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POLITY & GOVERNANCE

ADDRESSING MENSTRUAL EQUITY: POLITICAL PROMISES AND LEGISLATIVE STRIDES



Introduction:

- In the lead-up to the 2024 general election, the election manifesto of Tamil Nadu's ruling political party, the Dravida Munnetra Kazhagam (DMK), has brought to the forefront the issue of menstrual leave, signaling a pivotal moment in the fight for gender equality.
- This promise, amidst a backdrop of legislative efforts and societal debates, underscores the pressing need to address deeply ingrained gender biases and discrimination against women.
- As political parties and lawmakers grapple with this issue, the quest for menstrual equity takes center stage in the quest for a more inclusive and gender-sensitive society.

Legislative Efforts and Advocacy:

- The discourse surrounding menstrual leave gained traction with the introduction of Private Member Bills by Members of Parliament (MPs) such as S. Jothimani, Ninong Ering, Shashi Tharoor, and Hibi Eden, advocating for the recognition of menstrual rights and entitlements for women.
- These Bills sought to grant women the right to menstrual hygiene and paid leave, challenging existing norms and pushing for legislative reforms to promote gender equity in the workplace and beyond.

Challenges and Resistance:

- Despite these legislative endeavors, the journey towards menstrual equity has been fraught with challenges and resistance.

- The Supreme Court's reluctance to entertain a public interest litigation on menstrual leave and the central government's refusal to enact relevant policies highlight the uphill battle faced by advocates of menstrual rights.
- Moreover, the absence of explicit mentions of menstrual leave in the election manifestos of major political parties underscores the need for sustained advocacy and public awareness campaigns to keep the issue on the agenda.

Progressive Initiatives and International Comparisons:

- While India grapples with the issue of menstrual equity, progressive states like Kerala have led the way with pioneering initiatives such as granting period leave for students as early as 1912 and introducing menstrual and maternity leave for students above the age of 18 in 2023.
- Moreover, several Asian countries, including Japan, Indonesia, and South Korea, have enacted legislation to address menstrual stigma and provide paid leave for menstruating women, setting a precedent for global action on menstrual equity.

The Path Forward:

- As India navigates the complex terrain of menstrual equity, it is imperative to recognize the multifaceted nature of gender inequalities and the need for policy solutions that address the differentiated experiences of women.
- By promoting greater gender sensitivity and challenging societal taboos surrounding menstruation, policymakers and advocates can pave the way for a more inclusive and equitable society.
- Moreover, the recognition of menstrual rights by political parties and lawmakers is crucial in advancing women's rights and fostering gender equality in India's socio-political landscape.

Conclusion:

- The issue of menstrual equity transcends mere policy debates; it embodies a broader struggle for gender justice and societal transformation.
- As India grapples with the complexities of menstrual rights legislation, it is imperative for policymakers, lawmakers, and civil society to join forces in advocating for meaningful reforms that uphold the dignity and rights of women.

- ⇒ By centering the voices and experiences of menstruating individuals, India can chart a path towards a more inclusive, equitable, and gender-sensitive future.

ARTICLE 31 C



Context

- ⇒ The Supreme Court led by the Chief Justice of India decided to address whether Article 31C still exists while hearing a case on the government's ability to acquire and redistribute private property.

Details

- ⇒ The case surrounding Article 31C and its implications for the interpretation of fundamental rights, especially in relation to private property and socio-economic reforms, is complex and rooted in constitutional history.

Introduction of Article 31C

- ⇒ Article 31C was introduced in the Constitution of India through the Constitution (Twenty-fifth) Amendment Act, 1971.
- ⇒ This amendment was a response to judicial decisions that limited the government's ability to enact laws for socio-economic reforms.
- ⇒ The 25th Amendment sought to overcome judicial hurdles by protecting laws enacted to implement certain directive principles of state policy, specifically Articles 39(b) and 39(c), from being challenged on grounds of violating fundamental rights under Articles 14, 19, and 31 of the Constitution.
- ⇒ Article 31C was introduced after the Supreme Court struck down the Banking Companies Acquisition Act in 1970, which aimed to nationalize private banks, as violating the right to property (then a fundamental right under Article 31).

Legal Complications and Constitutional Challenges

Kesavananda Bharati Case (1973)

- ⇒ In this landmark case, the Supreme Court established the doctrine of basic structure, asserting that certain fundamental features of the Constitution are beyond the amending power of Parliament.

- ⇒ The court partially struck down Article 31C, specifically the part that prevented laws from being challenged in court.

Constitution (Forty-second) Amendment Act, 1976

- ⇒ This amendment expanded the protection under Article 31C to cover all directive principles of state policy (Articles 36-51), shielding them from challenges under Articles 14 and 19.
- ⇒ The amendment was aimed at prioritizing directive principles over fundamental rights for socio-economic reforms.

Minerva Mills Case (1980)

- ⇒ The Supreme Court struck down certain provisions of the Constitution (Forty-second) Amendment Act, including clauses of Article 31C, emphasizing the limits on Parliament's power to amend the Constitution.
- ⇒ The court's decision raised questions about the status of Article 31C and its application post the Minerva Mills case.

Ongoing Supreme Court Case

- ⇒ The current Supreme Court case involves a challenge to Chapter VIII-A of the Maharashtra Housing and Area Development Act, 1976, which allows the government to acquire and redistribute private properties.
- ⇒ The legality of this provision is being examined in light of the protection provided by Article 31C.

Arguments in the Supreme Court

Petitioner's Argument

- ⇒ The petitioners argue that the expanded version of Article 31C introduced by the Constitution (Forty-second) Amendment Act replaced the original provision and ceased to exist once the amendment was enacted.
- ⇒ Therefore, the striking down of the expanded provision in Minerva Mills did not revive the older version.

Government's Argument

- ⇒ The government contends that the doctrine of revival should apply, restoring the pre-amended position of Article 31C post the Minerva Mills decision.
- ⇒ The government relies on judicial precedents and constitutional interpretations to support this stance.

Significance and Implications

- ⇒ The case raises questions about the interplay between fundamental rights, directive principles, and the amending power of Parliament.
- ⇒ It seeks to clarify the legal status of Article 31C and its impact on socio-economic legislation and property rights.

- ⇒ The Supreme Court's ruling will have far-reaching implications for constitutional jurisprudence and the balance between individual rights and state policy objectives.

Conclusion

- ⇒ The ongoing case before the Supreme Court involving Article 31C underscores the complexities of constitutional law and the evolving nature of fundamental rights in India's legal framework.
- ⇒ The court's decision will shape future interpretations of socio-economic legislation and the protection of individual rights within the constitutional framework.

ARTICLE 244(A) - STATE WITHIN A STATE



Why in the News?

- ⇒ In the Diphu Lok Sabha constituency of Assam, where tribal communities form the majority, candidates across political affiliations have committed to enforcing Article 244(A), which seeks to create an autonomous entity within the existing state framework.
- ⇒ This measure is designed to empower tribal regions with greater autonomy.

DIPHU LOK SABHA CONSTITUENCY, ASSAM

- ⇒ The Diphu Lok Sabha constituency is located in the state of Assam.
- ⇒ It is known for its significant tribal population, with tribes such as the Karbis, Dimasas, and others residing in the region.
- ⇒ Diphu serves as the administrative headquarters of the Karbi Anglong district.
- ⇒ This constituency, designated for Scheduled Tribes (STs), encompasses six legislative Assembly segments situated within three hill districts of Assam, namely Karbi Anglong, West Karbi Anglong, and Dima Hasao.
- ⇒ These districts are governed according to the regulations outlined in the Sixth Schedule of the Constitution.

Demand for autonomy

- ⇒ The demand for self-governance and development in the tribal-majority Diphu Lok Sabha constituency in

Assam, particularly focusing on the implementation of Article 244(A) of the Constitution, has historical origins tracing back to the 1950s.

- ⇒ This demand emerged from a movement advocating for a separate hill state, which eventually led to the establishment of Meghalaya as a full-fledged state in 1972.
- ⇒ However, leaders in the Karbi Anglong region opted to remain within Assam, anticipating autonomy through Article 244(A).
- ⇒ The Autonomous State Demand Committee (ASDC), a mass organization championing regional autonomy, played a pivotal role in pushing for increased autonomy in the area.
- ⇒ In 1995, the ASDC, in collaboration with local student groups, reached a Memorandum of Settlement with state and central governments to enhance the authority of the two autonomous councils in the region.
- ⇒ Frustrated by the delay in achieving autonomy, the demand escalated into armed insurgency over time, prompting peace negotiations between the governments of Delhi and Guwahati and various militant factions, including those of the Karbi and Dimasa communities.
- ⇒ Several peace agreements were signed, offering promises of greater autonomy and development initiatives.
- ⇒ In 2021, a peace settlement was brokered with five militant groups in Karbi Anglong, followed by a similar agreement with the Dimasa National Liberation Army in 2023.
- ⇒ The quest for autonomy in Diphu reflects a longstanding aspiration for self-governance and progress in the region.

About Article 244(A)

Article 244(A) of the Indian Constitution permits the establishment of an autonomous entity within Assam, encompassing specific tribal territories. The key aspects of Article 244(A) are as follows:

- ⇒ It was introduced via the Constitution (Twenty-second Amendment) Act of 1969.
- ⇒ It empowers Parliament to establish an autonomous area within Assam, incorporating designated tribal regions such as Karbi Anglong.
- ⇒ This autonomous area may have its own legislative body or council of ministers, or both, providing it with greater autonomy compared to the existing provisions of the Sixth Schedule.
- ⇒ The autonomous authorities granted under Article 244(A) extend beyond the decentralized governance outlined in the Sixth Schedule, encompassing jurisdiction over law enforcement and other matters.

Implications of implementing Art-244(A) in Assam

The implementation of Article 244(A) in Assam carries significant implications for the region. Here are some key considerations:

- **Increased Autonomy:** Enforcing Article 244(A) would provide heightened autonomy to specific tribal areas within Assam, paving the way for the establishment of an autonomous state with its own legislative body and/or Council of Ministers. This expanded autonomy has the potential to empower local communities and bolster self-governance.
- **Allocation of Legislative and Executive Powers:** Executing Article 244(A) would delineate the powers and responsibilities of the autonomous state's Legislature or Council of Ministers, specifying domains where they can enact laws and delineating their executive authority. This would afford the autonomous state greater control over its governance.
- **Fiscal Independence:** Article 244(A) permits the assignment of state-imposed taxes to the autonomous state, ensuring fiscal autonomy and financial stability for the region. This financial self-sufficiency can facilitate local development endeavours and foster economic growth.
- **Enhanced Representation and Engagement:** The provision of Article 244(A) guarantees representation and engagement of tribal areas in the legislative arena, fostering more inclusive governance and decision-making processes that reflect the interests and concerns of local communities.
- **Promotion of Socio-Economic Progress:** By endowing the autonomous state with increased powers and resources, the implementation of Article 244(A) can stimulate socio-economic advancement in the region. It can facilitate targeted development initiatives, infrastructure undertakings, and programs aimed at enhancing residents' quality of life.
- **Advancement of Peace and Stability:** Meeting the demand for autonomy through Article 244(A) has the potential to contribute to peace and stability in the region by addressing long standing grievances and aspirations of tribal communities. It could potentially mitigate conflicts and foster harmony among diverse ethnic groups.

How can granting autonomy affect the social landscape of Assam?

Bestowing autonomy in Assam could significantly reshape the social landscape of the region, yielding various potential outcomes:

- **Empowerment of Indigenous Communities:** Autonomy has the potential to empower indigenous groups such as the Bodos, Karbis, Koch Rajbongshis, Dimasas, and Tiwas, enabling them to exercise greater authority over their governance, resources, and cultural heritage preservation.

- **Preservation of Cultural Diversity:** Autonomy may contribute to safeguarding the distinct cultural identities of Assam's diverse ethnic communities, granting them the ability to safeguard and promote their languages, customs, and heritage.
- **Fostering Social Harmony:** Autonomy might cultivate a sense of solidarity and collaboration among diverse communities by championing inclusive governance frameworks that honour and accommodate the interests of all segments of society.

ENHANCING PUNISHMENTS FOR ANIMAL CRUELTY: THE NEED FOR REFORM



Introduction:

- Around the globe, countries are revisiting their laws on animal cruelty, aiming to impose stricter penalties for such offenses.
- Recent developments in Croatia and India underscore the growing demand for legislative reform to address acts of cruelty towards animals.
- This article examines the shortcomings of existing laws, explores theories of punishment, and advocates for comprehensive reform to combat animal cruelty effectively.

Recent Developments:

- **Croatia's Stricter Penalties:** Croatia recently amended its Penal Code to impose harsher punishments for animal cruelty, particularly focusing on the abandonment of domestic pets. These amendments signify a global trend towards enhancing legal protections for animals.
- **#JusticeForJai in India:** In India, the tragic killing of a community dog named Jai has sparked public outcry and renewed calls for tougher penalties for animal cruelty. The social media campaign #JusticeForJai highlights the need for stronger legal provisions to deter such offenses.

Inadequacies of the Prevention of Cruelty to Animals (PCA) Act:

- **Poor Enforcement and Meager Penalties:** Despite the existence of the PCA Act (1960), enforcement remains weak, and penalties are often inadequate.

The act fails to effectively prevent acts of cruelty towards animals due to its limited scope and lenient punishments.

- ⇒ **Examination through Punishment Theories:** Through the lens of punishment theories, the PCA Act falls short in achieving the goals of retribution, deterrence, and rehabilitation. Bailable offenses, weak fines, and discretionary sentencing contribute to its ineffectiveness.

Proposed Amendments and Draft PCA (Amendment) Bill, 2022:

- ⇒ **Calls for Legislative Reform:** In November 2022, the Department of Animal Husbandry and Dairying introduced the Draft PCA (Amendment) Bill, 2022, proposing significant amendments to the existing law. Despite public support for the bill, it has yet to be tabled in Parliament.
- ⇒ **Key Amendments:** The draft bill includes provisions for enhancing punishments, revising fine amounts, and introducing new cognizable offenses. While a step in the right direction, concerns remain about the adequacy of penalties for extreme acts of cruelty.

Future Outlook and Conclusion:

Hope for Progress:

- ⇒ Despite its limitations, the enactment of the Draft PCA (Amendment) Bill, 2022, would represent a significant milestone in India's animal welfare legislation.
- ⇒ Rukmini Devi Arundale's call for action in 1954 resonates today, urging the government to prioritize ahimsa and implement reforms to protect animals effectively.
- ⇒ As India prepares for a new government, there is renewed hope that amendments to the PCA Act (1960) will finally come to fruition, marking a significant stride towards a more compassionate society.

Conclusion:

- ⇒ As nations strive to create a more humane society, reforming animal cruelty laws becomes imperative.
- ⇒ Through comprehensive legislative reform, coupled with public awareness and enforcement efforts, societies can ensure the protection and welfare of all living beings, aligning with the principles of ahimsa and compassion.

IS BAN ON ONION EXPORTS LIFTED?

Why in news

- ⇒ A recent decision by the Centre over allowing onion imports has further angered onion farmers in Nashik and neighbouring onion-growing regions, who have labelled the move a political gimmick during the Lok Sabha elections.



Ban on export raised unrest among farmers

- ⇒ The extension of the allium's export ban in March had upset farmers in the region earlier, with tensions extending to the political arena.
- ⇒ The unrest further deepened after the central government approved the export of 2,000 tonnes of white onions from Gujarat on April 25, 2024.
- ⇒ Maharashtra's onion farming community felt unfairly excluded, as the onion belt primarily grows red onions.
- ⇒ Earlier this month, the entry of candidates campaigning for the upcoming Lok Sabha polls was barred in a part of Maharashtra's famed onion belt – Deola taluka in Nashik – over the ban on onion exports.

Central Government allowing the export of 99,150 to only six countries

- ⇒ On April 27, 2024, a Press Information Bureau notification stated the central government was allowing the export of 99,150 tonnes of onions to six countries: Bangladesh, United Arab Emirates, Bhutan, Bahrain, Mauritius and Sri Lanka.
- ⇒ The export operations will be managed by the National Co-operative Exports Limited (NCEL).

Opinion of farmers on Center decision

- ⇒ Kuber Jadhav, an onion farmer from Nashik, said that the announcement appears to be a response to growing anger and protests from onion farmers in Nashik, Lasalgaon, Shirdi, Dindori, Solapur, Ahmednagar and other regions.
- ⇒ "But the notification isn't official; it's a farce.
- ⇒ There are no details on when it was issued, and the dates mentioned are from March 2024, when the onion export ban was expected to be lifted, he explained.

Confusing and misleading decision

- ⇒ The central government had extended the ban on onion exports indefinitely after initially imposing it on December 8, 2023, when it was expected to be revoked by the end of March.
- ⇒ The release was followed by appreciation from ruling party leaders, who welcomed the decision.

- Jadhav said that the notification is designed to create confusion and mislead farmers. "The leaders fear that farmers may vote against them during the ongoing Lok Sabha elections. Hence, this gimmick," he said.

Challenging different rules for white and red onions

- Farmers have reacted strongly, questioning why there are different rules for white and red onions, and have demanded that the restrictions and the ban be lifted immediately.
- Bharat Dighole, state president of the Onion Growers' Association, said the notification is meaningless as it refers to a past decision that is being re-circulated. "This statement indicates that a previous onion crop was allowed to be sold. But it doesn't help any farmer," he said.
- Dighole added that the move is purely to garner votes and is a false attempt to appease potential voters. "Moreover, the export will still be assisted by NCEL, which is the current scenario. There are still restrictions on farmers," he said.

Way Forward

- The growers want the freedom to be able to export onions without NCEL playing a role.
- Many farmers surrendered export licenses in September 2023 to demand a rollback of export duty as well.
- The country is expected to produce about 5-10 million tonnes of onions this year. Even if the notification holds true, the export amount is 0.33 to 0.35 per cent of the total production – not enough to make profits.

Conclusion

- Farmers have demanded that the central government open up export for at least 1.5 million tonnes of onions, which would enable farmers to earn a decent income.

THE DILEMMA OF THE SUPREME COURT'S EVM VERDICT



Introduction:

- The recent verdict by the Supreme Court regarding the Electronic Voting Machines (EVMs) has sparked

a debate over the transparency and security of India's electoral process.

- While the court's decision aimed to uphold the integrity of the voting system, it has raised concerns about the lack of transparency and accountability in the EVM verification process.

The Debate Over EVM Security:

- The petition brought by the Association for Democratic Reforms and Arun Kumar Agarwal against the Election Commission's processes for ascertaining EVM security prompted a crucial discussion in the Supreme Court.
- However, the exchange between the Bench and the lawyers revealed two fundamental issues: the reliance on undisclosed "source code" for EVM security and the reluctance to disclose technical details.

Championing Blind Trust Over Accountability:

- The assertion that the source code of EVMs should not be disclosed to prevent misuse raises questions about transparency and accountability.
- Blindly trusting the Election Commission's assurances without independent verification undermines the credibility of the electoral process and fosters doubts among the public.

The Need for Transparency and Independent Verification:

- Contrary to the belief that revealing the source code compromises security, open-source software systems like WordPress demonstrate that transparency enhances security.
- By allowing independent scrutiny and ethical testing, EVMs can become more fail-proof without jeopardizing their integrity.

Historical Context and Recommendations:

- The Election Commission's refusal to audit the source code despite recommendations from technical experts underscores the need for transparency and accountability in the electoral process.
- Courts have a constitutional duty to ensure the integrity of democratic institutions, but they must also prioritize transparency and public trust.

Advocating for Trustworthy and Trustless Systems:

- Software used in public institutions must be trustworthy and trustless, meaning it should bear a reputation for reliability and not rely solely on blind trust.
- Open-source software offers a solution by allowing scrutiny without compromising security, a principle essential for preserving democratic values.

Conclusion:

- The Supreme Court's verdict on EVM security highlights the tension between ensuring electoral

integrity and upholding transparency and accountability.

- Moving forward, India must adopt a critical and constructive approach guided by evidence and reason to address the concerns surrounding EVM security and restore public trust in the electoral process.

Factual Data:

- According to the Election Commission of India, there are over 1 million Electronic Voting Machines (EVMs) used in India's elections, making it one of the largest electronic voting systems in the world.
- Technical experts have raised concerns about the security of EVMs, citing instances of tampering and manipulation in other countries.
- The use of open-source software in electoral systems has been advocated by organizations like the Open Source Election Technology Institute (OSET), which promotes transparency and verifiability in voting technology.
- In countries like Germany, the United States, and Venezuela, electronic voting systems utilize open-source software, allowing for independent verification and scrutiny by experts and the public alike.

THE RESURFACING DEBATE OVER 5% QUOTA FOR MUSLIMS IN ANDHRA PRADESH



Why in News?

- The resurgence of the debate surrounding the 5% reservation granted to Muslims in Andhra Pradesh in 2004 has brought back discussions on religion-based reservation.

Background of Muslim Reservation in Andhra Pradesh

- In Andhra Pradesh, approximately 9.5% of the population comprises Muslims. Some Muslim groups are already included in the state's Other Backward Classes (OBC) lists with quotas ranging from 7% to 10%.
- There is a push to include all Muslims in the OBC category, following the models of Karnataka and Kerala.

Reservation in 2004:

- In June 2004, the government examined the socio-economic and educational status of Muslims for inclusion in the OBC list, leading to a 5% reservation under Articles 15(4) and 16(4).
- The Andhra Pradesh High Court struck down the quota for not being referred to the Backward Classes Commission and for not excluding the creamy layer, citing that the Muslim community cannot be considered a homogenous group.

Reservation in 2005:

- The Backward Classes Commission recommended reservations for the entire Muslim Community, stating they are socially, educationally, and economically backward.
- An ordinance granting a 5% quota to Muslims was introduced, subsequently replaced with legislation.
- The High Court struck down the quota again, stating that the Commission did not rely on objective criteria to conclude that Muslims as a group were backward in Andhra Pradesh.

Current Status:

- The Supreme Court was scheduled to hear the case in 2022, but it was postponed after the resolution of the Economically Weaker Section (EWS) quota issue.
- The EWS quota was cleared in November 2022, but the AP quota issue is pending.

