reduce the logistical challenges and costs associated with conducting multiple elections in a short span of time.

Reducing Election Fatigue

Let’s face it; frequent elections can lead to voter fatigue. The ONOE (One Nation, One Election) initiative aims to alleviate this issue, making the electoral process less cumbersome for both voters and the administration.

The Concept of Representative Democracy

What is Representative Democracy?

Representative democracy is a system where citizens elect representatives to make decisions on their behalf. It’s built on the principles of free and fair elections, political accountability, and the protection of individual rights. In a diverse country like India, this form of governance is crucial.

Challenges Faced by Representative Democracy

However, representative democracy is not without its challenges. A recent Pew Research Center study highlighted widespread disillusionment with democratic systems across various nations, including India. Citizens are increasingly questioning the effectiveness of their representatives, leading some to explore alternatives like direct democracy or even authoritarian regimes.

Critique by Jayaprakash Narayan

Key Defects in Parliamentary Democracy

Jayaprakash Narayan, a prominent figure in Indian politics, critiqued parliamentary democracy in his work, "A Plea for Reconstruction of Indian Polity." He argued that the reliance on individual voting creates an ‘atomized society’ where fragmented politics overshadow the collective national interest. He pointed out several defects, including the risks of minority governments and the centralization of power.

The Importance of Inclusivity in Reforms

Pre-Legislative Consultation Policy

For reforms as significant as ONOE, inclusivity is paramount. The Pre-Legislative Consultation Policy, established in 2014, mandates a minimum 30-day period for public feedback on proposed legislation. This is crucial for ensuring that diverse views are considered.

Shortcomings in the ONOE Process

Unfortunately, the process for ONOE fell short of these standards. Citizens were given only 10 days to respond to the proposal, and there was a lack of explanatory material to help them understand the implications of the Bill. This raises concerns about the inclusivity of the reform process.

Implications for Indian Democracy

Centralization vs. Federalism

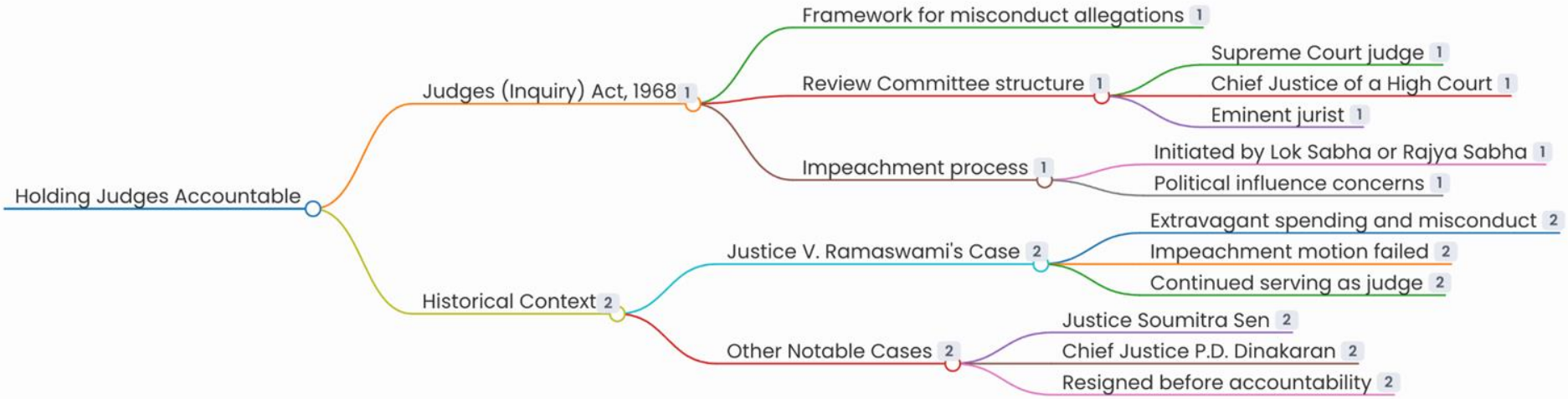
The ONOE Bill raises critical questions about the balance of power in Indian democracy. Synchronizing elections could lead to a centralization of power, potentially undermining the federal spirit of the Constitution. State-specific issues may be overshadowed by national narratives.