Arguments Related to Religion-based Reservation in India

Arguments in Favor:

- **Socio-Economic Backwardness:** Muslims lag behind in socio-economic indicators, and reservations can bridge this gap.
- **Constitutional Mandate:** The Constitution allows affirmative action for socially and educationally backward classes, irrespective of religion.
- **Ensuring Representation:** Reservations ensure adequate representation of underrepresented religious groups.

Arguments Against:

- **Secularism:** Religion-based reservations contradict secularism, which advocates equal treatment of all religions.
- **Undermining Unity:** Such reservations could undermine national unity by fostering resentment among communities.
- **Economic Criteria:** Reservations should be based on economic criteria to ensure benefits reach the truly disadvantaged.
- **Administrative Challenges:** Implementing religion-based reservations poses administrative challenges.

Way Forward:

- **Socio-Economic Criteria:** Reservations could be based on socio-economic factors to ensure benefits reach the most disadvantaged individuals.

- ⇒ **Education Empowerment:** Focus on improving educational infrastructure and skill development programs.
- ⇒ **Inclusive Policies:** Implement policies addressing the needs of backward communities without resorting to religious-based reservations.
- ⇒ **Dialogue and Consensus:** Engage stakeholders to address socio-economic challenges in line with constitutional values.

BEYOND THE SEMANTICS



Introduction

- ⇒ In a sign of progressive intent, a three-judge Supreme Court (SC) bench, comprising Chief Justice D Y Chandrachud and Justices J B Pardiwala and Manoj Misra extended the ambit of pregnancy to include non-binary people and transgender men, among other gender identities, in addition to cisgender women.

The case before SC

- ⇒ In its ruling in A (Mother of X) v. State of Maharashtra, involving the termination of pregnancy of a 14-year-old girl, the judges used the term “pregnant person/(s)” over 40 times, clarifying in a footnote that their reason for doing so was an acknowledgement of a wider, more inclusive gender spectrum.
- ⇒ In a country where gender rights, including, especially, LGBTQIA+ rights, has had a chequered trajectory, this is a welcome, necessary step.

SC's efforts to sensitize citizens against gender stereotypes

- ⇒ The SC's nod comes as an expansion of its ongoing efforts to sensitise the legal fraternity – and by extension, the people of the land – to the nuances of neutral language.
- ⇒ In August last year, launching its Handbook on Combating Gender Stereotypes, the Court had emphasised how impartiality is critical to the language of judicial discourse, capable of impacting procedural outcomes adversely, should it make room for paternalistic or prejudicial interpretations.
- ⇒ In its introduction, the CJI wrote that the use of outdated language “inhibits the transformative

project of the law and the Constitution of India, which seek to secure equal rights to all persons, irrespective of gender”.

- ⇒ The current observation is rooted in that spirit.

How SC's observation will help transgender and non-binary people?

- ⇒ In broadening categories of identity, this shift in language goes beyond semantics.
- ⇒ It urges a reimagination of gender and intersectionality that is not limited to binaries and that recognises the agency of individuals.
- ⇒ For transgender men and non-binary people who choose to become pregnant, navigating healthcare and legal frameworks can be discriminatory and isolatory at the best of times.
- ⇒ The Court's acknowledgment represents a vital step towards recognising legal protections for everyone capable of experiencing pregnancy.
- ⇒ It is also in keeping with the language of its judgment on same-sex marriage last year in which it urged for legislative safeguards for same-sex couples.
- ⇒ In lending institutional heft to the ongoing conversation around the use of gender-neutral language to reference matters of pregnancy, including abortion and fertility, the Court has set a precedent for legal systems and lower courts.

Conclusion

- ⇒ While it takes time for change to take root – the legal battle for same-sex marriage, for instance, has been ongoing for decades – the latest SC's observation could pave the way for a less conservative and more atypical understanding of gender and family.

EMBRACING COMPETENCY IN POLITICAL DISCOURSE: THE ERA OF PERFORMANCE POLITICS



Introduction: Reimagining Political Competency

- ⇒ In the dynamic landscape of India's vibrant democracy, the notion of political competency emerges as a crucial determinant of effective governance.

As citizens entrust their elected representatives with the mandate to lead, the emphasis shifts towards a competency-based approach in political discourse, wherein the ability to deliver on promises becomes paramount.

The Foundation of India's Democratic Fabric

At the heart of India's democratic framework lies the collective representation of the people through elected officials. With 795 Members of Parliament, approximately 4,123 Members of the Legislative Assemblies, and a staggering 31.8 lakh elected representatives at the local government level, the responsibility to formulate policies, address citizen concerns, and steer the nation towards progress rests on their shoulders.

The Need for Competency: Beyond Educational Qualifications

While educational qualifications serve as a foundational element, effective governance necessitates a broader spectrum of competencies. Behavioral skills, including communication, leadership, and negotiation, are essential for engaging stakeholders and fostering unity amid diversity.

Functional Competencies: Understanding Policy Processes

A deep understanding of legislative rules and policy implementation processes is imperative for elected representatives. They must bridge the gap between citizen grievances and policy formulation, ensuring that governance remains responsive and inclusive.

Domain Expertise: Tailoring Solutions to Constituency Needs

Domain-based competencies equip representatives with the knowledge and skills to address the unique needs of their constituencies. From infrastructure planning to technological advancements, staying abreast of relevant domains ensures informed decision-making and holistic development.

Balancing Specialization with Innovation

While advocating for competency-based politics, it's crucial to avoid the competency trap, wherein a narrow focus on specific skills stifles innovation. Instead, fostering critical thinking and problem-solving alongside technical expertise promotes adaptive governance.

Institutionalizing the Vision: Aligning Competencies with Roles

To institutionalize competency-based politics, aligning competencies with specific roles is essential.

Leveraging existing training resources and fostering collaboration between central and state institutions and civil society organizations facilitates continuous learning and skill development.

Conclusion: A Call for Accountability and Competency

As India marches towards a developed future, the onus lies on citizens to demand more from their elected representatives. Competency must become the cornerstone of political discourse, where effective leadership is not merely an exception but an expectation. In embracing this ethos, we pave the way for a truly empowered and prosperous nation.

NAVIGATING THE COMPLEXITIES: RELIGION-BASED RESERVATIONS IN INDIA



Introduction

As India's election season stirs debates on reservation policies, particularly those based on religion, a nuanced understanding of the constitutional framework, historical context, and practical implications is essential. The discourse surrounding religion-based reservations intersects with the foundational principles of equality, equity, and secularism enshrined in the Indian Constitution, prompting a multifaceted dialogue on social justice and representation.

Evolution of Reservation in India

India's journey towards social justice has been shaped by constitutional provisions aimed at rectifying historical injustices and addressing societal imbalances. While the Constitution initially emphasized equality, it later embraced equity through affirmative action measures to uplift socially and educationally backward classes, Scheduled Castes (SCs), and Scheduled Tribes (STs). This shift reflects a commitment to fostering inclusive development and mitigating entrenched inequalities.

Religion-Based Reservations: Theory and Practice

- The Indian Constitution prohibits discrimination based solely on religion, yet allows for affirmative action through reservations for backward classes, a category encompassing religious minorities demonstrating social and educational backwardness.
- This nuanced approach acknowledges the complex intersections of caste, religion, and socioeconomic status, recognizing the diverse manifestations of marginalization within society.

Examples of Muslim Reservations in States

Several states have implemented reservation policies benefiting Muslims, acknowledging their historical marginalization and social backwardness:

- **Kerala:** Sub-quota for Muslims within the OBC quota.
- **Karnataka:** Recognition of 36 Muslim castes as backward.
- **Tamil Nadu:** Sub-quota for backward Muslims within OBC reservation.
- **Andhra Pradesh & Telangana:** Attempts to classify Muslims as a backward class.

Constitutional and Judicial Insights

- The Supreme Court has affirmed that reservations can extend to socially and educationally backward religious communities, aligning with the principle of substantive equality.
- High court rulings have further upheld the compatibility of religion-based reservations with secularism, emphasizing the imperative of addressing historical disadvantages across religious lines.

Challenges and Future Prospects

- While religion-based reservations signify a step towards inclusive development, challenges persist in balancing constitutional mandates with practical implementation.
- Debates on the expansion and efficacy of reservation policies underscore the complexity of navigating social justice imperatives within a pluralistic society.
- Addressing these challenges requires nuanced policy approaches, informed by a commitment to equitable representation and inclusive growth.
- In navigating the complexities of religion-based reservations, India continues to grapple with questions of social justice, equality, and secularism, reaffirming the imperative of fostering a society where all individuals have equal opportunities for advancement and participation.

NURTURING FARM PROSPERITY: A CALL FOR FARMER-CENTRIC AGRICULTURAL POLICIES

Introduction: Harvesting Success in Agriculture

- In the vast fields of Indian agriculture, the yield of success is often measured in export figures.



- Yet, recent statistics reveal a shortfall, with agricultural exports witnessing a decline despite ambitious targets.
- It's time to plow through the policies and cultivate a farmer-centric approach to rejuvenate the fields of agri-export.

Sowing Seeds of Growth: A Tale of Two Governments

- The tale of agri-exports unfolds over the years, with contrasting narratives under different administrations.
- The fertile period of the UPA government, marked by robust growth, gave way to a leaner period under the NDA government.
- The growth momentum faltered, leaving a yawning gap between potential and reality.
- Had the growth trajectory of the UPA era been sustained, the harvest of agricultural exports could have flourished, reaching unprecedented heights.

Bountiful Harvest: Key Exports Nurturing the Economy

- In the diverse basket of agricultural exports, certain crops stand tall as pillars of prosperity.
- Rice, the golden grain, leads the pack, followed by marine products, spices, bovine meat, and sugar, each contributing its share to the bounty of Indian agriculture.
- These exports not only fill the coffers but also sustain livelihoods across the agrarian landscape.

Nurturing Growth: Factors Cultivating Agricultural Exports

- **The growth of agricultural exports thrives on two essential nutrients:** global market dynamics and export policies.
- Global price trends dictate the ebb and flow of export fortunes, while export policies serve as the tillers of trade.
- However, recent restrictions and bans have cast a shadow over the fields of agri-export, impacting the fortunes of farmers and traders alike.

Cultivating Prosperity: Lessons from Rice Export Restrictions

- The saga of rice export restrictions unveils valuable insights into policy cultivation.
- Despite a dip in export volume, the value realization remained resilient, underlining the importance of strategic export management.

- ⇒ Optimal export quantities and prudent policies emerge as the seeds of sustainable growth, ensuring a bountiful harvest while safeguarding resources and ecology.

Nourishing the Land: Prioritizing Farmer Prosperity

- ⇒ In the quest for export competitiveness, the well-being of farmers must remain the cornerstone.
- ⇒ Policies should nurture prosperity at the grassroots, fostering innovation, efficiency, and sustainability.
- ⇒ Investment in research, irrigation, and eco-friendly practices can sow the seeds of long-term growth, enriching both farmers and the environment.

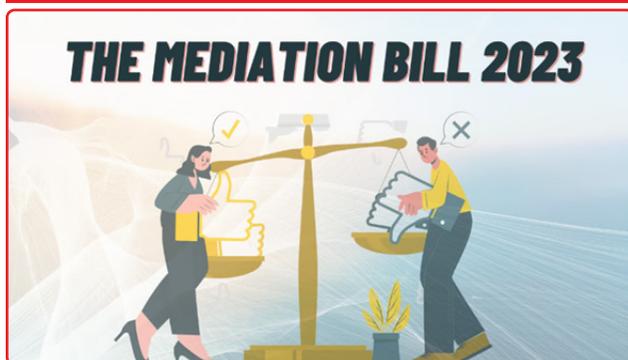
Harvesting Equity: Addressing Consumer Bias in Export Policies

- ⇒ The recent onion export saga highlights a glaring imbalance in policy priorities.
- ⇒ While consumers benefit from lower prices, farmers bear the brunt of skewed export regulations.
- ⇒ A shift towards farmer-centric policies is imperative to bridge this divide and cultivate a more equitable agricultural landscape.

Conclusion: Cultivating a Farmer-Centric Future

- ⇒ As we plow through the furrows of agricultural policy, let us sow the seeds of change.
- ⇒ A farmer-centric approach is not just a choice but a necessity, essential for nurturing prosperity across the agrarian landscape.
- ⇒ It's time to cultivate policies that put farmers first, ensuring a bountiful harvest of prosperity for all.

SIGNIFICANCE OF THE MEDIATION ACT, 2023, IN TRANSFORMING DISPUTE RESOLUTION IN INDIA



Context

- ⇒ The Mediation Act, 2023, emerges as a pivotal legislative instrument poised to revolutionize the landscape of dispute resolution in India.
- ⇒ Championed by Chief Justice of India, Justice D.Y. Chandrachud, this Act signifies a paradigm shift towards mediation as a primary means of resolving

conflicts, thereby offering a host of transformative implications:

Formalization and Diversification of Mediation Practices:

- ⇒ The Act formalizes mediation by providing a structured framework for its implementation across various stages of dispute resolution, including pre-litigation and court-annexed mediation.
- ⇒ By offering multiple forms of mediation, it caters to the diverse needs and complexities of disputes, thereby enhancing accessibility and inclusivity in the dispute resolution process.

Recognition and Evolution of Mediation:

- ⇒ Notably, the Act reflects a broader acknowledgment within the legal fraternity, including former Supreme Court judge, Justice S.K. Kaul, of the evolving acceptance and efficacy of mediation as a complementary tool to traditional legal mechanisms.
- ⇒ This recognition underscores a significant evolution in legal philosophy, as mediation emerges as a mainstream practice endorsed by legal luminaries, thereby fostering a culture of collaboration and mutual understanding in conflict resolution.

Alignment with Gandhian Principles:

- ⇒ Inspired by Mahatma Gandhi's emphasis on non-violence and reconciliation, mediation embodies a philosophical shift towards peaceful dialogue and amicable settlement of disputes.
- ⇒ By prioritizing reconciliation over adversarial confrontation, the Act fosters a democratic space for resolving conflicts, echoing India's rich cultural heritage and commitment to non-violent conflict resolution.

Addressing Challenges in Mediator Skill Development:

- ⇒ While the Act mandates a minimum of 15 years of professional experience for mediators, it also recognizes the need to overcome barriers to entry for aspiring mediators, particularly those transitioning from law school.
- ⇒ To address this challenge, the Act advocates for innovative training methods and integrated legal education, equipping legal professionals with the requisite skills to navigate both advocacy and mediation roles effectively.

Promotion of Innovative Training Methods:

- ⇒ In line with the Act's vision, innovative training methods such as co-mediation and shadow mediation are incorporated to provide practical exposure and dynamic learning experiences for emerging mediators.
- ⇒ These initiatives not only ensure comprehensive skill development but also foster a culture of continuous learning and adaptation within the mediation community.

Way Forward

- In essence, the Mediation Act, 2023, symbolizes a watershed moment in India's journey towards a more inclusive, efficient, and empathetic approach to dispute resolution.
- By formalizing mediation, recognizing its significance, and addressing challenges in mediator skill development, the Act lays a robust foundation for fostering a culture of peace, justice, and reconciliation in Indian society.

THE FRAYING OF THE MODEL CODE OF CONDUCT: A CONCERN FOR INDIAN DEMOCRACY



Context

- The model code of conduct, designed by the Election Commission of India (ECI) to ensure fair and peaceful elections, is facing egregious violations by senior politicians during the campaign for the 18th Lok Sabha, raising significant concerns about the integrity of the electoral process.

Upholding the Code

- Political parties are obligated to adhere to the code, which was formulated based on consensus among all parties to maintain civility and orderliness in elections.
- However, elections in India often descend into a no-holds-barred battle, with parties resorting to below-the-belt tactics to gain an advantage.

Constitutional Mandate

- The Constitution empowers the ECI to conduct free and fair elections, considering it an integral part of the Constitution's basic structure.
- The Supreme Court, in Election Commission of India vs State of Tamil Nadu and Others (1993), reaffirmed the Commission's role and powers in ensuring the purity of the electoral process.

Key Provisions of the Model Code

- The code prohibits activities that aggravate existing differences or incite communal hatred. Criticism of political parties should focus on policies and programs, avoiding unverified allegations or appeals to caste or communal feelings.

- Additionally, corrupt practices or offenses under election laws are strictly prohibited.

Enforcement Challenges

- Although the model code is not legally enforceable, the only recourse for aggrieved parties is to lodge complaints with the Commission.
- While neither The Representation of the People Act nor The Conduct of Election Rules explicitly address the code, the Election Symbols (Reservation and Allotment) Order empowers the Commission to take action against violators.

Ministerial Oaths and Violations

- Ministers, through their oaths, pledge to uphold fairness and impartiality. Violations, such as promoting enmity between sections of society, breach this oath.
- While the law lacks specific provisions for punishing such violations, Section 125 of the Representation of People Act 1951 addresses promoting enmity or hatred between citizens on religious grounds.

Judicial Role in Ensuring Fair Elections

- The Supreme Court has emphasized the importance of maintaining the purity of elections, condemning practices that foster hatred based on religion, caste, or community.
- It can direct the ECI to initiate criminal proceedings under Section 125 and even remove violators from campaign activities during ongoing elections.

Conclusion: Safeguarding Democracy

- The powers vested in the ECI by the Constitution are crucial for preserving the integrity of India's electoral process.
- It is imperative for the Commission to exercise these powers effectively when the need arises, ensuring that elections remain a fair and democratic process devoid of divisive tactics.

ADDRESSING THE CRITICAL GAP IN FIRE SAFETY STANDARDS: A CALL TO ACTION



Context

- The recent tragic fires in Delhi and Rajkot have thrust India's inadequate fire safety measures into the spotlight once again.

- ⇒ Despite global standards for fire preparedness and repeated incidents over the past decades, the vulnerability of public spaces, residential areas, hospitals, and commercial buildings in India remains a pressing concern.
- ⇒ According to the National Crime Records Bureau (NCRB), over 7,500 fire accidents in 2022 resulted in the loss of 7,435 lives, with Maharashtra and Gujarat bearing a significant portion of the burden.

The Persistent Challenges

Several challenges contribute to the recurring fire accidents across the country:

1. **Non-compliance with Safety Regulations:** Many establishments operate without the necessary fire safety clearances, blatantly disregarding basic safety norms. The recent incident at the Rajkot gaming center is a stark example of this negligence.
2. **Weak Municipal Oversight:** Municipal bodies tasked with fire safety inspections are often understaffed and lack resources, leading to infrequent and ineffective checks on compliance.
3. **Neglect of Existing Guidelines:** Despite detailed guidelines provided in the National Building Code and state-specific fire safety rules, adherence remains lax, perpetuating hazardous conditions.
4. **Inadequate Firefighting Infrastructure:** Urban India suffers from a significant deficit in the number of fire stations, with less than 40% of the required infrastructure in place. Moreover, the existing infrastructure urgently requires modernization to meet contemporary challenges.

Current Fire Safety Standards

- ⇒ India's fire safety standards are primarily governed by the National Building Code (NBC) 2016, which offers comprehensive guidelines for fire prevention, protection, and life safety in buildings.
- ⇒ Additionally, each state has its own Fire Services Act, defining the powers and responsibilities of fire services and enforcing safety regulations.
- ⇒ The Bureau of Indian Standards (BIS) sets standards for fire safety equipment, and the Ministry of Home Affairs oversees fire management through the Directorate General of Civil Defense, Home Guards, & Fire Services.
- ⇒ Furthermore, the National Fire Service College in Nagpur plays a crucial role in training and educating fire service personnel.

Steps Towards Improvement

Several initiatives have been launched to address the deficiencies in India's fire safety infrastructure:

1. **Scheme for Expansion and Modernization of Fire Services:** Launched by the Centre, this scheme aims to strengthen fire services in states by providing financial assistance for equipment upgrades, personnel training, and the establishment of new fire stations.

2. **Model Bill for Fire and Emergency Services Maintenance:** A model bill circulated by the Centre seeks to facilitate the establishment and maintenance of efficient fire and emergency services at the state level.
3. **National Disaster Management Authority (NDMA) Guidelines:** The NDMA has released guidelines covering scaling, types of equipment, and training for fire services nationwide.
4. **Mandatory Fire Safety Audits:** Fire safety audits are now mandated in all buildings over 15 meters tall every two years by independent entities.

The Path Forward

To effectively address the fire safety crisis in India, concerted efforts are required:

1. **Strict Enforcement of Regulations:** Authorities must rigorously enforce fire safety regulations and impose penalties on violators.
2. **Infrastructure Investment:** Modernizing firefighting infrastructure is imperative, as highlighted by various studies and reports.
3. **Enhanced Municipal Capacity:** Municipal bodies need increased resources and training to conduct regular and thorough fire safety inspections.
4. **Policy Implementation and Monitoring:** Adherence to the National Building Code and state-specific regulations must be ensured through regular audits and monitoring.
5. **Accountability and Legal Reforms:** Violators must be held accountable through stringent penalties and legal action, incentivizing compliance.
6. **Prioritizing Healthcare Facilities:** Special attention should be given to fire safety in healthcare facilities due to the presence of flammable materials and vulnerable patients.

Conclusion

- ⇒ By prioritizing these measures and fostering collaboration between government bodies, private stakeholders, and civil society, India can mitigate the risk of fire accidents and ensure the safety and well-being of its citizens.

CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES LAUNCHES PRAGATI-2024

Introduction:

- ⇒ The Central Council for Research in Ayurvedic Sciences (CCRAS), under the Ministry of Ayush, Government of India, is organizing the "Pharma Research in AyurGyan And Techno Innovation (PRAGATI-2024)" event at the India Habitat Centre, New Delhi, on May 28, 2024.
- ⇒ This collaborative initiative aims to propel Ayurveda research and industry by fostering partnerships between CCRAS and the Ayurvedic drug sector.



Key Participants:

- The program will be inaugurated by Secretary Ministry of Ayush, Vd. Rajesh Kotecha, who will deliver a keynote speech on the role of industry in Ayurveda development.
- Mrs. Kavita Garg, Joint Secretary, and Dr. Koustubha Upadhaya, Advisor, Ministry of Ayush, will also participate in the event.
- Prof. Vaidya Rabinarayan Acharya, Director General of CCRAS, will lead the meeting, emphasizing the importance of research-based, quality Ayurvedic products.