The Need for Electoral Accountability

Frequent elections enhance accountability by allowing voters to evaluate their representatives regularly. However, simultaneous elections could dilute this accountability, making it essential to consider the long-term implications of such reforms.

Conclusion

In conclusion, while the Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024, aims to streamline the electoral process and reduce election fatigue, it raises significant questions about the inclusivity and representative nature of Indian democracy. As we move forward, it’s crucial to ensure that reforms do not compromise the democratic principles that underpin our society.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Topic →holding judges accountable

Judges (Inquiry) Act, 1968

The Judges (Inquiry) Act, 1968, establishes a framework for addressing allegations of misconduct against judges. This mechanism is crucial for ensuring that judges are held accountable for their actions, but it is fraught with challenges.

Structure of the Review Committee

The review process is conducted by a three-member committee, which includes a Supreme Court judge, a Chief Justice of a High Court, and an eminent jurist. This structure aims to provide a balanced and fair assessment of the allegations.

Process of Impeachment

However, the process is initiated only after a successful impeachment motion is moved in either the Lok Sabha or the Rajya Sabha, which adds layers of complexity and potential political influence to the proceedings.

Historical Context of Judicial Accountability

Justice V. Ramaswami's Case

The case of Justice V. Ramaswami serves as a significant historical reference point. He was found guilty of extravagant spending and misconduct, yet the impeachment motion against him failed due to political maneuvering.

Findings and Consequences

Despite being found guilty, Ramaswami continued to serve as a judge, highlighting the inadequacies of the accountability mechanisms in place. This case set a troubling precedent for future judicial conduct.

Other Notable Cases

Other judges, such as Justice Soumitra Sen and Chief Justice P.D. Dinakaran, also faced impeachment motions but managed to resign before accountability could be enforced, further complicating the landscape of judicial accountability in India.

The Challenges of Accountability

Resignation vs. Impeachment

The ability of judges to resign before facing impeachment raises questions about the effectiveness of the current system. Unlike elected officials, judges can evade accountability, which undermines public trust in the judiciary.

The Role of the Forum for Judicial Accountability

Organizations like the Forum for Judicial Accountability have advocated for reforms to ensure that judicial misconduct is addressed thoroughly, regardless of a judge's resignation. They argue that accountability is essential for maintaining public confidence in the judicial system.

Conclusion

The speech by Justice Shekhar Kumar Yadav has brought to light the pressing need for reform in the mechanisms that hold judges accountable in India. As the judiciary plays a crucial role in upholding democracy, ensuring its integrity is paramount. The current system, with its loopholes and political entanglements, must evolve to foster greater accountability and transparency.

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- Analysis of Private Members' Bills in Indian Parliament
- Introduction to SpaDeX Mission
- Unconventional Warfare Methods
- Defence Ministry Contracts for Scorpene-Class Submarines
- NASA's Parker Solar Probe:
- The Plight of Rohingya Refugees in India
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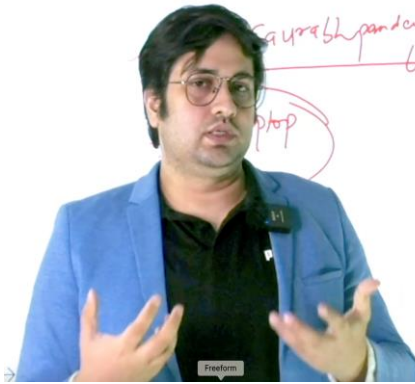


By saurabh Pandey

THE HINDU

Topic → Analysis of Private Members' Bills in Indian Parliament

Overview of Private Members’ Bills

Definition: Instruments for individual expression of MPs.
Legislation: Proposed laws that require a vote.
Political Messaging: Serve as a medium for political statements.

Time Allocation

17th Lok Sabha:

Lower House (Lok Sabha): 9.08 hours on Bills; 16.43 hours on Resolutions.
Upper House (Rajya Sabha): 27.01 hours on Bills; 20.78 hours on Resolutions.

18th Lok Sabha:

Lower House: 0.15 hours on Bills; 1.98 hours on Resolutions.
Upper House: 0.62 hours on Bills; 2.09 hours on Resolutions.

Historical Context

Significance: Until 2024, only 14 Bills have been passed since 1970.

Notable Events:

Indira Gandhi's political rise linked to Private Members’ Bills.

Challenges Faced

Indifference: Many MPs do not participate in discussions.

Scheduling Issues: Bills often scheduled at inconvenient times (e.g., Fridays).

Proposed Solutions: Shift discussions to midweek (Wednesdays).

Current Trends

Decline: A noticeable drop in time allocated for Bills.

Future of Private Members’ Business: Concerns over sustainability due to narrow discussion windows.

Introduction to Private Members' Bills

Private Members' Bills are a fascinating aspect of the Indian legislative landscape. These are proposed laws introduced by members of the Parliament who are not part of the government. Let's dive into their significance and evolution over time.

- Definition: A Private Members' Bill is a proposal for new legislation introduced by a Member of Parliament (MP) who is not a minister.
- Historical Context: The practice of introducing these bills dates back to the early years of parliamentary democracy in India, reflecting a vibrant democratic process.

The Legislative Process of Private Members' Bills

The journey of Private Members' Bills through the legislative process is unique and filled with challenges.

- **Introduction and Debate:** These bills are typically introduced during specific **parliamentary sessions**. MPs have the opportunity to present their bills, followed by a debate.
- **Comparison with Government Bills:** Unlike government bills, which have a stronger backing, Private Members' Bills often struggle to garner attention and support.

The Role of Youth and Representation

The role of youth in shaping legislation through Private Members' Bills cannot be overstated.

- **Importance of Involvement:** Engaging young MPs in the legislative process is crucial for ensuring that the voices of the younger generation are heard.
- **Recent Initiatives:** Recent bills aimed at increasing youth representation are indicative of a broader commitment to inclusivity in governance.

Challenges and Criticisms

While Private Members' Bills are an essential part of the legislative process, they face numerous challenges.

- **Limited Time and Resources:** Often, these bills are overshadowed by government priorities, leading to limited time for debate and discussion.
- **Critiques of the Legislative Framework:** Some argue that the current framework does not adequately support the introduction and passage of Private Members' Bills.

Conclusion

Private Members' Bills play a pivotal role in enriching the legislative discourse in India. As these bills continue to emerge and evolve, they reflect the dynamic nature of Indian democracy and the importance of diverse voices in the Parliament.

Topic → Introduction to SpaDeX Mission

The Indian Space Research Organisation (ISRO) has once again captured global attention with the successful launch of its SpaDeX mission. On a momentous Monday evening, the **PSLV C60 rocket ascended from the esteemed Satish Dhawan Space Centre in Sriharikota, carrying two small satellites, SDX01 (Chaser) and SDX02 (Target), alongside 24 additional payloads**. This mission is not just a significant technical achievement; it marks a pivotal step in India's ambitious space exploration agenda.

Launch Details:

Date: December 30, 2024

Time: 10 p.m.

Orbital Destination: 475-km circular orbit

The mission aims to test critical technologies for spacecraft rendezvous, docking, and undocking—skills only mastered by a select few spacefaring nations.

Technical Specifications and Launch Success

ISRO's SpaDeX mission is a testament to India's growing expertise in space technology. The PSLV C60 rocket effectively deployed the two SpaDeX satellites into their designated orbit, approximately 15 minutes post-launch.

Satellite Specifications:

SDX01 (Chaser): Designed to perform close-proximity maneuvers.

SDX02 (Target): The object for the chaser to rendezvous and dock with.

The ISRO Chairman, S. Somanth, expressed confidence in the mission, stating, “The rocket has placed the satellites in the right orbit… the distance will increase by 20 km over the next few days, and then the rendezvous and docking process will start.”

The docking process is anticipated to take place around January 7, 2025, marking a significant milestone in India's space journey.

Future of Space Exploration: ISRO's Ambitious Goals

With the SpaDeX mission, ISRO is not merely testing spacecraft; it's laying the groundwork for ambitious future missions that include sending Indian astronauts to the Moon and establishing an Indian space station.

Technologies Being Demonstrated:

- Precision docking maneuvers
- Propulsion systems for inter-satellite separation
- Enhanced orbital mechanics through relative velocity adjustments

The implications for India's space program are profound, as the demonstrated technologies will prove crucial for upcoming explorations, including potential sample returns from lunar missions.

Conclusion: The Dawn of a New Era for ISRO

The successful launch of the SpaDeX mission signifies a monumental leap forward in India's quest for space exploration. As ISRO continues to push the boundaries of technological advancements, the world watches with bated breath to see what spectacular feats await in the future.