Objectives of PRAGATI-2024:

The event aims to:

- Utilize CCRAS's research outcomes and technologies.
- Establish collaborative networks for research and development.
- Identify potential industrial partners for collaboration.
- Explore opportunities for capacity building and entrepreneurship in Ayurvedic pharmaceuticals.

Technical Sessions:

The event features four specialized technical sessions:

1. Highlighting CCRAS's product development initiatives and strategies for researcher-industry collaborations.
2. Panel discussion on regional and global Ayurveda drug development.
3. Experience sharing and industry expectations from CCRAS.
4. Focused group discussions on setting research priorities for CCRAS-industry collaboration.

Industry Participation:

- Representatives from 35 pharmaceutical companies, including CEOs from renowned firms such as Himalaya, Emami, Baidyanath, Dabur, and others, will participate.
- Experts from organizations like CII, Ayush Excil, PCIMH, and NRDC will also attend.

Expected Outcome:

- PRAGATI-2024 aims to identify potential industrial partners, exchange scientific knowledge, and utilize research outcomes in Ayurvedic drug development.

- This initiative will enhance networking, institutional linkages, and benefit Ayurvedic clinicians and patients alike.

COLLABORATIVE EFFORTS TO COMBAT UNSOLICITED CALLS: TRAI'S JOINT COMMITTEE OF REGULATORS MEETING



Context

- The Telecom Regulatory Authority of India (TRAI) recently convened a significant meeting of the Joint Committee of Regulators (JCoR) at its headquarters in Delhi on May 21, 2024.
- The meeting aimed to address the pressing issue of preventing unauthorized calls and combating the misuse of unsolicited calls, which not only cause inconvenience to the public but also infringe upon individual privacy.

What is the Issue? Centre

- Unsolicited Commercial Communication (UCC) poses a significant challenge, being a major source of inconvenience to the public and exploited by fraudsters.
- Recognizing the gravity of the situation, TRAI, along with representatives from regulatory bodies such as the Reserve Bank of India (RBI), Securities & Exchange Board of India (SEBI), Ministry of Consumer Affairs (MoCA), and special invitees from the Department of Telecommunications (DoT) and Ministry of Home Affairs (MHA), delved into collaborative approaches to tackle this menace.

Key Discussions

The discussions at the JCoR meeting revolved around several critical issues:

1. **Unauthorized Calls:** Addressing unsolicited calls from both unauthorised mobile and landline numbers.
2. **Series Identification:** Highlighting the use of specific series, such as the 140 series for promotional calls and the 160 series for service and transactional calls, to aid consumer identification.
3. **Role of BFSI Entities:** Recognizing the pivotal role of entities in the Banking, Finance Services & Insurance (BFSI) sector in preventing UCC calls and messages.

4. **Digital Consent Acquisition:** Emphasizing the importance of acquiring digital consents through a transparent process, facilitated by the Digital Consent Acquisition (DCA) system established by Telecom Service Providers, ensuring customer verification using OTP and permitting revocation of consents.
5. **Whitelisting and Fraud Control:** Implementing measures such as whitelisting of URLs/Apks/OTT Links/Call back numbers in content templates and strengthening the Know Your Customer (KYC) process to control frauds.
6. **Information Sharing:** Promoting information sharing through platforms to enhance security and transparency in the telecom sector.

Proactive Measures

- ⇒ TRAI's initiative to convene the JCoR meeting underscores a proactive approach to address regulatory implications in the digital realm.
- ⇒ By fostering collaboration among regulatory bodies and government departments, TRAI aims to strengthen consumer privacy protections and curb fraudulent activities effectively.

Conclusion

- ⇒ The collaborative efforts showcased in the JCoR meeting reflect a concerted commitment to combatting the challenges posed by unsolicited calls and ensuring the integrity of telecom resources.
- ⇒ Moving forward, the implementation of the discussed strategies, including whitelisting, digital consent acquisition, and fraud control measures, will be instrumental in safeguarding consumer interests and enhancing trust in the telecom sector.

CONSTITUTION BENCH VERDICT BINDING ON LESSER BENCHES: SC



Context

- ⇒ In a landmark ruling, the Supreme Court of India has affirmed the precedence of decisions made by Constitution benches over those made by smaller benches.
- ⇒ This significant decision came to light during a review of the 2022 ruling concerning land-holding rights under the Haryana Village Common Lands (Regulation) Act, 1961.

April 2022 Supreme Court Verdict

- ⇒ On April 7, 2022, the Supreme Court issued a verdict regarding the management of land acquired from landowners in Haryana within prescribed limits.
- ⇒ The ruling clarified that panchayats were not entitled to claim ownership of such lands but were tasked solely with their administration and oversight.
- ⇒ Notably, the land did not revert to its original owners but was retained for the present and future needs of the community.

Review of the Supreme Court's Decision

- ⇒ Subsequently, a bench comprising Justices B R Gavai and Sandeep Mehta revisited this verdict.
- ⇒ They highlighted that the initial decision should have been guided by a precedent established by a Constitution bench ruling in 1966, which it failed to do so.
- ⇒ Emphasizing the significance of adhering to such precedents, the bench underscored the adverse impact of deviating from established legal standards.
- ⇒ Consequently, the original April 2022 order was revoked.

Key Legal Principles Reinforced

This case underscores several crucial legal principles:

1. **Binding Precedent:** Decisions rendered by Constitution benches are binding on benches with fewer judges, ensuring stability and consistency in legal interpretations across cases and judges.
 2. **Judicial Review:** The review process plays a pivotal role in rectifying errors or significant omissions to ensure fairness and legality in legal determinations, particularly in cases involving potential miscarriages of justice.
 3. **Legal Consistency:** Consistency in court rulings is paramount for fostering trust in the legal system and facilitating predictability of outcomes.
- ⇒ Upholding the integrity and consistency of the legal system hinges on adhering to well-established legal standards.

More About Haryana Village Common Lands (Regulation) Act

- ⇒ Enacted in 1961, the Haryana Village Common Lands (Regulation) Act governs the management of Shamlat lands (common lands) in Haryana, India.
- ⇒ This legislation restricts the buying, selling, or renting out of these lands to prevent fragmentation of holdings, prioritizing agricultural and local community usage.
- ⇒ Panchayats are empowered to utilize these lands for public welfare purposes.
- ⇒ Importantly, the Act contains provisions penalizing illegal ownership and usage, with subsequent amendments aimed at bolstering regulations to safeguard against encroachments and illicit

acquisitions, reflecting ongoing efforts to safeguard rural community assets.

EXAMINING MUSLIM INHERITANCE LAWS IN INDIA: THE CASE BEFORE THE SUPREME COURT



Introduction:

- The Supreme Court of India is set to scrutinize the applicability of Muslim personal law in succession matters for former Muslims.
- This case arises from a plea filed by a petitioner representing former Muslims in Kerala, seeking the option to be governed by secular laws instead of Muslim personal law.

Case Before the Supreme Court:

- **Petitioner's Plea:** The petitioner argues that individuals who choose not to adhere to Muslim Personal Law should have the option to be governed by secular law, specifically the Indian Succession Act of 1925.
- **Citing Sabarimala Verdict:** The petitioner draws attention to the Supreme Court's 2018 ruling on the Sabarimala temple entry case, highlighting the right to freedom of religion under Article 25 of the Indian Constitution.
- **Challenging Shariat Law:** The petitioner seeks exemption from the Shariat law, particularly under Sections 2 and 3 of the Muslim Personal Law (Shariat) Application Act of 1937.
- **Application of Indian Succession Act:** The petitioner contends that the Indian Succession Act of 1925 should apply to both intestate and testamentary succession matters.
- **Rooted in Freedom of Religion:** The plea is rooted in Article 25 of the Indian Constitution, emphasizing the right to not follow any religion and associated civil rights without discrimination.

Muslim Inheritance Laws in India: Key Aspects:

- **Governance:** Muslim personal laws are primarily governed by the Muslim Personal Law (Shariat) Application Act of 1937, derived from Islamic principles, Quran, Hadith, and customary practices.

- **Coverage:** Encompasses various aspects of personal life, including marriage, divorce, maintenance, inheritance, and charities.
- **Marriage and Divorce:** Recognizes marriage as a civil contract and allows various forms of divorce, including talaq, khula, and mubarat.
- **Inheritance and Successions:** Rules of inheritance distribute property among legal heirs, with specific shares allocated to different categories. Applicable to both intestate and testamentary succession.
- **Maintenance and Guardianship:** Imposes obligations on individuals to provide maintenance to spouses, children, and dependents. Guardianship rules govern the rights and responsibilities of guardians.
- **Exclusion and Applicability:** Excludes Muslims married under the Special Marriage Act of 1954 and is not applicable in Goa, where the Goa Civil Code prevails. Indian Succession Act applies in certain circumstances.

Supreme Court's Decision:

- Initially indicating that Muslims are governed by Shariat regardless of their beliefs, the Supreme Court agreed to hear the case.
- Noting the absence of secular laws on wills and legacies for Muslims, the court directed responses from the Central and Kerala governments.

Conclusion:

- The case before the Supreme Court holds significance as it addresses the legal challenges faced by former Muslims in matters of inheritance and succession.
- The outcome of this case will have implications for the interpretation and application of personal laws in India, particularly concerning religious freedoms and civil rights.

INDIASKILLS 2024: INDIA'S BIGGEST SKILL COMPETITION TO COMMENCE IN NEW DELHI



Introduction

- The IndiaSkills Competition 2024 – the country's biggest skill competition designed to demonstrate the highest standards of skilling is all set to commence on 15th May 2024.

➤ The Ministry of Skill Development and Entrepreneurship (MSDE) has organised an inauguration ceremony at Yashobhoomi, Dwarka, New Delhi which will witness the participation of over 900 students from more than 30 states and Union Territories and over 400 industry experts.

Participants & Competition

- The four-day-long IndiaSkills will allow participants to showcase their diverse skills and talent on a national platform across 61 skills – from traditional crafts to cutting-edge technologies.
- While 47 skills competitions will be held onsite, 14 will be held offsite in Karnataka, Haryana, Uttar Pradesh, and Gujarat keeping in mind the availability of best infrastructure.
- The students will also participate in 9 exhibition skills such as Drone-Film making, Textile-Weaving, Leather-Shoemaking, and prosthetics-makeup.
- The students participating in the national-level competition have been trained in ITIs, NSTIs, Polytechnics, institutes of engineering, institutes of nursing, and institutes of biotechnology.
- This is a testament to the international-standard training Indian youth are receiving in the existing skill network.
- Winners of IndiaSkills, with the help of the best industry trainers, will get prepared for the WorldSkills Competition scheduled to take place in Lyon, France in September 2024, which will bring together 1,500 competitors from over 70 countries.

Opportunity

- The IndiaSkills Competition opens new avenues of opportunity for the skilled youth, empowering them to dream beyond conventional boundaries and showcase their skills on the global stage.
- It also celebrates the invaluable role of skills and craftsmanship in nation building, while also symbolising the intrinsic value of skill development in shaping the future of the nation amidst rapid technological advancements and dynamic global trends.
- This year the participants will have the opportunity to earn credits within the National Credit Framework.
- All skills showcased in both the WorldSkills and IndiaSkills Competitions are meticulously aligned with the National Skills Qualification Framework (NSQF), empowering participants to creditise their learning outcomes and lead a thriving career in their chosen fields.
- It is also the first time that IndiaSkills has incorporated a competition information system called Qrencia.

Shortlisting of Candidates

- About 2.5 lakh candidates registered for the competition on the Skill India Digital Hub (SIDH)

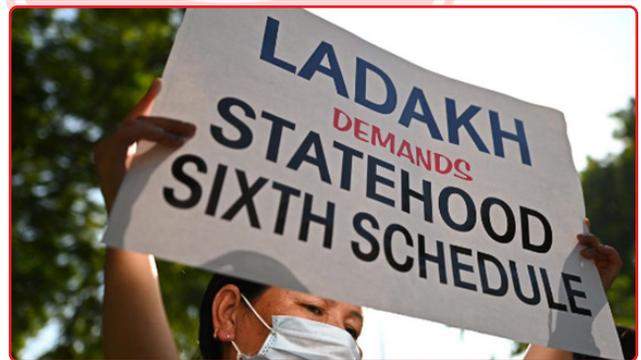
Portal, out of which 26,000 were shortlisted through a process of pre-screening.

- This data was shared with the states for organising the state- and district-level competition, out of which over 900 students were further shortlisted for the IndiaSkills National competition.

Way Forward

- The entire process of selection not only generates a spirit of competition among the participants but also plays a pivotal role in building aspirations for skill development and vocational training among the youth.
- By showcasing diverse opportunities and creating a competitive yet collaborative environment, such skill competition with active participation from States/UTs, Industry, and Academia lays a solid foundation for a skilled workforce that can drive national progress and innovation.
- IndiaSkills is expected to not only create aspirations among the youth but also give India its real skill heroes who later serve as ambassadors for 'New India'.
- This year, IndiaSkills is supported by more than 400 Industry and Academic Partners such as Toyota Kirloskar, Autodesk, JK Cement, Maruti Suzuki, Lincoln Electric, NAMTECH, Vega, Loreal, Schneider Electric, Festo India, Artemis, Medanta, and Cygnia Healthcare.

LADAKH DEMAND SIXTH SCHEDULE INCLUSION



Context

- The demand for Ladakh's inclusion in the Sixth Schedule of the Indian Constitution has been gaining traction in recent years, particularly since it became a Union Territory in 2019.
- This demand stems from the desire to protect and preserve the unique social practices and cultural heritage of the diverse tribal groups residing in the region.

What is the Sixth Schedule?

- The Sixth Schedule of the Indian Constitution provides provisions for the administration of tribal areas in Assam, Meghalaya, Tripura, and Mizoram.

- ⇒ It allows for the establishment of Autonomous District Councils (ADCs), which have the authority to legislate on matters concerning land, forests, agriculture, and more.
- ⇒ Additionally, these councils can set up village courts to resolve minor disputes within tribal communities.

Why does Ladakh demand Sixth Schedule inclusion?

- ⇒ Ladakh is home to various tribal groups, such as the Buddhist community in Leh and the Shia Muslims in Kargil.
- ⇒ Advocates and community leaders argue that inclusion in the Sixth Schedule would afford these tribes greater autonomy and governmental power.
- ⇒ This autonomy would enable them to address local issues effectively and safeguard their cultural identity and traditions.

Potential Impact of Sixth Schedule in Ladakh

- ⇒ If Ladakh is added to the Sixth Schedule, the establishment of Autonomous District Councils would play a pivotal role in local governance.
- ⇒ This autonomy would facilitate the formulation of policies tailored to the region's specific needs, ensuring the preservation of ethnic identities and sustainable development.
- ⇒ Moreover, it could alleviate concerns about external influences and migration impacting the region's cultural fabric.

More About Tribal Status

- ⇒ Tribal communities, often misunderstood as primitive, possess rich cultural traditions and complex social structures.
- ⇒ Recognizing the unique socio-economic challenges faced by these communities, the Constitution of India provides special provisions for Scheduled Tribes.
- ⇒ These include measures aimed at promoting their welfare and protecting their rights.

Way Forward

- ⇒ In international contexts, various examples highlight efforts to preserve tribal autonomy and cultural heritage.
- ⇒ From tribal autonomy in the United States to land rights recognition in Brazil, and the Declaration on the Rights of Indigenous Peoples by the UN, there are global initiatives aimed at safeguarding tribal cultures and identities.

Conclusion

- ⇒ In conclusion, Ladakh's demand for inclusion in the Sixth Schedule reflects the broader struggle for tribal empowerment and cultural preservation.
- ⇒ By granting greater autonomy and decision-making powers to local tribal communities, this move could pave the way for sustainable development and the protection of Ladakh's rich cultural tapestry.

LOOK-OUT CIRCULAR (LOC) ISSUE IN INDIA



Why in News?

- ⇒ The Bombay High Court has ruled against public sector banks (PSBs) recommending or requesting Look-Out Circulars (LOCs) against loan defaulters, citing violation of fundamental rights.

Key Points:

- ⇒ **Clause Controversy:** A clause from 2018 allowed heads of PSBs to request immigration authorities for LOCs against default borrowers.
- ⇒ **High Court Observations:** Quashed LOCs issued against PSB debtors, calling them "strong-arm tactics" violating fundamental rights under Articles 14 (Equality before Law) and 21 (Protection of Life and Personal Liberty) of the Constitution.
- ⇒ **Rights Violation:** Executive actions curbing the right to travel abroad without statutory backing violate constitutional rights, especially when limited to PSBs.
- ⇒ **Existing Restraints:** The ruling doesn't affect restraint orders by competent authorities like courts, Debt Recovery Tribunals, or investigative agencies.

Look-Out Circular (LOC) Overview:

- ⇒ **Purpose:** Prevent individuals wanted by law enforcement from leaving the country.
- ⇒ **Issuing Authority:** Designated officers including those from Interpol and public sector banks (as per the controversial clause).
- ⇒ **Actions:** Can merely stop travel or lead to detention and arrest.
- ⇒ **Modification/Withdrawal:** Only the Bureau of Immigration can act on specific requests from the originator.

Controversy over Nepal Currency Notes

Issue:

- ⇒ Nepal introduced a new Rs 100 currency note depicting contested territories of Lipulekh, Limpiyadhura, and Kalapani, sparking territorial disputes with India.

Key Details:

- ⇒ **Territorial Dispute:** India and Nepal contest ownership of Lipulekh, Kalapani, and Limpiyadhura, covering 370 sq km.

- **Lipulekh Pass:** A strategic area connecting Uttarakhand, Tibet, and China, highlighted in India-Nepal territorial disputes.
- **Development Activities:** India's road inauguration in 2020 for Kailash-Mansarovar pilgrimage via Lipulekh triggered tensions.

Indo-Nepal Issues:

- **Lipulekh Pass:** Strategic location triggering territorial disputes and infrastructure developments.
- **Development Activities:** India's infrastructure projects impacting India-Nepal relations and territorial disputes.
- **Border:** Nepal shares over 1,850 km border with Indian states like Uttarakhand, Uttar Pradesh, and others, influencing bilateral relations.

Conclusion:

- The controversies over territorial claims and infrastructure developments in border regions underscore the delicate nature of India-Nepal relations, highlighting the need for diplomatic dialogue and resolution.

NAVIGATING THE COMPLEXITY OF THE ICC'S ACTIONS: A DEEP DIVE INTO IMPLICATIONS AND PERSPECTIVES



Introduction:

- The recent move by the International Criminal Court (ICC) prosecutor to seek arrest warrants for Israeli Prime Minister Benjamin Netanyahu, Defense Minister Yoav Gallant, and three Hamas leaders has ignited a flurry of debate and scrutiny.
- This article delves into the multifaceted implications and perspectives surrounding this controversial decision.

Challenges to ICC's Credibility:

- The ICC has long faced challenges to its credibility, with criticisms ranging from selective attention to lack of enforcement mechanisms.
- Critics argue that the court's focus on certain cases while ignoring others undermines its legitimacy and effectiveness.

- Additionally, the absence of enforcement, especially by powerful member states like the United States, raises questions about the court's ability to hold perpetrators accountable.

Significance of Arrest Warrants:

- The ICC's decision to pursue arrest warrants against prominent figures in the Israeli-Palestinian conflict carries significant implications.
- Firstly, it tarnishes Israel's reputation on the international stage, particularly in light of allegations of humanitarian violations in Gaza.
- The issuance of warrants against Israeli leaders underscores the gravity of the situation and amplifies calls for accountability.

USA's Response and Global Ramifications:

- The United States' vehement condemnation of the ICC's ruling and threats of sanctions against its officials signal a broader challenge to the liberal international order.
- The US's rejection of ICC jurisdiction and intimidation tactics against the court raise concerns about the erosion of international norms and institutions.
- Moreover, the US's stance may compel its allies to navigate a delicate balance between allegiance to the ICC and maintaining strategic partnerships with the US.

Divergence from ICJ and Moral Implications:

- Contrasting with the International Court of Justice (ICJ), the ICC focuses on prosecuting individuals rather than states.
- This distinction underscores the moral dimensions of political conflicts and underscores the need for accountability at the individual level.
- However, equating Israel with Hamas overlooks power disparities and risks exacerbating tensions.
- Moving forward, a nuanced approach that acknowledges the complexities of the Israel-Palestine conflict is imperative for achieving sustainable peace.

Potential Consequences and Campus Dynamics:

- The ICC's actions have the potential to entrench positions and hinder efforts towards humanitarian aid and compromise.
- Moreover, debates surrounding ICC warrants may fuel cynicism about international law and the efficacy of legal mechanisms in resolving conflicts.
- On US campuses, discussions around resistance and moral accountability underscore the importance of empathy and dialogue in navigating contentious issues.

Conclusion:

- Amidst the complexities of the ICC's actions and the broader geopolitical landscape, the pursuit of accountability and justice remains paramount.

- ⇒ While the ICC's decision may elicit condemnation from various quarters, it also underscores the urgent need for a collective commitment to "humanity's law" above partisan interests.
- ⇒ Ultimately, the path to peace and justice requires a nuanced understanding of the complexities at play and a steadfast dedication to upholding universal principles of human rights and dignity.

OVER 90% INDIANS WANT GREEN POLICIES, CLIMATE ACTION



Context

- ⇒ A recent study titled "Climate Change in the Indian Mind, 2023" reveals a significant concern among Indians regarding climate change.
- ⇒ Conducted by the Yale Program on Climate Change Communication and the Centre for Voting Opinion & Trends in Election Research (CVoter) during September and October 2023, the study highlights that 91% of respondents acknowledge the reality of global warming.

Public Perception and Concern

- ⇒ The study underscores widespread apprehension about the impacts of climate change. Notably, 59% of respondents express being "very worried" about the phenomenon.
- ⇒ Moreover, 52% attribute global warming primarily to human activities, while 38% attribute it to natural environmental changes.