Topic → Unconventional Warfare Methods

Introduction:

The landscape of modern warfare is rapidly evolving, with unconventional methods presenting unprecedented challenges to nations around the globe.

Recently, Defence Minister Rajnath Singh articulated the pressing need for India to adapt and innovate in its defence strategies, particularly concerning AI-based warfare and cyber threats.

Unconventional Warfare Methods

The very essence of warfare is transforming, characterized by the rise of unconventional methods. This includes:

- **AI-Based Warfare:** The integration of artificial intelligence in military strategies is no longer a futuristic concept but a present reality. It encompasses everything from autonomous drones to predictive analytics for strategic planning.
- **Cyber Warfare:** Cyber attacks represent a profound challenge, threatening national security, infrastructure, and the very fabric of society. These attacks can disrupt communication, steal sensitive information, and cripple essential services.
- **Information Warfare:** The dissemination of misleading information can influence public perception and destabilize governments. This tactic is often used in conjunction with cyber warfare.

Rajnath Singh emphasized that mastering these methods is essential for maintaining national security and ensuring military effectiveness in an unpredictable global environment.

India’s Defence Export Growth

The past decade has witnessed a remarkable transformation in India's defence exports:

- **Statistics:** From a mere ₹2,000 crore a decade ago, India's defence exports have surged to an impressive ₹21,000 crore. This significant growth underscores the country's burgeoning capabilities and international standing in the defence sector.
- **Future Targets:** The ambitious target of reaching ₹50,000 crore by 2029 not only reflects the government's commitment to enhancing defence manufacturing but also positions India as a formidable player in the global arms market.
- **Made-in-India Equipment:** The ongoing push for indigenous production has resulted in advanced military equipment being exported to various countries, showcasing India's potential to meet global defence demands.

The Defence Minister's remarks highlight the strategic importance of boosting defence exports, reinforcing India's position as a rising military power.

The Need for Advanced Military Training

In light of the evolving threats, Rajnath Singh stressed the paramount importance of advanced military training:

- **Frontier Technologies:** Emphasizing the need for soldiers to be well-versed in the latest technologies, Singh pointed to training centres as pivotal in preparing personnel for contemporary challenges.
- **Role of Training Centres:** Institutions like the Army War College in Mhow are instrumental in adapting training curricula to meet the demands of modern warfare. This commitment to continuous improvement is vital for ensuring military readiness.
- **Integration through Training:** Singh called for enhanced collaboration between different branches of the military, particularly in areas such as weapons training and AI applications.

This forward-thinking approach to military training is crucial for equipping soldiers with the skills necessary to combat future threats effectively.

Conclusion

Rajnath Singh's insights into the future of warfare underscore the necessity for India to embrace technological advancements and adapt its military strategies accordingly.

The convergence of AI, cyber warfare, and unconventional tactics presents both challenges and opportunities for the nation.

As India aims to solidify its position as a global military power, the commitment to enhancing defence exports and refining military training will be instrumental in navigating the complexities of modern warfare.

Topic → Defence Ministry Contracts for Scorpene-Class Submarines

Overview

- **Contracts Signed:** The Defence Ministry has signed two significant contracts for Scorpene-class submarines, totaling ₹2,867 crore.
- 🔧 **AIP Module Development:** A contract worth ₹1,990 crore focuses on constructing and integrating an air independent propulsion (AIP) module developed by DRDO with Mazagon Dock Shipbuilders Limited.
- 🎯 **EHWT Integration:** Another contract, valued at ₹877 crore, is for integrating an electronic heavyweight torpedo (EHWT), developed by DRDO and signed with Naval Group, France

Challenges and Opportunities

- **Delays in AIP Module:** The AIP module, developed indigenously, has experienced delays and is pending fitment on Scorpene submarines.
- 👷 **Job Creation:** The AIP module's construction and integration are expected to generate approximately three lakh man-days of employment.
- **Collaborative Effort:** The EHWT integration involves collaboration between the Indian Navy, DRDO, and Naval Group.
- ⚓ **Operational Challenges:** Scorpene submarines have been operating without a modern heavyweight torpedo due to past procurement issues linked to a corruption scandal.

Summary

The Defence Ministry's contracts aim to enhance Scorpene-class submarines with an AIP module and a new heavyweight torpedo, improving operational capabilities and creating jobs.

What is Air Independent Propulsion (AIP)?

Air Independent Propulsion (AIP) technology is revolutionizing the landscape of naval warfare, particularly in submarine operations. By enabling submarines to operate without the need for atmospheric oxygen, AIP systems enhance stealth capabilities and endurance, crucial for modern maritime security. This article delves into the intricacies of AIP technology, its current advancements, and its strategic implications for naval defense.

Air Independent Propulsion (AIP) refers to a range of technologies that allow submarines to operate submerged without surfacing for extended periods. Traditional diesel-electric submarines rely on snorkels or batteries, limiting their operational range and stealth. AIP systems provide a significant advantage by enabling:

- **Extended Submersion:** Submarines can remain submerged for weeks, enhancing their operational flexibility.
- **Reduced Noise Levels:** AIP systems operate more quietly than conventional engines, improving stealth in hostile waters.
- **Improved Tactical Options:** With the ability to stay submerged longer, submarines can conduct reconnaissance and strike missions without detection.

Topic → NASA's Parker Solar Probe: A Historic Journey

🚀 Historic Flyby

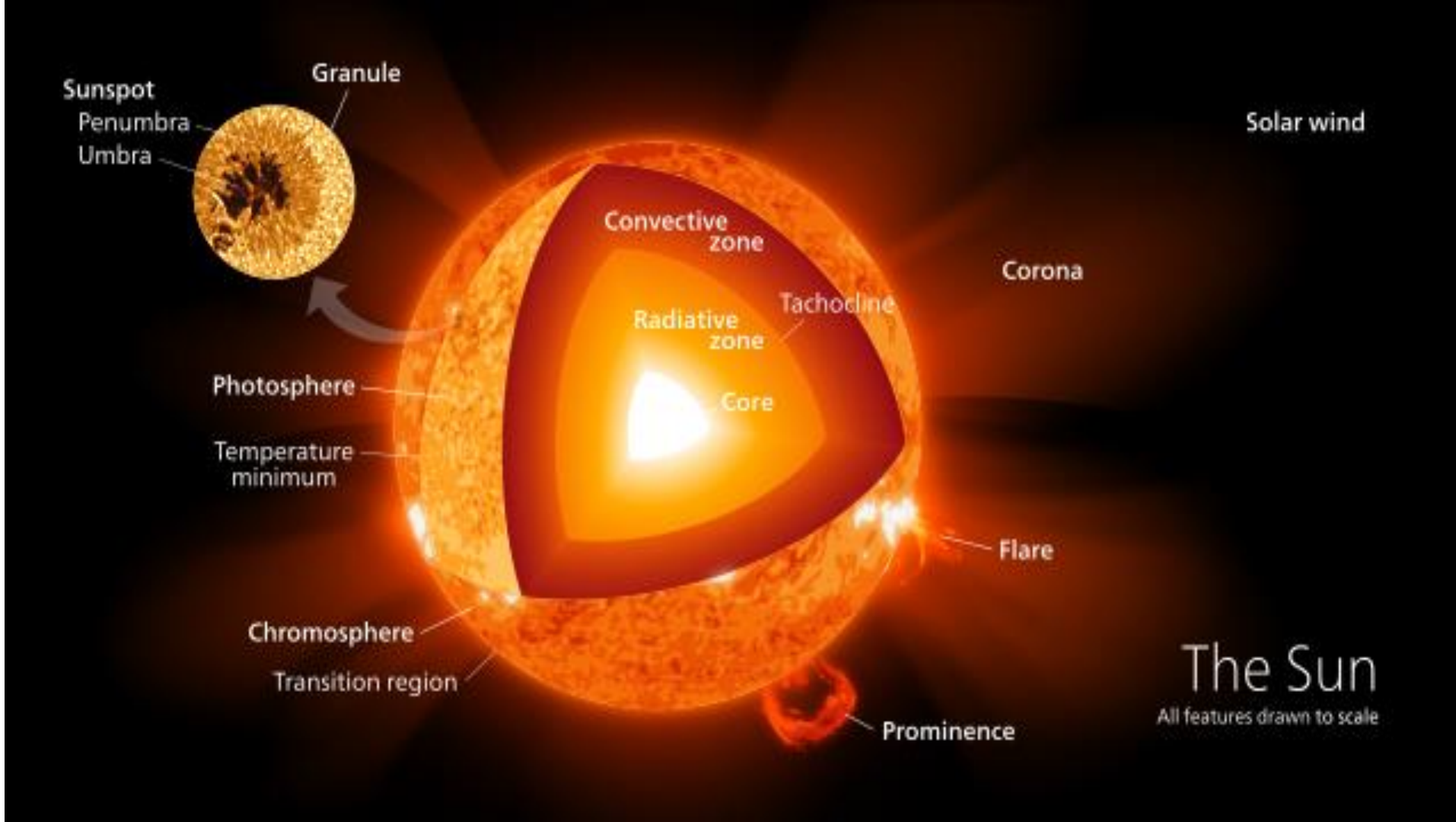
On December 24, NASA's Parker Solar Probe achieved a historic milestone by flying closer to the sun than any other spacecraft, reaching a distance of 6.1 million kilometers.