Perceived Risks and Effects

- ⇒ Concerns about the risks associated with global warming are prevalent, with 83% believing it will adversely affect plants and animals, and 82% expressing fear for Indian citizens.
- ⇒ A significant portion of the population anticipates severe weather events such as extreme heatwaves and storms.
- ⇒ Additionally, 71% perceive a substantial impact of global warming on local weather, while 76% believe it significantly affects the monsoon season.

Policy Support and Governmental Expectations

- ⇒ The study indicates strong public opinion regarding governmental action on climate change, with over

78% of respondents advocating for more aggressive measures from the Indian government.

- ⇒ Furthermore, approximately 86% express strong support for policies aiming to achieve Net Zero emissions by 2070, aligning with commitments made at the 26th UN Climate Change Conference.

Additional Insights on Climate Change Awareness

The study provides supplementary information on various aspects of climate change awareness:

- ⇒ Thwaites Glacier, colloquially termed the "Doomsday Glacier," is melting rapidly, posing significant threats to global sea levels.
- ⇒ Ocean acidification, attributed to higher CO₂ levels since the Industrial Revolution, has increased by approximately 30%, impacting marine ecosystems.
- ⇒ Arctic regions are experiencing greening due to rising temperatures, facilitating the growth of shrubs and trees.
- ⇒ Solar dimming projects, such as injecting light-reflecting particles into the stratosphere, aim to mitigate global warming effects.
- ⇒ Despite global agreements like the Paris Agreement, only a few countries are on track to meet their CO₂ emission targets.
- ⇒ Climate refugees, projected to become a substantial crisis, may face displacement due to severe weather events by 2050.
- ⇒ The significance of CO₂ absorption by trees contrasts with human emissions, which total about 33 billion tons annually.
- ⇒ Climate education remains limited, with less than 6% of schoolchildren receiving comprehensive instruction as of 2021.
- ⇒ Increasingly frequent and severe heatwaves claim more lives annually compared to other weather-related events.
- ⇒ Climate change-induced disruptions could cost global economies \$23 trillion by 2050, primarily due to extreme weather and agricultural challenges.

SARISKA TIGER RESERVE: SUPREME COURT HALTS MINING OPERATIONS



Context

- ⇒ In a significant move aimed at protecting the Sariska Tiger Reserve, the Supreme Court of India has

ordered the closure of 68 mines located within a one-kilometer radius of the reserve.

- This decisive action, issued on May 15, 2024, is part of an ongoing battle against illegal mining activities that have posed a threat to the vital tiger habitat since the 1990s.
- Upholding provisions from the Wildlife Protection Act of 1972 and the Environment Protection Act of 1986, the court's ruling reinforces the prohibition of quarrying near tiger reserves.

Historical Context and Judicial Interventions

- The issue of mining encroachment in Sariska was first brought to the attention of the Supreme Court in October 1991 through a Public Interest Litigation (PIL) filed by a local NGO.
- Responding promptly, the court issued an interim order to cease mining activities within the reserve and initiated a fact-finding mission led by Justice M. L. Jain.
- Subsequent findings underscored the ecological significance of the 800 square kilometer protected area, prompting the closure of 262 mines in April 1993.
- Despite these measures, persistent violations necessitated further interventions, including the establishment of a one-kilometer safety zone around the reserve.
- However, challenges persisted due to inconsistencies in enforcement across states and disputes over boundary delineations.

Continued Challenges and Supreme Court's Vigilance in the 2020s

- Throughout the 2010s, the Supreme Court adopted a stricter stance, reaffirming its decisions to prohibit mining activities within the one-kilometer safety zone surrounding the Sariska reserve.
- Despite these efforts, challenges persisted for another decade.
- In response, the Supreme Court adapted its approach in the 2020s to address evolving circumstances while maintaining a steadfast commitment to safeguarding conservation areas from mining encroachment.

Boundary Demarcation Issues and Local Concerns

- The implementation of protective measures has been hindered by ambiguities in the delineation of the reserve's boundaries, resulting in discrepancies between official records and ground realities.
- These discrepancies have created legal and administrative loopholes that have facilitated illegal mining activities.
- Local communities have voiced their apprehensions, particularly regarding the inclusion of revenue villages within the tiger reserve without due consideration, which they argue infringes upon their rights.

Exploring Sariska Tiger Reserve

- Situated in the Alwar district of the Indian state of Rajasthan.
- Established as a wildlife reserve in 1955, designated as a tiger reserve in 1978.
- By 2004, all tigers in Sariska had fallen victim to poaching.
- In 2008, efforts to reintroduce tigers commenced, marking India's first successful relocation of tigers from Ranthambore.
- The reserve boasts remnants of medieval temples and a fortress.
- It is home to a diverse array of wildlife, including leopards, sambars, and chitals.
- Sariska Tiger Reserve is an integral part of India's Project Tiger initiative, encompassing approximately 800 square kilometers.

STATES' INTEREST IN AADHAAR-BASED AUTHENTICATION FOR GST REGISTRATION



Context

- In a recent development, several Indian states have expressed keen interest in adopting Aadhaar-based authentication for GST registration.
- Karnataka, Tamil Nadu, and Telangana are among the states showing interest, with Gujarat, Andhra Pradesh, and the Union Territory of Puducherry already initiating testing of Aadhaar identification.

Biometric Authentication Discussions

- Discussions at the third National Coordination Meeting of Central and State GST officers centered around implementing biometric-based confirmation for GST registration.
- States contemplating this system are evaluating the associated infrastructure and staffing requirements, aiming to present well-informed proposals to their Cabinets for approval.

Challenges with Current Authentication Method

- Presently, GST officials employ OTP-based Aadhaar authentication to verify the identities of registration applicants.
- However, this method has faced misuse, leading to instances of individuals using others' identities to

establish fraudulent businesses and claim Input Tax Credit (ITC).

Potential Benefits of Aadhaar-GST Integration

- States like Karnataka, Uttar Pradesh, Tamil Nadu, and Maharashtra, prominent contributors to April's GST revenues exceeding Rs 2 lakh crore, stand to gain substantially from this proposed system change.
- Tighter GST registration protocols, leveraging Aadhaar, promise enhanced tax collection accuracy and safeguarding against fraudulent activities amidst burgeoning economic growth and increased trade activities.

Understanding GST Registration

- GST registration is mandatory for businesses with annual turnovers surpassing Rs 20 lakh. It entails acquiring a 15-digit registration number from the Central Government.
- GST levies include IGST on inter-state transactions, and CGST and SGST on intra-state transactions, aimed at eliminating the cascading effect of taxation.
- Non-resident businesses selling in India are also required to register for GST, failing which they cannot levy GST on their customers.
- Violations of GST regulations incur penalties, with provisions for cancellation of registration under certain circumstances.

Insights into Aadhaar-based Authentication

- Aadhaar-based authentication involves utilizing Aadhaar numbers to verify one's identity, employing a two-step process comprising biometric and demographic data.
- Biometric information encompasses fingerprints, eye scans, and facial images, while demographic data includes personal details like name, date of birth, gender, and address.
- The authentication process occurs in real-time on registered devices, ensuring privacy without divulging sensitive information.
- According to UIDAI, verified data can be retained for up to six months, offering a cost-effective and user-friendly authentication solution.

INTERNATIONAL RELATIONS

ALLEGATIONS OF "BLOOD MINERALS" AGAINST APPLE FROM DRC SURFACE: A CLOSER LOOK AT THE ISSUE

Introduction: The Accusations and Their Implications

- In a recent development, the Democratic Republic of Congo (DRC) has accused tech giant Apple of sourcing minerals from the country's war-torn eastern region, alleging the use of "blood minerals" in its products.



- Lawyers representing the DRC government have sent a letter to Apple's CEO Tim Cook, claiming that the company purchases minerals illegally transported from the DRC to Rwanda, where their origins are obscured before entering the global technology supply chain.
- The DRC government has threatened legal action if Apple continues this practice.

The Context: Conflict Minerals and the Troubled Eastern Region

- The eastern region of the DRC, known for its tantalum, tin, tungsten, and gold mines (referred to collectively as 3T or 3TG), has been a hotspot for violence and conflict for decades. The situation escalated in late 2021 when rebels from the March 23 Movement (M23) began reclaiming territory, intensifying the struggle over mineral resources. Rwanda has faced accusations from the DRC, the United Nations, and Western nations of supporting rebel groups like M23 to gain control over the region's abundant mineral wealth.
- The presence of approximately 120 armed groups in the eastern DRC further complicates the situation, with many benefiting from the mining and trade of minerals to varying extents.

The Allegations and Apple's Response: Examining the Claims

- The allegations against Apple are detailed in a 53-page report by Amsterdam & Partners, the law firm representing the DRC government.
- Titled "Blood Minerals: Everyone sees the massacres in Eastern Congo, but everyone is silent," the report claims that Apple's supply chains are opaque and tainted by the suffering of the Congolese people.
- Apple, however, has refuted these claims, citing its 2023 annual corporate report, which asserts that due diligence efforts found no evidence of direct or indirect financing of armed groups in the DRC or adjacent countries.

Understanding the Democratic Republic of Congo: Riches, Struggles, and Challenges

- The Democratic Republic of Congo (DRC) is a vast country located in central Africa, renowned for its abundant mineral resources and tumultuous history.

- Despite its resource wealth, the DRC faces numerous challenges, including political instability, armed conflicts, and human rights abuses.
- Key facts about the DRC include its status as the second-largest country in Africa by area and the 11th largest globally.
- Additionally, it boasts the second-largest rainforest in the world after the Amazon.
- The country gained independence from Belgium in 1960 and is rich in natural resources such as cobalt, copper, diamonds, gold, and other minerals crucial for modern technology.
- However, despite its resource wealth, the DRC remains one of the poorest nations globally, characterized by high poverty rates and a low human development index.

Regulatory Landscape: The Dodd-Frank Act and Corporate Responsibility

- The Dodd-Frank Act of 2010 mandates U.S. companies to disclose their use of conflict minerals and ensure that their supply chains do not contribute to human rights abuses in the DRC and neighboring countries.
- This legislation underscores the importance of corporate responsibility and transparency in global supply chains, particularly concerning conflict-affected regions like the DRC.

AMU DARYA AND KABUL RIVER: VITAL WATER SOURCES FOR AFGHANISTAN



Context:

- A recent study on water resources in Afghanistan sheds light on the country's hydrology, emphasizing the significance of river basins like Amu Darya and Kabul River amidst water stress and climate change challenges.

River Basins and Water Sources:

- Afghanistan is delineated into five primary river basins, including Panj-Amu, Helmand, and Kabul.
- The Panj-Amu basin, dominated by the Amu Darya River, covers a substantial portion of Afghanistan's area and contributes significantly to its water resources.

- The Kabul River Basin, spanning 11% of Afghanistan's territory, serves as a crucial water source for both domestic use and irrigation, extending into Pakistan.

Water Yield and Distribution:

- The Panj-Amu Basin yields a substantial water volume, primarily sourced from glacier melting, while the Helmand River Basin also contributes significantly to Afghanistan's water resources.
- Variations in water availability across seasons underscore the importance of alternative water sources during dry periods.

Factors Influencing Water Availability:

- Higher precipitation rates and lower evapotranspiration losses contribute to increased water yields in certain river basins.
- Seasonal variations necessitate adaptive strategies to manage water resources effectively.

Water Stress and Climate Change:

- Afghanistan grapples with extreme water stress exacerbated by recurrent droughts, population growth, and climate change impacts.
- Regional water shortages pose significant challenges, particularly in Central Asia.

Implications for Water Resource Management:

- Long-term planning is imperative for sustainable water management and agricultural development.
- Understanding external water sources is crucial for addressing water scarcity effectively amidst changing climatic conditions.

Future Water Demand and Sustainability:

- With a burgeoning population, Afghanistan's water demand is expected to rise, necessitating sustainable management practices.
- Climate change underscores the urgency for adaptive measures and international cooperation to tackle water-related challenges effectively.

About Amu Darya:

- The Amu Darya, historically known as the Oxus, originates in the Pamir Mountains and traverses several Central Asian countries before draining into the Aral Sea.
- Despite its historical significance and critical role in regional water resources, extensive irrigation projects have contributed to environmental degradation.

About Kabul River:

- The Kabul River, emerging from the Hindu Kush Mountains, traverses Afghanistan and Pakistan, serving as a vital water source for eastern Afghanistan and Khyber Pakhtunkhwa province.
- Its hydrological characteristics, including tributaries and seasonal variations, underscore its importance for local communities and agriculture.

Conclusion

- As Afghanistan grapples with water stress and climate change challenges, understanding and managing its water resources, including the Amu Darya and Kabul River basins, are crucial for ensuring water security, agricultural sustainability, and resilience in the face of evolving climatic conditions.

BALANCING ACT: INDIA'S GLOBAL EMERGENCE AND REGIONAL REALITIES



Context

- India's emergence as a global player has been a testament to its economic growth, military prowess, and active participation in international forums.
- However, amidst this global ascent, India faces a paradoxical decline in its regional influence, particularly in South Asia.
- This article delves into the nuances of India's global rise and regional challenges, proposing strategies to navigate this complex dynamic.

India's Global Standing

- India's rise on the global stage is underscored by its inclusion in key forums like the G-20 and BRICS, showcasing its growing economic and strategic importance.
- Its centrality in the Indo-Pacific further solidifies its role as a pivotal player in shaping global affairs.

Regional Realities and Contradictions

- Despite its global stature, India's influence in South Asia has faced setbacks, largely due to the rise of China and shifting geopolitical dynamics.
- The withdrawal of the U.S. from the region has created a power vacuum, allowing China to expand its footprint at India's expense.
- This regional decline stands in stark contrast to India's global prominence.

Navigating the Rise of China

- China's ascendancy as a regional powerhouse poses a formidable challenge to India's interests in South Asia.
- Faced with this new reality, India must adopt a proactive approach to counterbalance China's

influence and reaffirm its strategic position in the region.

Policy Recommendations

- To address the paradox of its global rise and regional decline, India must reassess its regional strategy and leverage its strengths effectively.
- This entails modernizing its approach to South Asia, prioritizing soft power initiatives, and strengthening maritime capabilities in the Indo-Pacific.
- Additionally, India should engage in proactive diplomacy to forge partnerships and mitigate regional challenges.

Conclusion

- India's journey as a global player is intricately linked to its ability to navigate regional complexities while capitalizing on global opportunities.
- By striking a balance between its global aspirations and regional imperatives, India can emerge as a resilient and influential actor on the world stage.
- Through strategic foresight and proactive engagement, India can reconcile the paradox of its global rise with its regional challenges, paving the way for sustainable growth and stability.

SIERRA MADRE: A VESSEL STIRRING DISPUTES IN THE SOUTH CHINA SEA



Context:

- In recent times, tensions between the Philippines and China in the South China Sea have intensified, sparking concerns about a potential escalation.
- A focal point of this tension is the Sierra Madre, a ship dating back to World War II.

Introduction to Sierra Madre

- Sierra Madre, a relic from World War II, holds historical significance as a former landing ship measuring 100 feet in length.
- Originally built in the United States during the years of World War II (1939-1945), it served a vital role in military operations before being repurposed for other duties.

Sierra Madre's Historical Journey:

- Following its wartime service, Sierra Madre was deployed to Vietnam during the US involvement in the Vietnam War (1954-1975).

⇒ In 1976, it found its way to the Philippines, solidifying the bond between the two nations.

Sierra Madre's Role in the Spratly Islands Dispute:

- ⇒ In 1999, Sierra Madre was strategically stationed at the Second Thomas Shoal, nestled within the Spratly Islands archipelago.
- ⇒ This location, chosen deliberately, has become a focal point of contention due to conflicting territorial claims.

Rising Tensions:

- ⇒ China's assertive stance in the region, particularly its claims over nearby territories like Mischief Reef, has heightened tensions.
- ⇒ Beijing has repeatedly demanded the removal of Sierra Madre, a demand firmly rejected by the Philippines.
- ⇒ The deteriorating state of the vessel serves as a physical representation of the ongoing dispute, with both sides unwilling to back down.

The Spratly Islands Dispute:

- ⇒ At the heart of the conflict are overlapping exclusive economic zones (EEZs) and competing claims over sovereignty. The rich natural resources found in the region, including oil, gas, and abundant fishing grounds, further fuel the dispute.

Legal Rulings and Environmental Concerns:

- ⇒ Efforts to resolve the dispute through legal channels have been met with mixed results.
- ⇒ A landmark ruling by an international tribunal in The Hague in 2016 favored the Philippines, highlighting China's activities in the region.
- ⇒ However, the ruling did little to resolve the underlying tensions.
- ⇒ Moreover, China's construction of artificial islands and disregard for environmental concerns have exacerbated the situation.

Conclusion:

- ⇒ Sierra Madre stands as a symbol of the complex geopolitical dynamics at play in the South China Sea.
- ⇒ Its presence underscores the ongoing struggle for control and sovereignty in one of the world's most hotly contested maritime regions.

UNDERSTANDING THE MYAWADDY CONFLICT

Introduction:

- ⇒ Myanmar's recent reclaiming of Myawaddy, a crucial node in the trade route with Thailand, follows a brief seizure by anti-government forces in mid-April.
- ⇒ This event underscores regional tensions fueled by the involvement of ethnic armed groups and pro-democracy fighters.

The Role of the Border Guard Force (BGF):

- ⇒ Amidst the conflict, the Border Guard Force (BGF) emerges as a significant player. Aligned with the

military government but operating with considerable autonomy, the BGF utilizes the turmoil to expand its regional dominance.

- ⇒ Moreover, it oversees a vast criminal network involved in gambling, drug trade, and trafficking along the Thai border, amplifying the complexity of the situation.



Historical Context: Myanmar's Conflictual Journey:

- ⇒ Myanmar's post-independence history reflects ongoing struggles to maintain control over its diverse territories.
- ⇒ Deep-rooted conflicts between the majority Bamar ethnic group and various minority groups have continually challenged state authority and contributed to territorial instability.

Post-2021 Coup Situation:

- ⇒ The aftermath of the 2021 coup witnessed a surge in anti-military sentiment, leading to widespread opposition and unrest.
- ⇒ Pro-democracy movements, in collaboration with ethnic groups, have united against military rule, further weakening state authority.
- ⇒ This instability has created fertile ground for the escalation of trans-border illegal activities, exacerbating the situation.

Attraction of External Players:

- ⇒ As Myanmar's crisis spills beyond its borders, external powers are increasingly drawn into the fray.
- ⇒ China, in particular, has deepened its involvement to stabilize its frontier, while the US has extended significant aid to support pro-democracy movements.
- ⇒ This intervention underscores the geopolitical significance of Myanmar's crisis and its implications for regional stability.

India's Strategic Silence:

- ⇒ Despite the profound implications for India's internal and external security, New Delhi's response to the Myanmar crisis has been notably restrained.
- ⇒ The prevailing policy bias in favor of the Myanmar army, which is no longer capable of securing India's interests, warrants a reassessment.

- ⇒ It is imperative for India to engage with the National Unity Government and local forces along the border to navigate the evolving situation effectively.

Conclusion: Crafting a Clear Policy:

- ⇒ The Myanmar crisis highlights the urgency for India to adopt a decisive stance.
- ⇒ Merely fortifying the border is insufficient in addressing the multifaceted challenges on India's eastern frontier.
- ⇒ India must formulate a coherent and proactive policy approach, engaging with relevant stakeholders to navigate the complexities of the evolving situation and safeguard its strategic interests effectively.

EU ADOPTS FIRST LAW AGAINST VIOLENCE TOWARDS WOMEN



Introduction

- ⇒ On May 7, 2024, the European Union took a significant step forward in the protection of women's rights by formally adopting groundbreaking legislation aimed at combating violence against women across its 27 member states.
- ⇒ This legislation represents a comprehensive effort to address various forms of gender-based violence, including forced marriages, female genital mutilation, and cyber violence.

Key Provisions of the Legislation

- ⇒ The newly enacted law encompasses a wide range of offenses related to gender-based violence.
- ⇒ Notably, it criminalizes acts such as online stalking and harassment, non-consensual sharing of intimate images, and incitement to violence or hatred.
- ⇒ Offenders face imprisonment, with terms ranging from one to five years, depending on the severity of the crime.
- ⇒ Moreover, enhanced penalties are stipulated if the victim is a minor or has a close familial relationship with the perpetrator.

Support and Protection for Victims

- ⇒ The legislation places a strong emphasis on providing support and enhancing protections for victims of domestic abuse, including children.

- ⇒ Specific measures are outlined for cases involving a child reporting a crime committed by someone with parental responsibilities.
- ⇒ Authorities are mandated to prioritize the immediate safety and well-being of the child before informing the alleged perpetrator, ensuring the child's security.

Implementation and Impact

- ⇒ EU member states are tasked with integrating these new rules into their national laws within three years.
- ⇒ This harmonization is expected to strengthen the legal response to gender-based violence across the EU, ensuring that perpetrators face significant penalties while offering comprehensive support for victims.

Controversy Over Definition of Rape

- ⇒ While the broader legislative framework received unanimous approval, disagreement arose among EU countries regarding the inclusion of a standardized EU-wide definition of rape.
- ⇒ Varied national perspectives on jurisdiction and legal competence led to divisions, with some countries advocating for a unified definition and others opposing it due to concerns over EU competency issues.
- ⇒ This controversy underscores the challenges in creating fully harmonized legal standards within the diverse political and legal landscapes of the EU.

About The European Union

- ⇒ The European Union is a political and economic union of 27 European countries established after World War II to foster economic cooperation and prevent further conflicts.
- ⇒ Formed by the Maastricht Treaty in 1993, the EU has developed an internal single market through standardized laws and policies.
- ⇒ It uses 24 official languages and emphasizes human rights, democracy, and sustainable development.
- ⇒ Key institutions include the European Commission, the European Parliament, and the European Court of Justice, with the Euro serving as its official currency in 19 member countries.

THAILAND EXTENDS VISA-FREE ENTRY FOR INDIAN, TAIWANESE TOURISTS

Background

- ⇒ Thailand, renowned for its rich cultural heritage, stunning beaches, and vibrant cities, has long been a favored destination for tourists worldwide.
- ⇒ In recent years, the Thai government has implemented various initiatives to boost tourism, including visa exemption programs targeting key markets.
- ⇒ One such initiative is the visa exemption for tourists from India and Taiwan, initially introduced to facilitate travel and encourage tourism growth from these countries.