🔥 Extreme Temperatures

The probe's heat shield endured temperatures exceeding 930 degrees Celsius, while its internal instruments remained at a stable 29 degrees Celsius.

□ Mission Timeline

Launched in August 2018, the Parker Solar Probe is on a seven-year mission to enhance our understanding of the sun and predict space weather events.


Sunspot
Penumbra
Umbra
Granule
Solar wind
Convective zone
Corona
Tachocline
Radiative zone
Photosphere
Core
Temperature minimum
Flare
Chromosphere
Transition region
Prominence
The Sun
All features drawn to scale

📅 Upcoming Flybys

The Christmas Eve flyby is the first of three record-setting close passes, with the next two scheduled for March 22 and June 19, 2025.

🔭 Scientific Goals

The mission aims to uncover mysteries of the sun, including:

- The origins of solar wind
- The temperature anomaly of the corona
- The formation of coronal mass ejections

⚡ Speed Record

The probe travels at approximately 690,000 km/hr, allowing it to cover the distance from New Delhi to Chennai in about 10 seconds.

🌍 Communication Delay

Scientists will receive confirmation of the flyby on December 28, as the probe temporarily loses contact due to its proximity to the sun.

Summary: NASA's Parker Solar Probe made history by flying closer to the sun than any spacecraft before, marking a significant milestone in solar research.

On India's obligations towards the Rohingya

What has a recent report by The Azadi Project and Refugees International said about India's refugee policy for the Rohingya people? How many Rohingya refugees reside in India? What does the 1951 Refugee Convention state? Does India have a domestic refugee law?

EXPLAINER

Aaratrika Bhaumik

The story so far:

A recent study examining the plight of Rohingya refugees detained in India, conducted jointly by The Azadi Project and Refugees International has highlighted "gross violations of constitutional and human rights" and criticised India's "failure to uphold its obligations under international human rights treaties." Based on interviews with detainees, their families, and legal representatives, the report reveals that "a significant number of Rohingya refugees continue to be incarcerated even after serving their prescribed sentences."

How are Rohingya refugees protected under international law?

The Rohingya people of Myanmar constitute the world's largest stateless population, estimated to number approximately 2.8 million. Denied citizenship and subjected to decades of persecution by Myanmar's authorities, majority of the Rohingya have been compelled to flee their homeland due to genocidal violence. At present, they are dispersed across multiple countries. According to the United Nations High Commissioner for Refugees (UNHCR), nearly 22,500 Rohingya refugees currently reside in India.

The 1951 Refugee Convention and its 1967 Protocol enshrine the principle of non-refoulement, which prohibits States from expelling individuals under their jurisdiction when substantial evidence suggests they would face persecution, torture, or other severe human rights violations upon return. This principle is a cornerstone of human rights, humanitarian, and refugee law. Moreover, its status as customary international law imposes binding obligations on states regardless of formal assent. The Office of the United Nations High Commissioner for Human Rights has reiterated that "the principle is characterised by its absolute nature without any exception". Additionally, in a 2007 advisory opinion, the UNHCR affirmed that non-refoulement constitutes customary law and is binding on all states, including those not parties to the Refugee Convention or the 1967 Protocol.

What is India's stand?