Government Decision

- Prime Minister Srettha Thavisin's announcement to extend the visa exemption initiative until November 11, 2024, reflects the government's commitment to promoting tourism.
- This decision follows a comprehensive review and deliberation in a government meeting, where officials likely analyzed tourism trends, economic impacts, and the effectiveness of existing policies.

Visa Exemption Extensions

- The extension of the visa exemption initiative signifies the success of the initial period and aims to further enhance tourist arrivals from India and Taiwan.
- By extending the stay allowance from 15 to 30 days without a visa, Thailand seeks to encourage longer stays and more frequent visits, providing travelers with ample time to explore the country's attractions and immerse themselves in its culture.

Impact on Visitor Numbers

- Thailand's tourism industry experienced a notable surge in the first quarter of 2024, with over 12 million foreign visitors, marking a substantial increase of 39% compared to the previous year.
- Notably, tourists from China, Malaysia, Russia, South Korea, and India accounted for half of these arrivals.
- The extension of visa exemptions for Indian and Taiwanese tourists is expected to sustain this positive momentum, contributing to continued growth in visitor numbers.

Tourism Strategy

- The decision to extend visa exemptions aligns with Thailand's broader tourism strategy, which aims to facilitate travel and attract visitors from key markets worldwide.
- In addition to targeting Indian and Taiwanese tourists, Thailand has implemented measures to ease visa regulations for other significant markets such as China and Russia, recognizing the importance of diversifying its tourist base.

Future Outlook

- With ambitious goals set by the Thai government to attract 80 million tourists annually by 2027,

the extension of visa exemptions for Indian and Taiwanese tourists is a strategic step toward achieving this target.

- Thailand remains committed to enhancing its tourism infrastructure, promoting its diverse attractions, and providing visitors with memorable experiences, ensuring its position as a premier tourist destination in the years to come.

Important Tourist Attractions

- Thailand boasts a wealth of attractions that cater to a wide range of interests and preferences.
- From the majestic Grand Palace and the ancient ruins of Ayutthaya to the picturesque Phi Phi Islands and the bustling streets of Bangkok, the country offers something for every traveler.
- Whether exploring historical sites, indulging in culinary delights, or relaxing on pristine beaches, visitors to Thailand are spoiled for choice when it comes to memorable experiences.

Economic Impact

- Tourism plays a pivotal role in Thailand's economy, contributing approximately 12% to its GDP and providing employment for around 20% of the workforce.
- The extension of visa exemptions for Indian and Taiwanese tourists is expected to further stimulate economic growth, generating revenue from tourism-related activities and supporting local businesses across the country.

BIMSTEC CHARTER COMES INTO EFFECT: A MILESTONE IN REGIONAL COOPERATION



Background:

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) saw a historic moment as its inaugural charter came into force, paving the way for new members and observers to join.
- Initially signed in 2022 during the fifth BIMSTEC summit held virtually in Colombo, Sri Lanka, the charter required ratification from all member countries, a milestone achieved in April 2024.

About BIMSTEC:

- Established in 1997 with the Bangkok Declaration, BIMSTEC comprises seven member countries: Bangladesh, Bhutan, Sri Lanka, Nepal, Thailand, Myanmar, and India.
- With its permanent secretariat in Dhaka, Bangladesh, BIMSTEC represents a significant portion of the world population (22%) and boasts a combined GDP of approximately \$3.6 trillion.

Key Provisions of the Charter:

- The charter provides a legal and institutional framework for cooperation among member countries, granting BIMSTEC a legal personality and facilitating the admission of new members and observers.
- Notable aspects include decision-making by consensus, criteria for membership focusing on geographical contiguity or trade dependence on the Bay of Bengal, biennial leaders' summits, rotational chairmanship, and authority for the ministerial meeting to establish additional criteria as needed.

BIMSTEC and SAARC:

- The emergence of BIMSTEC gained momentum following the 2016 Uri attack, wherein India rallied SAARC nations to boycott the summit planned in Pakistan.
- While SAARC and BIMSTEC share geographic overlap, they serve distinct purposes.
- SAARC is regional, whereas BIMSTEC is inter-regional, bridging South Asia and ASEAN. BIMSTEC, unencumbered by India-Pakistan tensions, offers a cooperative platform conducive to regional development.

Comparison with SAARC:

- SAARC, founded in 1985 with its secretariat in Kathmandu, Nepal, aims to foster economic and social development through intra-regional cooperation among eight member states.
- However, unlike SAARC, which grapples with India-Pakistan animosity, BIMSTEC provides a more harmonious environment for collaboration.

Way Forward:

- The implementation of the BIMSTEC Charter underscores member states' commitment to regional cooperation across various sectors, including security, connectivity, trade, agriculture, environment, science and technology, and people-to-people exchanges.
- It signifies a significant step towards forging agreements with other nations and regional entities, heralding a new era of cooperation and development in the Bay of Bengal region.

Conclusion

- The BIMSTEC Charter stands as a testament to the collective resolve of member states to foster

inclusive development and strengthen regional ties, offering promising opportunities for collaboration and growth in the years ahead.

ICC'S HISTORIC MOVE: SEEKING ARREST WARRANTS AGAINST ISRAELI AND HAMAS LEADERS

**Introduction:**

- The International Criminal Court (ICC) has taken a significant step by seeking arrest warrants against leaders of both Israel and Hamas.
- This move, initiated by ICC Prosecutor Karim Khan, marks a pivotal moment in international justice, addressing allegations of war crimes and crimes against humanity stemming from the October 7 attack on Israel and subsequent conflicts in Gaza.

Balancing Act:

- The request for arrest warrants against leaders of both Israel and Hamas demonstrates a perceived effort by the prosecutor to maintain balance and impartiality in addressing conflicts.
- Amid criticisms of the ICC's alleged bias towards targeting leaders of developing nations over Western powers and their allies, this move is noteworthy for its attempt to hold all parties accountable for their actions.

Legal Precedent:

- Under international law, heads of state traditionally enjoy immunity from prosecution in foreign or international courts.
- However, the ICC's statute explicitly states that official capacity does not exempt individuals from criminal responsibility.
- This legal principle was upheld in the 2019 Jordan Referral re Al-Bashir Appeal judgment, allowing the court to issue arrest warrants against high-ranking officials, including Russian President Vladimir Putin, despite their status.

Territorial Jurisdiction:

- While neither Israel nor Palestine is a member of the ICC, the court asserts jurisdiction based on Palestine's status as a state party.

- This grants the ICC authority to investigate crimes committed within Palestinian territories, even if the alleged perpetrators are from non-member states.
- Consequently, crimes committed by Israeli soldiers in Gaza and Hamas's actions in Israel fall within the ICC's jurisdiction.

Mixed Record:

- The ICC's track record concerning high-level state officials has been mixed.
- While arrest warrants have been issued against figures like former Sudanese President Omar al-Bashir, successful prosecutions and extraditions have been limited.
- Cases involving current and former Kenyan presidents, William Ruto and Uhuru Kenyatta, and former Ivory Coast First Lady Simone Gbagbo were either dropped or inconclusive.
- Despite limitations, the ICC's actions have had diplomatic and legal ramifications for those targeted.

Significance and Implications:

- Despite past challenges, the ICC's pursuit of arrest warrants against Israeli Prime Minister Benjamin Netanyahu and Hamas leaders carries significant geopolitical implications.
- If issued, the warrants could impact Israel's international standing and restrict Netanyahu's travel to ICC member states.
- Moreover, the move sends a strong signal that no individual or state is immune from accountability under international law.
- The outcome of this case will be closely watched as a test of the ICC's credibility and effectiveness in upholding justice on the global stage.

Conclusion:

- The ICC's decision to seek arrest warrants against leaders of Israel and Hamas represents a landmark development in international justice.
- By challenging traditional notions of immunity for heads of state and asserting jurisdiction over non-member states, the ICC underscores its commitment to accountability and impartiality.
- While the outcome remains uncertain, this case reaffirms the principle that the powerful can be held accountable for their actions, regardless of political or diplomatic considerations.

INDIA'S NUCLEAR QUANDARY: BEYOND PAKISTAN TO EMERGING GLOBAL REALITIES

Context

- The current discourse surrounding India's nuclear posture primarily revolves around the longstanding challenge posed by Pakistan's nuclear arsenal.
- However, amidst evolving global dynamics and regional complexities, Delhi must broaden its nuclear deterrence debate to encompass emerging challenges and opportunities on the world stage.



Evolution of the Nuclear Debate in India

1. **Historical Context:** In the 1990s, India grappled with intense debates regarding the formal acquisition of a nuclear arsenal, followed by efforts to reconcile with global nonproliferation norms in the 2000s. However, since then, public and political interest in nuclear matters has waned, overshadowed by other pressing issues.
2. **Global Nuclear Realities:** The global landscape is witnessing a resurgence of nuclear dynamics, with mounting tensions between major powers and key regional players. Escalating tensions between the US, Europe, Russia, and China underscore the imperative of reevaluating nuclear deterrence strategies.

Emerging Global Challenges

1. **Tensions in Europe:** The Ukraine conflict and Russian assertiveness are prompting a reevaluation of deterrence dynamics in Europe, with proposals for strengthening NATO's nuclear capabilities and bolstering Eurodeterrent under French leadership.
2. **Asian Dynamics:** China's growing nuclear arsenal and assertive posture necessitate a strategic rethink in Asia, particularly among neighboring countries like Japan and South Korea. Concerns about North Korea's nuclear ambitions further complicate regional security dynamics.
3. **Middle East Concerns:** Regional apprehensions regarding Iran's nuclear ambitions are fueling a quest for expanded atomic capabilities among Arab states, potentially exacerbating tensions in the Middle East.

Technological Challenges

1. **AI and Robotics:** The rise of artificial intelligence and robotic weapons introduces new complexities into the nuclear deterrence debate, raising concerns about automated decision-making and its implications for strategic stability.
2. **Space Militarization:** The militarization of space, including the deployment of anti-satellite weapons, underscores the need for vigilance and cooperation to prevent an arms race beyond Earth's atmosphere.

Reframing India's Nuclear Discourse

1. **Beyond Pakistan:** While Pakistan remains a significant nuclear concern for India, the country must also contend with China's expanding nuclear arsenal and evolving strategic ambitions.

2. **Prioritizing Deterrence:** Building robust deterrent capabilities against China's nuclear arsenal should be a national imperative, necessitating a comprehensive review of India's nuclear doctrine and arsenal modernization efforts.
3. **Civilian Nuclear Energy:** In addition to military considerations, India must accelerate its civilian nuclear energy program to address growing energy demands and mitigate climate change challenges.

Future Imperatives

1. **Comprehensive Review:** The next Indian government must undertake a thorough review of evolving global nuclear dynamics and regional challenges, informing strategic decisions regarding nuclear posture and doctrine.
2. **Modernization Efforts:** India should prioritize the modernization of its nuclear arsenal and explore avenues for enhancing deterrence capabilities in alignment with emerging threats and technological advancements.
3. **Civilian Nuclear Program:** Revamping India's civilian nuclear energy program requires comprehensive reforms in legal and institutional frameworks to promote technological advancements and energy sustainability.

Conclusion: Looking Ahead

- As India navigates the complexities of the 21st-century nuclear landscape, it must transcend the limitations of the current debate focused solely on Pakistan's nuclear capabilities.
- Embracing a broader perspective that encompasses emerging global realities, technological challenges, and regional dynamics is essential for shaping a nuanced and effective nuclear deterrence strategy in the years to come.
- The forthcoming government in Delhi must seize the opportunity to recalibrate India's nuclear policy, ensuring that it remains responsive to evolving threats and conducive to national security and strategic interests in a rapidly changing world.

IRAN FACES UNCERTAINTY FOLLOWING PRESIDENT RAISI'S TRAGIC DEATH



Introduction

- The recent demise of Iranian President Ebrahim Raisi in a helicopter crash on May 19th has plunged Iran into a state of uncertainty.
- The crash occurred in the mountainous northwest region of the country bordering Azerbaijan, while President Raisi was en route to Tabriz after jointly inaugurating the Qiz Qalasi dam on the Aras River with Azerbaijani President Ilham Aliyev.

Aftermath of the President's Death

- In response to President Raisi's untimely passing, Supreme Leader Ayatollah Ali Khamenei swiftly appointed First Vice-President Mohammad Mokhber as the interim president, in accordance with the Iranian constitution.
- This move was aimed at assuring the Iranian populace and signaling to the world Iran's resilience in the face of adversity.
- The appointment of an interim president is expected to raise questions regarding the circumstances surrounding the helicopter crash and may prompt the formation of an inquiry commission.
- Speculation about potential foreign involvement in the incident may further complicate matters, particularly amidst ongoing tensions in the region, such as the conflict between Israel and Gaza.

Iran's Political Landscape

- Understanding the dynamics of Iran's political system is essential in assessing the implications of President Raisi's death.
- While the president holds a significant position within the government, ultimate authority rests with the Supreme Leader.
- The president is elected by the people but operates within the confines of the Supreme Leader's veto power.
- Since the Islamic Revolution, only two clerics have held the position of Supreme Leader: Ayatollah Ruhollah Khomeini and his successor, Ali Khamenei.
- While Khamenei has exerted considerable influence, he has faced challenges in filling the void left by Khomeini's leadership. This has led to a delicate balance between hardline and pragmatic factions within Iranian politics.

Shifts in Iran's Leadership and International Relations

- The withdrawal of the United States from the nuclear deal under former President Donald Trump dealt a significant blow to pragmatic factions within Iran, leading to a resurgence of hardline influences.
- President Raisi, known for his conservative stance and harsh judicial rulings, epitomized this shift towards hardline policies.

- ⇒ Despite Iran's internal struggles, its geopolitical relations continue to evolve. The country has increasingly aligned itself with Russia and China, particularly in response to Western sanctions.
- ⇒ Moreover, Iran's actions in the region, such as missile attacks against Israel, highlight its complex relationships with neighboring states and global powers.

Implications for Iran and Beyond

- ⇒ The passing of President Raisi raises questions about the future direction of Iranian politics and its impact on regional stability.
- ⇒ While a new president will be elected within 50 days, it remains uncertain whether pragmatic voices will be allowed to contest the election.
- ⇒ The role of the Revolutionary Guard, under the Supreme Leader's guidance, will likely shape the outcome.
- ⇒ In the midst of these uncertainties, Iran's relations with countries like India will also come under scrutiny.
- ⇒ While continuity is expected in certain areas, such as support for the Chabahar port project, shifts in Iran's foreign policy could have broader implications for regional dynamics.

Conclusion

- ⇒ President Raisi's tragic death marks a pivotal moment in Iran's political landscape, with potential ramifications for its domestic and international affairs.
- ⇒ As the country navigates this period of transition, the balance of power between hardline and pragmatic factions will shape its trajectory in the years to come.

MISREADING AMERICA'S LINES



Introduction

- ⇒ Indian domestic debate on how West, particularly USA sees the democratic credential of India should not be top on the agenda.
- ⇒ The USA elections and its outcome must be seen carefully in India, because of its impact on trade and security of India.

Indian media's misplaced concern regarding USA

- ⇒ Indian media often portrays the US as preoccupied with India's "democratic backsliding" and election interference.
- ⇒ In reality, the US is dealing with more pressing concerns.
- ⇒ The ongoing US general election could significantly impact its political, economic, and geopolitical landscape.
- ⇒ The US is struggling with:
 - Russian invasion of Ukraine in Europe.
 - China's expansionism in Asia.
 - The Gaza conflict affecting American domestic politics.
- ⇒ The US has not effectively countered the Sino-Russian alliance challenging its global interests.
- ⇒ Recent visits by Chinese President Xi Jinping to Europe and the upcoming visit by Russian leader Vladimir Putin to China highlight the growing strategic coordination between Beijing and Moscow against the West.

Return of Trump and America's domestic crisis

- ⇒ There is little discussion in India about important US domestic debates, especially regarding the upcoming elections.
- ⇒ Donald Trump's potential return to presidency is concerning for US allies and the Indian media missed covering his recent interview outlining plans on relevant issues for India.
- ⇒ Indian media prioritizes commentary by US State Department spokespersons over the actual US domestic political discourse.
- ⇒ Western media coverage of Indian elections is primarily based on reports by India-based correspondents, read more in India than the West.
- ⇒ Indian foreign reporting focuses on Western media's coverage of India rather than the actual political situation in the countries the reporters are stationed in.
- ⇒ Commentary on Indian democracy in Western media is a small portion of their overall output.

West's capital interests

- ⇒ The debate about Western countries promoting democracy is inaccurate.
- ⇒ Their foreign policies are driven by capitalists and security interests, not spreading a specific ideology.
- ⇒ Slogans about "democracy promotion" don't reflect the reality of US foreign policy, similar to how "strategic autonomy" discussions don't reveal much about India's actual foreign policy actions.
- ⇒ Every country has its own narrative about its global role, but these are adjusted based on realpolitik (political realism) and external circumstances.
- ⇒ The US's past support for Pakistan's military, overlooking human rights abuses, contradicts the idea of democracy being their top priority.

- Similarly, supporting China's rise and aiding the rise of Islamic extremism in Afghanistan show US foreign policy prioritizes interests over ideology.
- This is not criticizing the US, but highlighting the gap between their stated goals and actual actions.
- Geopolitical and economic interests, not spreading democracy, are the main drivers of US foreign policy.

Concerns for Delhi

- The US elections matter to India for reasons beyond Indian democracy being a talking point.
- These are going to be the fallback of a potential change of guard at Washington
 - Potential US trade policy changes under Trump, including a 10% import tariff, could significantly impact India's trade.
 - Trump's foreign policy towards Russia and China affects India's strategic partnership with the US.
 - Trump's immigration policies targeting undocumented immigrants, including many Indians, should concern India.
 - Potential changes to the US government under Trump could have global implications, including for India.

Conclusion

- Ultimately, Delhi Chief Minister Arvind Kejriwal's warnings about a potential "dictatorship" in India and Congress leader Rahul Gandhi's use of the Constitution in his election rallies hold more significance than editorials on the Indian elections in The New York Times and The Guardian.
- The true fight for Indian democracy is internal, not a contest between Delhi and Western capitals.

NATO BORDER NATIONS PLAN 'DRONE WALL' AGAINST RUSSIA

Context and Background

- Amid escalating security concerns and tensions along their borders with Russia, six NATO countries—Finland, Norway, Poland, Estonia, Latvia, and Lithuania—are devising plans for a coordinated drone defense system.
- The concept of this project, dubbed the "drone wall," emerged in response to ongoing conflicts such as the war in Ukraine and allegations of Russia employing "hybrid warfare" tactics.
- Hybrid warfare, blending conventional military tactics with non-military strategies like cyberattacks and disinformation campaigns, complicates attribution and response efforts.

Implementation of the Drone Wall

- The proposed drone wall is envisioned to span from Norway to Poland, encompassing all NATO countries bordering Russia.

- Lithuanian Interior Minister Agne Bilotaite initiated discussions surrounding the project, aiming to integrate security drones and anti-drone technologies to enhance border safety.
- The system aims for real-time threat detection and swift response capabilities.



Technological and Strategic Significance

- Recognizing the evolving landscape of warfare, particularly evidenced by conflicts like Ukraine, officials emphasize the strategic importance of drone technology.
- Estonia's Interior Minister Lauri Laanemets highlights the transformative impact of drones on modern warfare, underscoring their role in bolstering defenses and safeguarding sovereignty against unconventional threats.

Broader NATO Support and Initiatives

- The regional initiative aligns with NATO's broader strategy of fortifying member states' air and missile defenses.
- Poland's participation in the European Sky Shield Initiative, aimed at establishing an integrated air defense system akin to Israel's Iron Dome, underscores NATO's commitment to protecting territories from aerial threats.

More About NATO-Russia Border Defense

Military Investments and Enhancements:

- Several NATO members have significantly increased military spending to bolster border defenses against Russia.
- Poland notably ramped up defense expenditure following Russia's annexation of Crimea in 2014.
- Additionally, Estonia, Latvia, and Lithuania's accession to NATO in 2004 strengthened the alliance's eastern flank.

Strategic Initiatives and Deployments:

- NATO's Enhanced Forward Presence, initiated in 2017, is pivotal to the defense strategies of Poland and the Baltic states.

- ⇒ Military drills along the Norway-Russia border in the Arctic region underscore NATO's focus on regional security.
- ⇒ The Suwalki Gap, a crucial corridor between Poland and Lithuania, is a focal point for NATO's defense efforts.

Regional Security Dynamics:

- ⇒ Membership in NATO has substantially enhanced security in the Baltic states, while Poland's increased defense spending underscores its strategic importance to NATO's eastern defense posture.
- ⇒ The Arctic region, where Norway shares a border with Russia, remains central to NATO's security agenda, with ongoing military exercises reinforcing alliance cohesion and deterrence capabilities.

NORWAY, IRELAND, AND SPAIN TO FORMALLY RECOGNIZE PALESTINE: A SHIFT IN INTERNATIONAL RELATIONS



Introduction:

- ⇒ In a significant diplomatic move, Norway, Ireland, and Spain have announced their intention to formally recognize the state of Palestine, joining a growing list of nations advocating for Palestinian statehood.
- ⇒ This decision marks a departure from the stance of countries like the UK and the US, which have refrained from officially recognizing Palestine.

Context:

- ⇒ Currently, 143 out of 193 member states of the United Nations have extended recognition to a Palestinian state.
- ⇒ However, notable nations like the UK and the US have withheld formal recognition.
- ⇒ Meanwhile, Israel staunchly opposes the establishment of a Palestinian state in the West Bank and Gaza, citing concerns about its security and sovereignty.

Historical Background of the Israel-Palestine Conflict:

- ⇒ The Israel-Palestine conflict traces its roots back to the United Nations' proposal for the partition of Palestine between Arab and Jewish states.

- ⇒ The subsequent establishment of Israel in 1948 sparked the first Arab-Israeli war, resulting in the displacement of Palestinians from their homes, a period referred to as the "Nakba" or catastrophe.