As India is neither a signatory to the Refugee Convention nor a party to key international instruments, such as the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment and the International Convention for the Protection of All Persons from Enforced Disappearance, it maintains that it bears no legal obligation to provide asylum or adhere to the principle of non-refoulement. India continues to detain Rohingya refugees under archaic domestic legal frameworks, notably the Foreigners Act, 1946, and the Passport Act, 1967. These legislations confer sweeping executive powers to regulate the presence of foreigners and enable authorities to categorise Rohingya refugees as "illegal migrants."

In response to a public interest litigation (PIL) in the Supreme Court seeking the release of detained Rohingya refugees, the Centre clarified in March that while they are entitled to the right to life under Article 21 of the Constitution, they do not possess the right to reside or settle in India. In 2021, the top court in *Mohammad Salimullah and Anr. versus Union of India*, rejected a plea to prevent the deportation of 170 Rohingya refugees detained in Srinagar accepting the Centre's national security concerns.

In October 2024, the Delhi High Court dismissed a PIL seeking directions to the authorities to admit Rohingya refugee children in local schools. The court noted that the matter involved international implications and required a policy decision to be taken by the government.

Destitute living: A general view of Rohingya camps area near Shaheen Bagh in New Delhi on December 12. SHASHI SHEKHAR KASHYAP

What are India's international obligations?

The International Covenant on Civil and Political Rights, to which India is a party, implicitly obligates member states under Article 7 to refrain from refouling individuals to places where they may face torture or cruel, inhuman, or degrading treatment. The UN Human Rights Committee has unequivocally affirmed this interpretation. Similarly, the principle of non-refoulement is enshrined in other significant international instruments, including the International Convention on the Elimination of All Forms of Racial Discrimination and the Convention on the Rights of the Child, both of which India has ratified.

Further, the Convention Against Torture makes an express mention of non-refoulement under Article 3. While India's position as a signatory but not a ratifier renders its provisions non-binding, any deviation from the convention's principles would compromise the commitment India demonstrated by signing the treaty.

Although India lacks a domestic refugee law, the Supreme Court in landmark rulings such as *Vishaka & Ors. versus State of Rajasthan* (1997) and *National Legal Services Authority versus Union of India* (2014), has affirmed that in the absence of domestic legislation on a matter, international conventions and norms must be applied by municipal courts to ensure the dignity of human life. Additionally, Article 51(c) of the Constitution mandates that the state must strive to promote respect for international law and treaty obligations.

Several High Courts in India have also interpreted the principle of non-refoulement as integral to Article 21 of the Constitution, which guarantees the right to life and personal liberty. Notable examples include the Gujarat High Court's decision in *Khaer Abbas Habib Al Qataifi versus Union of India* (1998) and the Delhi High Court's ruling in *Dongh Lian Kham versus Union of India* (2015), both of which involved refugees from different countries seeking protection from deportation.

What are the existing concerns?

The absence of a standardised refugee policy has led to the disparate treatment of different refugee populations, driven by India's shifting geopolitical and diplomatic interests. While groups such as the Tibetans, Sri Lankans, and Afghans are granted refugee certificates or long-term visas by the government, most Rohingya refugees – despite being registered with the UNHCR – often face arbitrary detention and criminal imprisonment. Further, the controversial Citizenship Amendment Act, 2019, excludes persecuted Muslim minorities, such as the Rohingya, from its ambit.

The lack of legal representation and aid for detained Rohingya refugees also poses a severe concern. The report by Azadi Project and Refugees International highlights that civil society organisations working on behalf of Rohingya refugees in India are starved of funding as most Foreign Contribution (Regulation) Act licences that allow for the receipt of foreign funding have been revoked. This has made lawyers reluctant to take on cases involving the Rohingya, fearing potential repercussions.

Moreover, detention centres housing Rohingya refugees, including pregnant women and children, are plagued by dehumanising living conditions. In light of the appalling conditions at the Matia Transit Camp, the Supreme Court in October, directed the Assam State Legal Services to conduct surprise visits and evaluate the conditions in which the refugees are living.

THE GIST

- A recent study examining the plight of Rohingya refugees detained in India, conducted jointly by The Azadi Project and Refugees International has highlighted "gross violations of constitutional and human rights" and criticised India's "failure to uphold its obligations under international human rights treaties.
- As India is neither a signatory to the Refugee Convention nor a party to key international instruments, it maintains that it bears no legal obligation to provide asylum or adhere to the principle of non-refoulement.
- The report highlights that civil society organisations working on behalf of Rohingya refugees in India are starved of funding as most Foreign Contribution (Regulation) Act licences that allow for the receipt of foreign funding have been revoked.