Escalation:

- ⇒ Subsequent conflicts, including the Six-Day War in 1967, further complicated the situation, leading to Israeli occupation of territories such as the West Bank, Gaza Strip, and East Jerusalem.
- ⇒ Efforts to broker peace, such as the Oslo Accords in 1993, aimed to establish a framework for Palestinian self-governance but faced numerous challenges.

Recent Developments:

- ⇒ The Abraham Accords, signed in 2020, normalized relations between Israel and several Arab states, signaling a shift in regional dynamics.
- ⇒ However, tensions flared again in May 2021, with clashes between Israeli forces and Palestinians in Jerusalem escalating into an 11-day conflict with Hamas, resulting in significant casualties.

Implications of Recognition:

- ⇒ Formal recognition of Palestine by Norway, Ireland, and Spain carries significant diplomatic implications.
- ⇒ It demonstrates international support for Palestinian statehood and challenges the status quo in the Israel-Palestine conflict.
- ⇒ Additionally, it may influence future negotiations and efforts to achieve a two-state solution.

Way Forward:

- ⇒ Despite ongoing challenges, achieving peace based on a "two-state solution" remains a crucial objective.
- ⇒ International organizations and diplomatic efforts play a vital role in facilitating dialogue and negotiation between Israel and Palestine, offering hope for a peaceful resolution to one of the world's most protracted conflicts.

Conclusion:

- ⇒ The decision by Norway, Ireland, and Spain to formally recognize Palestine reflects a growing momentum in the international community towards supporting Palestinian statehood.
- ⇒ While significant challenges persist, diplomatic initiatives and dialogue remain essential in advancing the cause of peace and stability in the region.

PUTIN AND XI: STRENGTHENING RUSSO- CHINESE RELATIONS IN THE 21ST CENTURY

Context

- ⇒ The recent meeting between Russian President Vladimir Putin and Chinese leader Xi Jinping in Beijing underscores the deepening convergence of strategic interests between the two nations.



- Since Putin's ascension to power in 2000, he has consistently sought to bolster ties with China, even as he navigated relations with the West. Similarly, Xi Jinping, since assuming leadership in China, has prioritized challenging US primacy in Asia and fostering a strong partnership with Russia.

Surprising the World with Sino-Russian Bonhomie

- The growing closeness between Russia and China has surprised Western observers who previously doubted their ability to align due to competing regional interests and economic engagements with the West.
- However, Putin and Xi have demonstrated their willingness to set aside differences and forge a new axis aimed at challenging Western dominance.
- Their recent summit emphasized political coordination and mutual support on key national priorities, such as Ukraine for Russia and Taiwan for China.

Countering the US-Led World Order

- Putin and Xi have openly criticized US interventions in Europe and efforts to build new coalitions, such as the Quadrilateral Forum.
- They advocate for a "multipolar world" and seek to counter American hegemony in international finance.
- Despite US pressure on China to limit cooperation with Russia, Xi's embrace of Putin signals a defiance against Washington's influence.

Reevaluating India's Strategic Assumptions

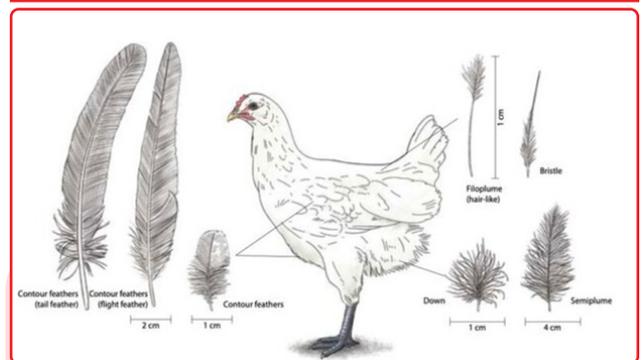
- India, like many Western nations, had assumed that Moscow and Beijing would maintain limited collaboration.
- However, Putin's increasing reliance on China, particularly after strained relations with the West due to the Ukraine conflict, challenges this assumption.
- India must reconsider its approach, recognizing China's dominance in the Sino-Russian partnership.
- Concerns arise regarding Putin's support for China's positions in the Indo-Pacific, potentially undermining India's efforts to build a 'multipolar Asia' and exacerbating security vulnerabilities vis-a-vis China.

Conclusion: Navigating Evolving Power Dynamics

- As Russia and China solidify their alliance, India faces heightened security challenges and must adapt its strategies accordingly.
- A proactive and nuanced approach is necessary for India to safeguard its interests amidst shifting global dynamics.
- This entails reassessing relationships with both Russia and China and actively engaging in diplomatic efforts to maintain regional stability and security.

ECONOMY

NAVIGATING CHALLENGES IN THE INDIAN POULTRY SECTOR



Current Situation

- The recent outbreak of H5N1 has shed light on vulnerabilities within India's poultry industry, prompting a call for comprehensive reforms in animal welfare standards.

Challenges Faced

- Disease Outbreaks and Biosecurity**
 - Avian Influenza and Newcastle Disease pose grave threats, necessitating bird culling and disrupting markets.
 - Inadequate biosecurity measures exacerbate disease spread, particularly in densely populated farm and market environments.
- Market Fluctuations and Price Volatility**
 - Fluctuating feed prices and consumer demand during disease outbreaks disrupt production costs and market stability.
- Infrastructure and Supply Chain Challenges**
 - Limited cold chain infrastructure results in spoilage and wastage, while an unorganized supply chain raises transaction costs and impedes product movement.
- Policy and Regulatory Issues**
 - Fragmented regulations and limited access to credit hinder industry modernization and growth efforts.
 - Labour shortages and environmental concerns further complicate sustainable development.

Existing Provisions

1. Status of Poultry Birds

- India boasts a substantial poultry population, with significant contributions from small and marginal farmers.

2. Legal Status and Guidelines

- Recent guidelines categorize poultry farmers based on flock size and mandate regulatory approvals for medium-sized farms.
- Existing laws address animal welfare and pollution control but require stronger enforcement.

Initiatives for Industry Support

1. Poultry Venture Capital Fund (PVCF) and National Livestock Mission (NLM)

- Provide financial support and assistance for disease control and productivity enhancement.

2. Assistance to States for Control of Animal Diseases (ASCAD) Scheme

- Focuses on disease control and containment efforts.

Proposed Steps for Improvement

1. Focus on Biosecurity

- Implement compartmentalization and vaccination programs to curb disease spread.
- Encourage adoption of advanced feeding and environmental monitoring technologies.

2. Strengthen Supply Chain and Regulations

- Promote contract farming and invest in cold chain infrastructure to enhance efficiency and reduce wastage.
- Streamline regulations and improve access to credit for industry players.

Conclusion

- Through concerted efforts to address challenges and implement strategic initiatives, the Indian poultry industry can achieve sustainable growth, bolster biosecurity measures, and enhance competitiveness on the global stage.

US dollar has experienced a notable increase, strengthening by approximately 27.6%.

- This shift, from Rs 60.34 to Rs 83.38, has garnered attention due to its potential implications for the Indian economy.

Understanding Currency Depreciation

- Currency depreciation refers to a decline in the value of a country's currency relative to other currencies in the foreign exchange market.
- Essentially, it means that the domestic currency can purchase fewer units of another currency or goods and services in international markets.

Key Distinctions: Depreciation vs. Devaluation

- Depreciation and devaluation are two distinct concepts in the realm of currency valuation:
 - Depreciation implies a decline in the value of the currency due to market forces.
 - Devaluation, on the other hand, involves a deliberate action by the government to lower the international value of the home currency.

Systems and Processes

- These currency shifts operate within different exchange rate systems:
 - Depreciation typically occurs under a flexible exchange rate system, driven by market demand and supply factors.
 - Devaluation, conversely, is a deliberate action taken under a fixed exchange rate system, where the government intervenes to adjust the currency's value.

Factors Influencing Depreciation

Several factors contribute to currency depreciation, including:

- 1. Trade Imbalance:** When a country's imports exceed exports, there is heightened demand for foreign currencies, leading to depreciation of the domestic currency.
- 2. Differential Inflation Rates:** If a country experiences higher inflation rates compared to its trading partners, the purchasing power of its currency diminishes relative to others.
- 3. Interest Rate Differentials:** Discrepancies in interest rates between countries can influence investor behavior, affecting currency demand and, consequently, its value.
- 4. Market Speculation:** Investor sentiments regarding economic and political stability, both domestically and globally, can impact currency markets.
- 5. Capital Flows:** Fluctuations in capital flows, driven by factors such as economic uncertainty or attractive investment opportunities abroad, can influence currency demand.
- 6. External Factors:** Events like changes in global oil prices, geopolitical tensions, or monetary policy decisions by major central banks can also impact currency values.

RISING STRENGTH OF RUPEE



Why it's in the Spotlight

- Recent reports highlight a significant trend: since 2014, the value of the Indian rupee against the

The Role of Effective Exchange Rate (EER)

- Effective Exchange Rate (EER) serves as an index of the weighted average of a country's currency against those of its major trading partners.
- This metric helps assess a currency's performance in international trade, considering factors like Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER).
- NEER reflects changes in the external value of the currency, while REER adjusts for inflation differentials, providing a more accurate measure of purchasing power in international markets.

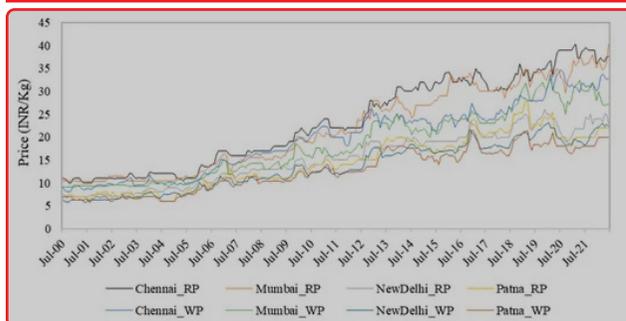
Impact on Trade

- Currency depreciation can affect a country's trade balance:
 - Depreciation tends to boost exports by making them more competitive in international markets, while also reducing imports by increasing their costs for domestic consumers.
 - Conversely, currency appreciation may make exports more expensive and imports cheaper, potentially impacting trade dynamics.

Conclusion

- The recent strengthening of the Indian rupee against the US dollar reflects a complex interplay of domestic and global factors.
- While it may enhance export competitiveness, it also presents challenges such as increased import costs.
- Understanding these dynamics is crucial for policymakers and businesses alike in navigating the evolving landscape of international trade.

UNDERSTANDING INDIA'S FOOD PRICE DYNAMICS AMIDST GLOBAL TRENDS



Context

- In 2023, while global food prices witnessed a substantial decline, India stood as an outlier, grappling with persistently high food inflation rates.
- This unique scenario prompts an in-depth exploration of the factors contributing to India's insulated food price escalation against the backdrop of global trends.

Global Food Price Dynamics:

- The year 2023 witnessed a notable drop in global food prices, attributed to various factors such as bumper harvests of key crops, improved supply from major grain exporters like Russia and Ukraine, and a decrease in demand for vegetable oils due to shifts in biofuel production and consumer behavior.
- Additionally, slowing demand amidst economic uncertainties further exerted downward pressure on global food prices.

India's Contrasting Situation:

Despite the global deflationary trend, India experienced persistently high food inflation rates, particularly in commodities like cereals, pulses, and sugar. Several factors contribute to this divergence:

- Limited transmission of global prices:**
 - India's import dependence is significant primarily for edible oils and pulses, while for most other agri-commodities, the country is self-sufficient or an exporter.
 - Consequently, global price movements have limited impact on domestic food prices.
- Government interventions:**
 - Export bans and import duties imposed by the Indian government on certain food items aimed at stabilizing domestic prices have further insulated India from global market influences.
- Domestic production challenges:**
 - Weather-related disruptions and supply shortages have contributed to elevated prices of essential commodities domestically, exacerbating the inflationary pressures.
- Low stock levels:**
 - Insufficient stock levels for commodities like wheat and sugar have added to the price pressures in the domestic market, limiting the buffer against price fluctuations.

Impact of Imported Inflation:

- In addition to domestic factors, India faces the risk of imported inflation, driven by currency depreciation and rising import costs, including those related to crude oil prices.
- This poses further challenges to food price stability and inflation management in the country.

Addressing the Challenge:

To effectively tackle food inflation and ensure food security, India needs a comprehensive approach that encompasses:

- Increasing agricultural productivity through investments in infrastructure, technology, and research.
- Enhancing supply chain management to reduce wastage and ensure a steady supply of food items.

- ⇒ Promoting diversification of agriculture to reduce reliance on a few commodities and balance market dynamics.
- ⇒ Implementing price monitoring and regulation mechanisms to prevent price manipulation and ensure fair pricing.
- ⇒ Building climate resilience in farming practices to mitigate production risks and enhance long-term food security.

Conclusion:

- ⇒ India's unique food price dynamics, characterized by insulated inflation amidst global deflationary trends, underscore the importance of tailored policy interventions and strategic investments to address both domestic and global factors influencing food prices.
- ⇒ By adopting a multifaceted approach, India can navigate the complexities of the global food market while ensuring stability and affordability in its domestic food market.

WHY THE BULL RUNS



Introduction

- ⇒ It's indicative of the changes in the Indian economy: The number of stock market investors is now inching closer to the number of land-owning farmers in the country.
- ⇒ The global uncertainties are also not affecting the bullish nature of India's stock market.

Performance of the Indian Stock Exchange

- ⇒ In April, the BSE Sensex traded at a price-to-earnings (PE) ratio of 25.
- ⇒ In comparison, the PE ratio averaged 18.61 between 2003-04 and 2007-08 and 23.81 between 2014-15 and 2023-24.
- ⇒ In the case of the small- and mid-cap segments, the exuberance has been even more euphoric.
- ⇒ While both small- and mid-cap indices did witness a steep fall following concerns over "froth" in certain segments, and the possibility of price manipulation, they have recovered since.
- ⇒ This despite the fact that several small- and mid-cap funds had restricted fresh inflows, indicating

their inability to allocate funds efficiently, which suggests that stock prices may not be anchored in fundamentals.

Indian economy's compelling narrative

- ⇒ This exuberance, rational or irrational, is backed by an appealing narrative with several cross-cutting themes.
- ⇒ At its core is a belief in India's growth trajectory – the view that the political, policy and economic environment are perfectly aligned to deliver relatively high growth over a sustained period is now widely held.
- ⇒ There are, after all, strong reasons to be optimistic about the economy's prospects.
- ⇒ A growth rate of 7-8 per cent – notwithstanding uncomfortable questions over its estimation, the distribution of growth or job creation – is nothing to scoff at.
- ⇒ Strong corporate and bank balance sheets have only raised expectations that the economy is on the cusp of a private investment cycle.
- ⇒ And then there are favourable demographics.

Both foreign and domestic investors are enthusiastic to invest

- ⇒ It's not just the foreign investors who have been pouring in money, enthused about the economy's prospects.
- ⇒ Indian households, too, have been increasingly turning towards the stock markets in their search for yield. *Education Centre*
- ⇒ As per reports, the total number of demat accounts in the country has recently crossed 150 million.
- ⇒ As per NSE, the number of unique investors (based on PAN) now exceeds 90 million, which translates to upwards of 50 million families, or more than 17 per cent of all households in the country.
- ⇒ And then there are those who invest indirectly via mutual funds.
- ⇒ As per the Association of Mutual Funds in India's estimates, there are now more than 40 million unique mutual fund investors (there will obviously be some overlap).

The numbers, in perspective

- ⇒ To put these numbers in perspective, consider the following statistics.
- ⇒ In 2019, the total number of agricultural households in the country was pegged at 93.09 million by a survey carried out by the National Statistical Office.
- ⇒ In 2022-23, the number of farmer beneficiaries under PM-Kisan stood at 107.3 million, while in 2023-24, it was 92.1 million (as of January 2024).
- ⇒ In 2022-23, 74 million persons filed income tax returns (this includes individuals, firms, etc).
- ⇒ And, as per the National Family Health Survey, 7.5 per cent of households in the country have cars.

The investors are from diverse PIN codes in India

- ⇒ Investors now are not just limited to the larger cities.
- ⇒ In 2023, an SBI dividend yield fund drew applications from 70 per cent of the pin codes in the country.
- ⇒ As per other estimates, investors now come from every nine out of 10 pin codes in the country.
- ⇒ In 2016-17, contributions through systematic investment plans (SIPs) stood at Rs 43,921 crore.
- ⇒ By 2023-24, they had risen more than four-and-a half times to touch Rs 1.99 lakh crore.
- ⇒ In comparison, net investments by foreign portfolio investors last year stood at Rs 2.08 lakh crore.

Why do investors trust India?

- ⇒ Some are now expecting a period of digesting the extraordinary gains that the markets have witnessed.
- ⇒ But, a continuing surge in domestic flows could help maintain current valuations.
- ⇒ Investors, though, are not showing any signs of nervousness – the India VIX, a fear gauge, witnessed a steep fall last Tuesday, and remains well below recent highs.
- ⇒ Investors, though, especially the foreign ones, can be a fickle lot.
- ⇒ As per a recent report, some funds are undoing their “buy India, sell China” strategy as Beijing’s support for the economy and depressed valuations prompt a rethink.
- ⇒ On balance, however, India remains the preferred investment destination.
- ⇒ After all, it does seem to offer a more compelling story.

Conclusion

- ⇒ At a time when there is uncertainty over China’s growth prospects, the Indian economy stands out. It remains a preferred investment destination.

ADVANCEMENTS IN SELF-HEALING ROAD TECHNOLOGIES: PAVING THE WAY FOR SAFER HIGHWAYS



Context:

- ⇒ As India’s infrastructure continues to evolve, the National Highways Authority of India (NHAI)

remains at the forefront of innovation, exploring cutting-edge technologies aimed at revolutionizing the country’s roadways.

- ⇒ Among these advancements, self-healing road technologies have emerged as a promising solution to combat potholes and ensure smoother, safer journeys for commuters.

Understanding Self-Healing Road Technologies

Self-healing road technologies encompass a range of innovative approaches designed to address the common issue of road deterioration. These include:

1. **Microencapsulation:** This method involves incorporating microcapsules filled with healing agents into the asphalt mix. When cracks occur, these capsules rupture, releasing the healing agent to seal the cracks effectively.
2. **Induction Heating:** Integrating steel fibers into the asphalt mix enables induction heating technology to be utilized. When cracks develop, an induction machine heats the steel fibers, causing the surrounding asphalt to melt and seal the cracks, promoting efficient repair.
3. **Bacteria-Based Self-Healing:** Research is underway to harness the power of bacteria to produce calcium carbonate, which can effectively seal cracks in concrete roads, offering a natural and sustainable approach to road maintenance.
4. **Rejuvenator Capsules:** Similar to microencapsulation, rejuvenator capsules contain agents that soften the asphalt when released, facilitating the sealing of cracks and enhancing road longevity.

NHAI’s Strategic Approach

- ⇒ NHAI is actively exploring self-healing road technologies, with a particular focus on integrating infused bitumen and steel fibers into the asphalt mix.
- ⇒ This approach enables roads to spontaneously fill gaps and repair themselves, thereby enhancing durability and minimizing traffic disruptions caused by potholes.

Implementation and Future Prospects

- ⇒ While these innovative technologies show immense promise, NHAI is conducting a comprehensive cost-benefit analysis to ensure their effective implementation.
- ⇒ Looking ahead, there is optimism regarding the broader adoption of self-healing road technologies, which have the potential to significantly improve the quality and sustainability of India’s road network.

About NHAI

- ⇒ Established in 1988 under the Ministry of Road Transport and Highways, NHAI plays a pivotal role in the development, maintenance, and management of India’s national highways.
- ⇒ With a focus on high-quality infrastructure and the adoption of advanced technologies, NHAI is

committed to enhancing road safety, reducing congestion, and promoting economic growth and regional development across the country.

ELABORATING ON THE SMART CITIES MISSION



Introduction

➤ The Smart Cities Mission, initiated in 2015, embodies a visionary approach to urban development, aiming to leverage technology and innovation to address the complex challenges faced by India's rapidly growing cities. Here's a more detailed exploration of its components:

Defining Smart Cities:

➤ The concept of smart cities emerged as a response to the increasing urbanization and the need for sustainable urban development.

➤ While initially associated with advanced infrastructure and technology integration, the definition has evolved to encompass broader aspects such as inclusivity, sustainability, and citizen-centric governance.

Mission Strategy:

➤ The mission adopts a multifaceted strategy to transform urban areas, emphasizing both pan-city initiatives and area-based developments.

➤ By implementing smart solutions across entire cities and focusing on specific zones for comprehensive redevelopment, it seeks to create a holistic urban ecosystem that fosters economic growth and enhances the quality of life for residents.

Core Infrastructure Elements:

➤ At the heart of the Smart Cities Mission are the core infrastructure elements essential for urban living.

➤ These include provisions for reliable water supply, electricity, sanitation, efficient public transport, affordable housing, digital connectivity, effective governance mechanisms, environmental sustainability, and ensuring the safety and well-being of citizens.

Financing Mechanism:

➤ To support the ambitious goals of the mission, a substantial financial commitment has been made by the central and state governments.

➤ The funding model, operating as a Centrally Sponsored Scheme (CSS), provides significant resources over a five-year period, with matching contributions required from state and urban local bodies.

➤ This pooling of resources enables the allocation of substantial funds for the development of smart cities across the country.

Concerns/Challenges:

➤ Despite its noble objectives, the Smart Cities Mission has encountered several challenges during implementation.

➤ These include issues related to the selection process, governance structures, displacement of marginalized communities, and unintended consequences such as urban flooding.

➤ Additionally, concerns have been raised regarding the exclusionary nature of the scheme and the need for greater citizen participation in decision-making processes.

Way Forward:

➤ Addressing these challenges requires a nuanced approach that integrates data-driven decision-making, inclusive urban planning, and effective governance mechanisms.

➤ The mission must evolve to incorporate feedback from stakeholders, prioritize community engagement, and adopt sustainable development practices.

➤ Moreover, there is a need for smart leadership at all levels of government to drive the mission forward and ensure its success in transforming India's urban landscape.

Conclusion

➤ In essence, the Smart Cities Mission represents a bold step towards reimagining urban spaces and creating cities that are not only technologically advanced but also inclusive, sustainable, and responsive to the needs of all citizens.

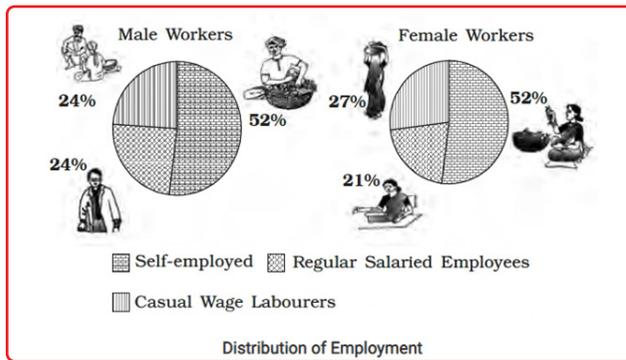
➤ By addressing challenges and embracing innovative solutions, it has the potential to redefine urban development paradigms and pave the way for a more equitable and prosperous future.

EXPLORING THE DYNAMICS OF EMPLOYMENT GROWTH IN INDIA

Introduction:

➤ Understanding employment trends in India involves navigating through a complex web of data interpretation and nuanced analysis.

➤ Over the years, as more refined data becomes available, disagreements over its interpretation become increasingly common.



Analysis of Employment Data (1983-2023):

- Data from the National Sample Survey Office (NSSO) spanning from 1983 to 2023 is scrutinized to discern the evolving nature of employment.
- Principal employment, referring to individuals engaged in substantial work for the bulk of the year, is the focal point of analysis, excluding subsidiary employment.
- Notably, every sub-period under consideration has witnessed growth in principal employment, dispelling notions of jobless growth.

Key Findings:

- The period from 2017-18 to 2022-23 emerges as the phase with the fastest employment growth, witnessing an addition of approximately 80 million jobs.
- This translates to an annual growth rate of 3.3%, surpassing the population growth rate during the same period.
- Crucially, this growth is widespread across rural and urban sectors, spanning manufacturing, agriculture, construction, and services, as well as various demographic segments, including women and older citizens.

Growth in Employment of Women and Older Citizens:

- Notably, women experience the highest growth rate in employment during this period, exceeding 8% annually.
- Additionally, older citizens aged 60 and above are increasingly entering the workforce at a rate of around 4.5% annually.

Reasons for Growth in Employment:

- Various factors contribute to this phenomenon, including changing social dynamics and economic conditions.
- While distress-driven employment is a commonly cited factor, other possibilities include increased flexibility due to declining fertility rates and improved access to resources.
- Moreover, the longer lifespan of older cohorts may contribute to their sustained participation in the workforce.

Sectoral Analysis:

- While manufacturing and construction exhibit robust growth, agriculture and services sectors stand out with even higher rates of employment expansion.
- Interestingly, within agriculture, growth is attributed more to sectors such as livestock and fisheries rather than traditional cropping activities.

Dominance of Self-Employment and Unpaid Family Work:

- A significant portion of the employment growth pertains to self-employment and unpaid family work, comprising 44 million of the total 80 million new jobs.
- This form of employment, often seen as a fallback option, receives considerable support through government schemes like the PMMY (Mudra).

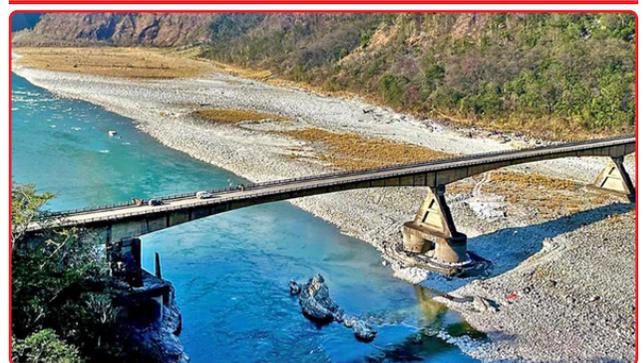
Stagnation in Real Wages:

- Despite the surge in employment, there is relative stagnation in real wages, with nominal wage growth outpacing inflation by a mere 1.2% over five years.
- This stagnation may be attributed to factors such as a larger workforce entering the market and stagnating labor productivity.

Conclusion:

- The surge in employment in India is a multifaceted phenomenon influenced by various factors, including government policies, economic restructuring, and changing demographics.
- Deciphering the underlying causes demands a nuanced understanding of the intricate interplay between these factors.
- Simplistic narratives risk oversimplifying a complex reality, emphasizing the need for rigorous analysis to inform policy decisions and foster sustainable growth in employment and living standards.

INDIA ALLOCATES RS. 2 CRORE PER KILOMETER FOR CHINA BORDER ROAD DEVELOPMENT



Context

- The government's Vibrant Village Program (VVP), sanctioned on February 15, 2023, aims to enhance infrastructure and settlement viability along the India-China border.

- With a focus on 2,967 villages spanning 46 border blocks across 19 districts in Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, and Ladakh, the VVP seeks to uplift livelihoods, elevate living standards, and fortify border security by fostering populated frontlines.

Road Construction Initiative under VVP

- A significant portion of the VVP's ₹4,800 crore budget over three years is earmarked for road construction and improvement projects.
- The Ministry of Home Affairs (MHA) has greenlit 113 road projects, predominantly concentrated in Arunachal Pradesh (105 roads), Uttarakhand (5 roads), and Sikkim (3 roads).
- These projects encompass road development and the construction of steel bridges, with an estimated cost of ₹2 crore per kilometer, reflecting substantial investment in bolstering connectivity infrastructure.

Project Highlights

- **Uttarakhand Pithoragarh Project:** Spanning Pithoragarh district, Uttarakhand, this project entails a total road length of 43.96 km, with a total cost of ₹119 crore, approximately translating to ₹2.71 crore per kilometer.
- **Sikkim Chungthang-Mangan Project:** Covering Chungthang and Mangan blocks in Sikkim, this project comprises 18.73 km of roads alongside 350 meters of steel bridges. With a total expenditure of ₹96 crore, the project's cost per kilometer stands at approximately ₹5.03 crore.

Strategic Implications

- India's intensified infrastructure development under the VVP forms part of a broader strategic response to China's initiatives in establishing "moderately prosperous" Xiaokang villages along the Line of Actual Control (LAC), particularly in regions bordering Uttarakhand, Sikkim, and Arunachal Pradesh.
- By bolstering border areas' economic viability and surveillance capabilities, India aims to consolidate its territorial integrity and promote local livelihoods.

Understanding the Vibrant Village Programme (VVP)

- Initiated by the Indian government, the Vibrant Village Program (VVP) targets underdeveloped border towns, particularly in Arunachal Pradesh and Ladakh, to revitalize them and ensure access to essential services like healthcare, education, and internet connectivity.
- By fostering physical and digital infrastructure development, enhancing border security, and facilitating sustainable livelihoods, the VVP aims to uplift socioeconomic conditions in these border regions and deter migration from these areas.

INDIA'S SPICE BOARD ADDRESSES ETHYLENE OXIDE CONTAMINATION



Introduction

- The Spices Board of India has taken proactive measures to address the issue of ethylene oxide (EtO) contamination in spices exported from the country.
- This decision comes in response to bans imposed by Hong Kong and Singapore on popular Indian spice brands like MDH and Everest due to the presence of ethylene oxide, a known carcinogen.
- The contamination has raised concerns among international buyers and has prompted a mandatory recall of the affected products.

Use of Ethylene Oxide

- Ethylene oxide is commonly used for the sterilization and fumigation of agricultural products due to its effectiveness in killing bacteria, fungi, and insects.
- However, its carcinogenic properties have led to strict regulations regarding its presence in food products worldwide.

Spices Board Guidelines

The guidelines issued by the Spices Board aim to address the contamination issue comprehensively:

- **Prohibition of EtO Use:** Exporters are instructed to refrain from using ethylene oxide throughout the spice production and supply chain, including treatment processes, transportation, storage, and packaging.
- **Testing and Monitoring:** Regular testing for ethylene oxide contamination is mandated, covering raw materials, processing aids, and finished goods. Any contamination detected must be followed by a thorough root cause analysis to implement preventive measures effectively.
- **Alternative Sterilization Methods:** Exporters are encouraged to utilize alternative sterilization methods approved by the Food Safety and Standards Authority of India (FSSAI), such as steam sterilization, irradiation, and others.
- **Critical Control Points:** Ethylene oxide must be identified as a hazard, and critical control points

should be incorporated into Hazard Analysis Critical Control Points and Food Safety Plans.

Additional Safety Measures

In addition to the above guidelines, the Spices Board has outlined further safety measures to enhance the quality of spices:

- **Rejection of Contaminated Raw Materials:** Spices and herbs containing microbial contaminants beyond acceptable levels must be rejected.
- **Prevention of Cross-Contamination:** Measures must be implemented at all processing stages to prevent cross-contamination, including effective handling and packaging practices.
- **Packaging and Transportation Requirements:** New, non-porous containers should be used for packaging, and clean and dry transportation conditions should be maintained to prevent contamination during transit.

Impact on Trade

- The implementation of these guidelines is crucial not only for public health but also for India's spice export industry, which was valued at USD 4.25 billion in 2023-24.
- By assuring international markets of the quality and safety of Indian spices, these measures may stabilize and increase India's share in the global spice market, particularly in light of stiff competition from other major exporters like China.

Conclusion

- The Spices Board's proactive approach to addressing ethylene oxide contamination demonstrates India's commitment to ensuring the quality and safety of its spice exports.
- By enforcing stringent guidelines and promoting alternative sterilization methods, the country aims to maintain its position as a leading player in the global spice trade while safeguarding public health and consumer confidence.

PM GATI SHAKTI INITIATIVE ENHANCES SOCIAL SECURITY MEASURES AND EXPANDS HEALTH INFRASTRUCTURE



Context

- In a significant move, the Ministry of Labour and Employment has joined the PM Gati Shakti initiative, focusing on bolstering health infrastructure and social security measures in industrial areas and Special Economic Zones (SEZs).
- Sumita Dawra, the ministry's secretary, highlighted the project's core objective of leveraging building data to enhance workers' social security within these burgeoning regions.

Initial Steps and Geotagging Initiatives

- The ministry kick-started the process by geotagging approximately 1.3 million buildings affiliated with the Employees' Provident Fund Organization (EPFO) and 1.5 million buildings under the Employees' State Insurance Corporation (ESIC), including 104 ESIC hospitals.
- Geotagging serves as a pivotal initial step in assessing service coverage gaps and identifying areas already served.

Expanding Coverage in SEZs

- A strategic focus on exploring 268 Special Economic Zones (SEZs) through the Gati Shakti platform aims to extend social security program access to numerous workers in these zones.
- This expansion is poised to fortify the safety net for workers, ensuring broader coverage and benefits.

Integration with Other Schemes

- Future plans involve integrating additional programs into the PM Gati Shakti portal, with a particular emphasis on services catering to individuals with disabilities, such as the National Career Services centers.
- The expansion plan for these centers is geared towards aiding the most vulnerable demographics and remains inclusive to all.

Addressing Challenges for Pensioners

- Efforts to streamline the process for seniors in submitting their digital life certificates represent a tangible benefit of this initiative.
- By utilizing geotagging to locate pensioners, the ministry aims to generate concentration maps on the portal, facilitating targeted and improved healthcare services, especially by entities like the ESIC.

About the PM Gati Shakti Portal

- Launched by the Indian government, the PM Gati Shakti Portal stands as a transformative endeavor aimed at formulating a comprehensive blueprint for nationwide infrastructure development.
- This GIS-based platform consolidates planned and ongoing infrastructure projects across various sectors, including shipping, aviation, roads, and railways.

⇒ The primary objective of the Gati Shakti Portal is to ensure coordinated project planning and execution, thereby mitigating implementation delays and fostering economic growth by facilitating seamless mobility of goods and people.

About Special Economic Zones (SEZs)

- ⇒ SEZs denote designated areas within a country characterized by distinct economic regulations compared to other regions.
- ⇒ Established to attract foreign direct investment (FDI), foster export-driven growth, and generate employment opportunities, SEZs offer incentives like tax exemptions, reduced tariffs, and simplified regulatory procedures to businesses.
- ⇒ These zones typically specialize in specific industries like manufacturing, technology, or finance, playing a pivotal role in enhancing international trade and industrial expansion.
- ⇒ However, SEZs have faced criticism for displacing local populations and exacerbating economic inequality.

- ⇒ It is noteworthy that the decline in the value of agricultural imports in 2023-24 was primarily due to edible oils, plummeting by 28.5 per cent, from \$20.8 billion to \$14.9 billion in a single year.
- ⇒ However, in terms of quantity, it remained relatively stable, hovering around 15-16 million metric tonnes (MT) during both 2022-23 and 2023-24.
- ⇒ India imports roughly 55 to 60 per cent of its edible oil consumption.
- ⇒ Within the spectrum of edible oils, palm oil accounts for over 50 per cent, followed by soybean and sunflower.
- ⇒ The principal factor contributing to the decline in import values is the decrease in palm oil prices in international markets.
- ⇒ The FAO's vegetable oil sub-index averaged 168.5 points in 2022-23, dropping to 123.4 points in 2023-24, indicating reduced global prices, consequently lowering India's vegetable oil import bill in 2023-24.

Other import items

- ⇒ Next to edible oil, it is pulses, fresh fruits and vegetables (F&V), sugar, spices, cashew, and various other items that comprise India's agri-imports.

The price fluctuation of pulses

Historical context

- ⇒ The import of pulses, which had declined from its peak of \$4.2 billion in 2016-17 (a record 6.6 MT) to \$1.9 billion in 2022-23 (2.5 MT), suddenly doubled to \$3.7 billion in 2023-24 (4.7 MT).
- ⇒ In 2016-17, pulses production at home had suddenly increased by about 6 MT, while imports also hovered around the same quantity.
- ⇒ This led to a glut and domestic prices of many pulses went below minimum support prices (MSP).
- ⇒ GoI had to impose a 30 per cent import tariff on lentils, pigeon pea/tur, and chickpea, followed by quantity restrictions.
- ⇒ Later, the import tariff on chickpea increased to 40 and then to 60 per cent by March 2018.
- ⇒ For yellow/white peas, a 50 per cent duty was combined with a minimum price of Rs 200/kg, implemented in December 2019, effectively prohibiting imports below this threshold.
- ⇒ This was to give high protection to domestic production of pulses.

The current status of pulses

- ⇒ However, since then, the increase in pulse production has been sluggish, hovering around 25-27 MMT.
- ⇒ Import restrictions, coupled with somewhat sluggish growth in domestic production, are leading to high inflation in pulses.
- ⇒ Even in April 2024, pulses group registered an inflation of 17 per cent, while tur showed an inflation of 31 per cent.

A TO-DO LIST FOR INFLATION



Introduction

- ⇒ The Reserve Bank of India needs to be complimented for broadly containing the consumer price inflation within its mandated range of 4+/- 2 per cent.
- ⇒ The food inflation, which is hovering around 8 percent has led the government to go into overdrive mode to contain inflation. This has resulted in harming farmers.

The recent decline in India's agri-imports

- ⇒ India's agri-imports in 2023-24 have registered a notable decline of 8 per cent, dropping from \$35.7 billion in 2022-23 to \$32.8 billion in 2023-24.
- ⇒ Interestingly, the average annual growth rate (AAGR) observed in agricultural imports during the 10 years of the Narendra Modi government appears to have slowed down – from 14 per cent during the UPA government (2004-05 to 2013-14) to 9 per cent during 2014-15 to 2023-24.

Reasons for decline in agri-import bills

A drop in the international price of edible oil

- This is worrying the government and no wonder, they are liberalising the imports of pulses at zero import duty, which will remain in place until the end of 2024-25.
- This is likely to hit the farmers, though it will help in taming pulses prices for consumers. Again a sign of consumer bias.

A rational trade policy that dovetails well with domestic MSP policy

1. Policy regarding pulses

- First, instead of a sudden drop to zero import duty, it could have been more calibrated.
- Second, it must ensure that the landed price is not below the MSP of major pulses.
- Third, if domestic prices go below MSP, then NAFED should undertake large scale procurement at MSP to build its buffer stocks. Else, we are afraid, pulses farmers will lose heavily and their enthusiasm to produce more pulses may wane soon.

2. Policy regarding edible oils/oilseeds

- A similar policy has to be adopted in case of edible oils/oilseeds, that is, ensuring that landed price of edible oils should not be below the domestic MSP of oilseeds converted to oil.
- Else, the vision of the Prime Minister to achieve relative self-reliance in edible oils through the National Edible Oil Mission-Oil Palm (NEOM-OP) will wash away.
- Having said this, Indian policymakers must recognise that achieving self-sufficiency in edible oils through traditional oilseeds like mustard, groundnuts, and soybeans would necessitate an additional area under oilseeds to the tune of 35 to 40 million hectares, which is not feasible.
- Only way is to promote palm oil at home on about 2 million hectares that is identified as a suitable area for this crop.
- This is the only crop that can give almost 4 tonnes of oil/ha.

Conclusion

- The key lesson is that trade policy, especially import liberalisation, has to be well integrated with MSP policy at home.
- This is important for pulses and oilseeds, which demand less water and less fertilisers. Thus, farmers' and the planet's interests must go hand in hand.

BIHAR'S SOLAR STREETLIGHT INITIATIVE FALLS SHORT OF TARGETS, LEAVING VILLAGES IN DARKNESS

Context

- Despite ambitious promises and significant investment, Bihar's endeavor to illuminate its rural areas with solar streetlights has stumbled, leaving many villages still shrouded in darkness at night.



Slow Implementation and Missed Targets:

- Chief Minister Nitish Kumar launched the Mukhyamantri Gramin Solar Street Light Scheme two years ago with the aim of installing solar streetlights in all village streets within two years.
- However, as of May 17, 2024, only 20% of the targeted areas have been illuminated, leaving thousands of villages without adequate lighting.

Underwhelming Progress:

- Official data reveals that only 134,239 solar street lights have been installed across Bihar's wards, significantly below the initial target of over a million lights.
- The sluggish implementation has been attributed to delays and inefficiencies in the execution of the scheme, despite directives from state authorities.

Government Intervention and New Strategies:

- State authorities have intervened by directing private agencies to accelerate the installation process, especially in districts where progress has been lacking.
- An online monitoring system has been established to ensure the proper functioning and maintenance of installed solar streetlights.
- The Bihar Renewable Energy Development Agency is in the process of selecting new private agencies to expedite the completion of the project.

Financial and Investment Landscape:

- The initiative initially received financial assistance from the Centre under the 15th Finance Commission, with the state government utilizing a portion of the Rs 1,100 crore received for the installation of solar streetlights.
- Despite the setbacks, Bihar continues to explore opportunities in the renewable energy sector, with recent bids invited for 200 MW rooftop solar power capacity.

Conclusion:

- Bihar's solar streetlight project, envisioned as part of the Jal Jeevan Haryali Abhiyan to mitigate the effects of climate change, faces challenges in meeting its objectives within the stipulated timeframe.

- ⇒ The state government's efforts to address implementation issues and expedite the process will be crucial in ensuring that rural areas receive the promised illumination.

EASE OF COMPLIANCE: ADDRESSING TIME-LIMIT CONUNDRUMS IN GST



Introduction:

- ⇒ Last month, monthly GST collections soared to record-breaking levels, exceeding Rs 2 lakh crore for the first time.
- ⇒ However, amidst this achievement, the persistent challenges and glitches in the daily application of GST laws remain concerning.
- ⇒ One critical issue revolves around the time-limit dilemma associated with claiming input tax credit.

One Nation, One Tax Philosophy:

- ⇒ The GST regime was designed to streamline the taxation system by merging central and state indirect taxes.
- ⇒ It aimed to facilitate seamless availment of credit on taxes paid for all inputs, thereby eliminating the cascading effect of double taxation.

Understanding the Credit Issue with an Example:

- ⇒ Consider a manufacturer with a monthly tax liability of Rs 1,00,000 and input taxes paid amounting to Rs 60,000.
- ⇒ With a cash balance of Rs 10,000, the resulting tax arrears stand at Rs 30,000.

Problems with GST Portal:

- ⇒ The GST portal often poses challenges, refusing to accept monthly returns unless the entire tax amount is paid.
- ⇒ Subsequent returns cannot be filed if previous returns remain unpaid.

Time Limit for Input Tax Credit:

- ⇒ A deadline of November 30 each year is set for claiming input tax credit.
- ⇒ Failure to pay the balance tax by this date leads to a permanent loss of input tax credit, as illustrated in the example.

Need for GST Portal Adjustment:

- ⇒ There is an urgent need for the GST portal to accept monthly returns even with shortfalls in tax payment.
- ⇒ The portal should record monthly tax arrears and allow returns noting the shortfall, with interest accruing until dues are cleared.

Payment Issues for SMEs and Injustice in Tax Liability:

- ⇒ Many Small and Medium Enterprises (SMEs) face payment delays, exacerbating their challenges.
- ⇒ Tax liability based on total sales without considering net income is unjust, especially when businesses face difficulties in timely payment.

GST Portal Issues and Needed Modifications:

- ⇒ The refusal to accept returns until full monthly tax payment is made affects numerous taxpayers.
- ⇒ The GST portal should accept all returns, noting arrears and applying interest.
- ⇒ The law should mandate tax arrears clearance by November each year, with higher interest and penalties for non-compliance.

Conclusion:

- ⇒ The GST Council must promptly address this recurring monthly issue, recognizing that defaults often stem from unfavorable business conditions beyond the control of many small and medium taxpayers.
- ⇒ Until the GST Portal allows monthly returns with shortfalls, enforcing the November 30 deadline for availing input tax credit should be reconsidered.

INDIA'S DEPENDENCY ON CHINESE ELECTRONICS: CHALLENGES AND THE WAY FORWARD



Introduction:

- ⇒ India's reliance on China for electronic and electrical goods has been a matter of concern, with over 50% of mobiles, automatic data processing units, and semiconductor devices being sourced from China.
- ⇒ This dependence poses significant challenges to India's economic and strategic interests, necessitating a reevaluation of trade policies and supply chain strategies.