Topic --. > The Plight of Rohingya Refugees in India

Introduction

The Rohingya refugees, a group that has faced unimaginable hardships, are currently detained in India, and a recent study sheds light on their dire situation. Conducted by The Azadi Project and Refugees International, this study highlights “gross violations of constitutional and human rights” and criticizes India’s failure to uphold its obligations under international human rights treaties.

Recent Study Findings

Overview of the Study

The report, based on interviews with detainees, their families, and legal representatives, reveals a shocking reality: many Rohingya refugees continue to be incarcerated even after serving their prescribed sentences. This raises serious questions about the treatment of these individuals and the legal frameworks that govern their status in India.

Finding safe haven in Bangladesh

Hundreds of thousands of Rohingya have left their ethnic homeland of Rakhine State for the district of Cox's Bazar in Chittagong, Bangladesh.

Rohingya Refugees and International Law

The Concept of Statelessness

The Rohingya people of Myanmar are the world’s largest stateless population, with an estimated 2.8 million individuals. Denied citizenship and subjected to decades of persecution, they have fled their homeland due to genocidal violence. Today, they are dispersed across various countries, with nearly 22,500 residing in India, according to the United Nations High Commissioner for Refugees (UNHCR).

Non-Refoulement Principle

1951 Refugee Convention and 1967 Protocol

The principle of non-refoulement, enshrined in the 1951 Refugee Convention and its 1967 Protocol, prohibits states from expelling individuals when there is substantial evidence they would face persecution or torture upon return. This principle is a cornerstone of human rights and humanitarian law, and it is binding on states, regardless of formal assent.

India's Position on Refugees

Legal Framework in India

India is not a signatory to the Refugee Convention or other key international instruments, such as the Convention against Torture. This allows the Indian government to argue that it has no legal obligation to provide asylum or adhere to the principle of non-refoulement. Instead, Rohingya refugees are detained under outdated laws like the Foreigners Act of 1946 and the Passport Act of 1967, which categorize them as “illegal migrants.”

Supreme Court Rulings

Article 21 of the Constitution

In a recent public interest litigation (PIL) in the Supreme Court, the Indian government clarified that while Rohingya refugees have the right to life under Article 21 of the Constitution, they do not have the right to reside or settle in India. This was further emphasized in a 2021 ruling that rejected a plea to prevent the deportation of detained Rohingya refugees, citing national security concerns.

India's International Obligations

Key International Treaties

India is a party to the International Covenant on Civil and Political Rights, which obligates member states to refrain from refouling individuals to places where they may face torture or cruel treatment. The UN Human Rights Committee has affirmed this interpretation, reinforcing India’s obligations under international law.

Non-Refoulement in Indian Law

Despite the lack of a domestic refugee law, the Supreme Court has ruled that international conventions must be applied to ensure the dignity of human life. Several High Courts have interpreted the principle of non-refoulement as integral to Article 21, which guarantees the right to life and personal liberty.

Current Concerns and Challenges

Disparate Treatment of Refugees

The absence of a standardized refugee policy has led to the unequal treatment of different refugee populations in India. While some groups receive refugee certificates, Rohingya refugees often face arbitrary detention and criminal imprisonment, highlighting a troubling inconsistency in India’s approach to refugees.

Lack of Legal Representation

The report by Azadi Project and Refugees International points out that civil society organizations advocating for Rohingya refugees are struggling for funding, as many licenses for foreign contributions have been revoked. This has made it difficult for lawyers to take on cases involving Rohingya refugees, fearing repercussions.

Dehumanizing Conditions in Detention Centers

The conditions in detention centers housing Rohingya refugees are appalling, with reports of overcrowding and inadequate facilities. The Supreme Court has directed legal services to conduct surprise visits to assess these conditions, but the situation remains dire.

Conclusion

The plight of Rohingya refugees in India is a complex issue that intertwines human rights, international law, and national policy. As the recent study reveals, the treatment of these individuals raises serious ethical and legal questions. It is crucial for India to reassess its approach to refugees and uphold its international obligations to ensure the dignity and rights of all individuals, regardless of their nationality.