China as India's Top Trading Partner:

- In FY24, China reclaimed its position as India's top trading partner for the sixth time in the last decade, outpacing the United States.
- The trade relationship is characterized by a significant trade deficit for India, primarily driven by high import volumes from China compared to relatively low exports.

Trade Dynamics with the United States:

- In contrast, India enjoys a trade surplus with the United States, with exports exceeding imports.
- However, the trade balance has been widening in recent years, signaling a need for diversification of trade partners and enhanced export competitiveness.

Analysis of Trade Imbalances:

- The widening trade deficit with China highlights the asymmetry in trade relations, with stagnant exports and surging imports.
- On the other hand, India's trade surplus with the United States underscores the potential for balanced trade relationships.

Rising Trade Deficit with Russia:

- India's trade deficit with Russia has escalated significantly, driven by increased oil imports amid sanctions imposed by the West.
- Russia has emerged as a crucial source of oil for India, contributing to the trade deficit.

Impact on Key Industries:

- The majority of imports from China comprise electronics and electrical items, including mobiles, data processing units, and semiconductor devices.
- India's heavy reliance on Chinese imports in these sectors underscores the vulnerability of its supply chains.

The Way Forward:

- To reduce import dependency from China, India must prioritize diversification of supply chains, incentivize domestic production, invest in research and development, forge partnerships with other countries, and implement policies supporting local manufacturing.
- This comprehensive approach will enhance India's economic resilience and promote self-reliance in critical sectors.

Conclusion:

- India's dependence on Chinese electronics presents multifaceted challenges that require strategic interventions and policy reforms.
- By adopting a holistic approach focused on domestic manufacturing and diversification of trade partners, India can mitigate risks associated with import dependency and strengthen its economic sovereignty in the long run.

IMF'S ASIA-PACIFIC ECONOMIC OUTLOOK



Context

- Late 2023 witnessed a surge in economic growth across the Asia-Pacific region, with a notable expansion rate of 5.0%. Despite this momentum, projections for 2024 indicate a slight deceleration to 4.5%, amidst varying inflation rates and a balance of near-term risks.
- Strong private demand has emerged as a primary catalyst for growth, particularly evident in emerging markets.

India's Growth Trajectory

- India stands out for consistently surpassing growth expectations, largely fueled by robust domestic demand.
- The IMF raised India's growth forecast for the upcoming financial year to 6.8%, with a sustained projection of 6.5% for the subsequent year.
- Notably, public investment has played a pivotal role in driving India's economic momentum, especially in critical sectors such as infrastructure.

Forecast for China

- China, a cornerstone of the Asia-Pacific economy, is anticipated to witness a growth rate of 4.6% in 2024, marking a slight decrease from the previous year.
- The IMF identifies China as both a source of upside and downside risks, emphasizing the importance of addressing stresses in the property sector and bolstering domestic demand to sustain economic stability.

Inflation Dynamics

- While inflation remains relatively stable across emerging markets, future trends are subject to various influencing factors.
- Core inflation is expected to remain subdued, although economies like India may experience fluctuations driven by food price increases.

Geoeconomic Considerations

- Geoeconomic fragmentation emerges as a significant risk, underscored by escalating economic and trade tensions among nations.

- ⇒ Policymakers are urged to navigate these challenges prudently, mitigating trade risks to avoid exacerbating frictions that could impede regional economic growth.

Public Investment Imperatives in India

- ⇒ Public investment emerges as a cornerstone for India's economic development, facilitating infrastructure development, job creation, and human capital enhancement.
- ⇒ Strategic investments in sectors such as cybersecurity, biotechnology, circular economy, and marine research are pivotal for unlocking India's potential as a global economic powerhouse.

Conclusion

- ⇒ In essence, the IMF's Asia-Pacific Economic Outlook report provides invaluable insights into the region's economic landscape, emphasizing the importance of proactive policy measures and strategic investments to navigate evolving challenges and capitalize on emerging opportunities.

NAVIGATING INFLATION: INSIGHTS FROM INDIA'S VEGETABLE TRIUMVIRATE



Context

- ⇒ Inflation serves as a critical barometer of economic vitality, reflecting shifts in general price levels and the cost of living.
- ⇒ In India, the Consumer Price Index (CPI) serves as the yardstick for measuring price inflation, with vegetables, notably tomatoes, onions, and potatoes (TOP), holding substantial sway within the index.

Measuring the Impact

- ⇒ The CPI basket, comprising 299 items, allocates a weight of 6.04% to vegetables, with TOP commanding a significant 2.2%.
- ⇒ Beyond numerical representation, TOP's influence on food and beverage inflation, as well as headline CPI figures, is noteworthy.
- ⇒ Across urban and rural sectors, TOP holds varying degrees of significance, constituting 3.6% and 5% of the consumption basket, respectively.

Understanding Volatility

- ⇒ TOP's price volatility, reflected in its inflation coefficient of variation (CoV) of 5.2 from January 2015 to March 2024, outstrips not only the broader food group but also headline inflation and vegetable sub-groups.
- ⇒ This volatility underscores the susceptibility of these commodities to market dynamics and supply chain intricacies.

Supporting Farmers

- ⇒ The volatility of TOP underscores the imperative for strategic policy interventions to stabilize agricultural supply chains and mitigate risks for farmers.
- ⇒ Given their perishable nature and vulnerability to various stressors, effective solutions entail overhauling agricultural value chains, enhancing cold storage facilities, and ensuring fair prices to incentivize cultivation.
- ⇒ Addressing exorbitant input costs for fertilizers and pesticides is also pivotal to bolstering farmer profitability.

Challenges and Short-term Measures

- ⇒ Recent instances, such as the sudden lifting of export bans on onions before Maharashtra elections, underscore reliance on short-term fixes rather than addressing systemic issues.
- ⇒ Such reactive measures fail to address underlying farmer concerns and the need for sustainable solutions.

Conclusion

- ⇒ In addressing inflation volatility and supporting farmers, a holistic approach is imperative.
- ⇒ Long-term strategies aimed at enhancing agricultural resilience, reducing input costs, and ensuring fair prices are crucial for fostering stability and sustainability within India's vegetable triumvirate.
- ⇒ It's time for proactive measures to navigate the complexities of inflation and safeguard the interests of both consumers and farmers alike.

NEW AIS FEATURE ENHANCES INCOME TAX CONFIRMATION PROCESS



AIS for Taxpayers

Income Tax Department
Government of India

Context

- ⇒ The Annual Information Statement (AIS) now has a useful feature added by the Income Tax Department that lets taxpayers see the confirmation state of their financial data. The goal of this change is to make tax filing more open and accurate.

Understanding the Annual Information Statement (AIS)

- The American Income Statement (AIS) is a detailed record of all of a taxpayer's financial transactions during the tax year.
- It includes information from many sources, such as banks and mutual funds. According to the Income Tax Department, it gives a thorough picture of a person's business activities.

New Feature Explained

- **Confirmed:** This state means that the tax department has checked the information carefully and agreed with it. Entries that are marked as "Confirmed" are thought to be correct, and the taxpayer does not need to do anything else about them.
- **Partially Accepted:** This state means that some parts of the information have been checked out and approved, but other parts may still need more information or clarification. Taxpayers should carefully read over these records to see what other information might be needed to fully settle any problems.
- **Rejected:** It means that the tax office has not accepted the information. These records need to be fixed, and taxpayers are responsible for updating or changing the wrong information. People who owe money on taxes should take care of these mistakes right away to avoid problems with their tax returns.

How to Accessing AIS?

- The compliance page on the e-filing website (www.incometax.gov.in) lets all registered income taxpayers get to their AIS.
- Taxpayers can look over and make changes to their recorded financial transactions here.

What are the Benefits for Taxpayers?

Transparency:

- Taxpayers can now directly check that the financial information the tax office has on file about them is correct.
- This makes it easier to check that the data used for tax estimates and assessments is correct, which lowers the chance of mistakes.

Proactive Correction:

- With the updated AIS, taxpayers can find mistakes in their financial records and fix them before they happen.
- Taxpayers can avoid problems during the tax scoring process by taking care of these issues before they file their tax returns.

Reduced Workload:

- When you have better knowledge and can make changes ahead of time, it's much less likely that the tax department will ask questions or do an audit.

- This makes it easier to file taxes and also makes things easier for both taxpayers and tax officials in terms of paperwork.

More About Annual Information Statement (AIS)

- India's Income Tax Department created the Annual Information Statement (AIS), which is a better version of Form 26AS and shows a lot more about a taxpayer's financial transactions.
- AIS has extra data like interest, dividends, trades in securities, and purchases of mutual funds. It makes voluntary cooperation easier and makes sure that taxes are clear.
- You can get to the statement through the Income Tax Department's e-filing site. Taxpayers can give feedback if there are problems.
- AIS is updated often to include the most recent information from financial companies.
- It uses information from property and share deals to accurately figure out tax liabilities. This helps keep income tax returns as error-free as possible.

NEXT GOVERNMENT'S THINGS TO-DO



Introduction

- The Indian economy has done well in growing by above 7 per cent for three successive years while other major countries have struggled to stay afloat.
- However, if one looks closer, the picture is not that straightforward.
- Compared to pre-Covid years, India has added less value to its GDP.
- Here are some key points on which the next government should think of working.

Five areas that need to be focused on

1. Reviving private investment.

- Government capex has driven infrastructure growth, especially in roads and railways.
- This has spurred growth in sectors such as steel, cement, machinery, and chemicals.
- Private sector investment is crucial for further growth.
- Investment decisions in the private sector rely on return on capital, which requires strong demand.

- The PLI scheme has shown limited success, mostly in mobile phones, solar panels, and partially in electric vehicles.
- Suggestions for improvement include expanding the PLI scheme to SMEs and providing incentives like investment allowances.

2. Increasing Household Consumption:

- Household consumption has been volatile, with a surge during the pandemic for services and some manufactured goods.
- Hospitality and tourism sectors performed well, but consumer goods demand remained weak.
- Surplus capacity and high inflation have muted investments and compressed demand in the consumer goods sector.
- Rural demand has been weak due to poor farm output from a sub-normal monsoon.
- Reconsider tax rates to increase disposable income.
- Lower direct tax rates and rationalize GST slabs.
- Address the decline in household savings by reviewing existing tax structures.
- Reconsider the old tax scheme and provide further avenues for savings.

3. Employment generation

- It is not directly under the control of the government.
- It revolves around the private sector, though, on the government's part, it can fill up all the vacant positions, providing a small push to job creation.
- But, only with consumption taking off, will investments rise, creating the required employment opportunities.

4. Focus on farms

- Revisit and discuss the controversial farm laws with various stakeholders to reach an acceptable solution.
- Consider government participation in farming through state cooperatives to manage price increases due to crop failures.
- Clearly articulate the government's stance on agricultural trade to provide certainty for farmers.
- Establish standardized procedures for procurement and distribution to avoid reactive measures.
- Revoke the ban on futures trading in products like oilseeds, pulses, and cereals to enhance productivity through robust price discovery.

5. Integrate into Global Supply Chains

- This would mean entering into more free trade agreements with large trading partners.
- In the last five years or so, there has been significant acceleration in services exports with the IT sector taking the lead.
- But the same has not been the case in merchandise exports. This needs to change.

Conclusion

- It is also expected that the government will work aggressively on lowering the fiscal deficit over the next few years.
- While the target of 4.5 per cent of GDP will most probably be achieved by 2025-26, the important thing is to move towards the 3 per cent mark.
- This will require debt balancing by the next government.

RISING HOUSEHOLD DEBT STRAINS SAVINGS: UNDERSTANDING THE SHIFT



Introduction:

- Recent economic discourse has highlighted a concerning trend: a significant decline in household net financial savings to GDP ratio, primarily attributed to heightened borrowing.
- This shift prompts a deeper examination into its implications for household financial stability.

Interpreting the Trend:

- The Chief Economic Advisor suggests that the rise in borrowing is merely a shift in savings composition, with households allocating more towards physical savings (investment).
- However, the data reveals a disproportionate increase in borrowing compared to physical savings, leading to a decline in overall household savings to GDP ratio.

Exploring Causes:

- The surge in household borrowing is not solely a result of changing savings patterns but also reflects increased financial distress.
- Factors such as rising interest rates and debt-income ratios contribute significantly to this phenomenon, leading to greater interest payment burdens on households.

Structural Shifts:

- The recent period has witnessed a structural shift characterized by rising interest rates and debt-income ratios.
- Known as "Fisher dynamics," this trend exacerbates the debt-income ratio, particularly due to a slowdown in nominal income growth.

Macroeconomic Challenges:

- ⊖ While India's debt servicing ratio remains comparatively favorable, emerging challenges necessitate attention.
- ⊖ Addressing the widening gap between interest rates and income growth is crucial to mitigate the growth of household debt-income ratios.
- ⊖ Moreover, concerns arise regarding potential declines in aggregate demand due to households prioritizing debt servicing over consumption.

Conclusion:

- ⊖ As India grapples with these challenges, there's a pressing need to incorporate additional macroeconomic policy targets aimed at fostering household income growth.
- ⊖ Tackling these issues is essential to safeguard household financial stability and sustain economic resilience in the face of evolving economic dynamics.

SOCIETY**CRIES FOR HELP****Context**

- ⊖ The alleged death by suicide of at least seven students, six of them girls, in different parts of Telangana after the declaration of intermediate results is another grim reminder that despite several progressive interventions in recent years, much work needs to be done to alleviate the anxieties of the country's youth.

Government efforts to reduce the stress of students

- ⊖ The Telangana State Board of Intermediate Education had arranged for counsellors for students in junior colleges to deal with exam-related stress.
- ⊖ State government representatives had also asked students to not be dejected by adverse results and make use of the supplementary examinations.
- ⊖ However, the loss of young lives speaks of serious systemic shortcomings that cannot be mitigated by reaching out to students just before the examinations.

Extent of student suicide in India

- ⊖ Year after year NCRB data has provided significant pointers about the stress faced by students.

- ⊖ In 2022 according to the Bureau, over 13,044 Indian students ended their lives – 7.6 per cent of the total suicide fatalities in that year.
- ⊖ The data shows a 70 per cent increase in the number of students who took their lives in the last decade.

Factors responsible for suicides among youth in India

- ⊖ Suicidal behavior is, the culmination of several factors.
- ⊖ It's no secret, however, that competition pressures and burdens of parental expectations take a toll on the well-being of students – this is especially so because today, more than ever before, diverse sections of people see academic excellence as a ticket to a better life.
- ⊖ Schools, too, are harbingers of the competitive mentality and teachers push their wards to higher levels of performance.
- ⊖ This routine disincentives a child from searching for meaning in what is taught, encourages rote learning and pushes the young to coaching centers where the demands are even more punishing.
- ⊖ Instead of being empathetic tests of the student's aptitude, examinations continue to be purveyors of a ruthless elimination system that dehumanizes the learners and drives many of those who fail to make the cut to despondency.
- ⊖ Designing flexible evaluation mechanisms for school goers, one of the objectives of NEP, 2020, is at an early stage.

- ⊖ The endeavor requires greater urgency.

Effect of the New Education Policy (NEP)

- ⊖ Emotional well-being is a key part of the NEP's thrust on creating an enabling atmosphere for students.
- ⊖ However, most schools today aren't equipped to recognize a cry for help.
- ⊖ Round-the-year support systems that enhance the resilience and coping skills of students – especially those from marginalized communities – are extremely rare in the Indian school-education landscape.
- ⊖ Educationists have also emphasized the importance of counseling parents and teachers.
- ⊖ For long, it has been clear that the grueling system does not prepare the student for the country's economic realities.
- ⊖ At the same time, the expansion of the economic pie hasn't kept pace with the rise in aspirations.

Conclusion

- ⊖ The manifestos of most political parties in the ongoing elections seem to be cognizant of the existing deficit between the expansion of the economy and the rising aspiration of youth.

- ⇒ The urgent task after June 4 will be to translate words into action and make sure that the system doesn't fail its young.

IMPORTANCE OF FEMALE LABOR FORCE PARTICIPATION



Why in news?

- ⇒ In a significant ruling on Monday, the Supreme Court, led by Chief Justice of India D Y Chandrachud, emphasized the fundamental importance of women's participation in the workforce.
- ⇒ The bench underscored that this participation is not merely a privilege but a constitutional right safeguarded by Article 15 of the Constitution.
- ⇒ The judgment emphasized that Article 15 not only prohibits gender-based discrimination but also empowers states to enact special provisions for women.
- ⇒ This ruling underscores the state's obligation as a model employer to address the unique concerns of women in the workforce.

Key Points of verdict & It's after effect

- ⇒ At a juncture where discussions about the subdued involvement of women in the job market are widespread, the ruling emerges as a timely response.
- ⇒ It arrives amidst growing recognition from both state and central administrations regarding the imperative role of childcare provisions in bolstering women's engagement in formal employment.
- ⇒ In a societal landscape where caregiving duties are predominantly seen as women's responsibilities, the verdict underscores a crucial shift in perspective.
- ⇒ It elucidates that both the government and employers bear the onus of facilitating an environment conducive for women to enter and sustain their careers.
- ⇒ According to the Time Use Survey of India (2019), women spend significantly more time than men on unpaid domestic and care work, highlighting the unequal distribution of labor within households.
- ⇒ This burden is even heavier for socially and economically marginalized women.

Current Status of Female Labor Force Participation

- ⇒ Working women often encounter obstacles such as "marriage penalties" and "motherhood penalties," which can force them to temporarily withdraw from the workforce due to marital obligations or pregnancy.
- ⇒ Consequently, it's not surprising that female workforce participation in India remains low, standing at a mere 37 percent according to the Periodic Labour Force Survey (PLFS) of 2022.
- ⇒ Moreover, the employment landscape for women in India is characterized by a high proportion of self-employment, with 60 percent of women being self-employed.
- ⇒ However, a significant portion of these self-employed women—53 percent—work as unpaid family helpers, reflecting the challenges they face in accessing formal employment opportunities.
- ⇒ Many women opt for flexible employment options close to home to juggle their multiple responsibilities, further perpetuating the cycle of limited workforce participation.
- ⇒ These intertwined outcomes stem from both a lack of opportunities in the labor market and the necessity for women to seek flexible employment arrangements that allow them to balance their domestic and professional duties.

Reasons for low Female Labor Force participation rates

The low participation of women in the labor force in India can be attributed to various factors, each of which impacts women's employment opportunities and their ability to engage in economic activities. Here are some explanations with examples:

- ⇒ Social and Cultural Norms
 - Deep-rooted societal expectations often confine women to domestic roles, limiting their participation in the workforce.
 - For instance, in many Indian households, women are expected to prioritize caregiving and household duties over pursuing a career.
 - This expectation is reinforced by cultural beliefs that view a woman's primary role as that of a homemaker.
 - As a result, women face pressure to conform to these norms, which can deter them from seeking employment outside the home.
- ⇒ Lack of Education and Skills
 - Limited access to education and vocational training opportunities disproportionately affects women in India.
 - In rural areas, where educational infrastructure is often lacking, girls may have lower enrollment rates and higher dropout rates compared to boys.

- Without adequate education and skills training, women are less likely to qualify for well-paying jobs or positions in sectors that require specialized expertise.
- Occupational Segregation
 - Women in India are often concentrated in low-paying and informal sectors such as agriculture, domestic work, and cottage industries.
 - This occupational segregation limits their access to higher-paying jobs in sectors traditionally dominated by men.
- Gender Wage Gap
 - Women in India frequently encounter wage discrimination, receiving lower wages than their male counterparts for similar work.
 - This wage gap persists across various sectors and occupations, exacerbating economic inequalities between men and women.
- Unpaid Care Work
 - Women in India often bear the burden of unpaid care work, including household chores, childcare, and eldercare.
 - The expectation that women will assume these responsibilities can limit their ability to pursue paid employment outside the home.

Government's Initiative

The Government of India has implemented several policy measures aimed at increasing women's participation in the labor force and addressing gender disparities in the workforce. Some of these policy initiatives include:

Maternity Benefit Act (2017)

- The Maternity Benefit Act mandates paid maternity leave of 26 weeks for women working in the organized sector, with provisions for extended leave in certain cases.
- This policy aims to support women's participation in the workforce by providing them with adequate maternity benefits and job security during pregnancy and childbirth.

Pradhan Mantri Matru Vandana Yojana (PMMVY)

- PMMVY is a maternity benefit scheme that provides financial assistance to pregnant and lactating women for their first live birth.
- Under this scheme, eligible women receive cash incentives for maternity-related expenses, aiming to improve maternal health outcomes and support women's employment.

National Policy for Skill Development and Entrepreneurship (2015)

- This policy framework emphasizes skill development initiatives tailored to the needs of women, including training programs in non-traditional sectors and entrepreneurship development.

- By enhancing women's skills and entrepreneurial capabilities, the government aims to promote their economic empowerment and increase their participation in the labor force.

National Rural Livelihoods Mission (NRLM)

- NRLM includes provisions for promoting women's self-help groups (SHGs) and livelihood opportunities in rural areas.
- Through NRLM, women are provided with access to financial services, training, and support for income-generating activities, aiming to enhance their economic independence and participation in productive employment.

Stand-Up India Scheme

- Stand-Up India is a government scheme aimed at promoting entrepreneurship among women, Scheduled Castes (SCs), and Scheduled Tribes (STs) by providing them with access to bank loans for starting new ventures.
- By facilitating access to credit and entrepreneurial support, the scheme aims to empower women entrepreneurs and promote their participation in the formal economy.

Gender Budgeting

- The Government of India has adopted gender budgeting as a strategy to mainstream gender concerns in the budgetary process.
- Gender budgeting entails analyzing government budgets to assess their impact on women and allocating resources to address gender disparities.
- By prioritizing investments in areas such as education, healthcare, and social protection, gender budgeting aims to promote women's welfare and economic inclusion.

AT EASE WITH DIVERSITY: A STUDY ON DEMOGRAPHIC CHANGES



Contexts

- A recent study conducted by members of the PM-Economic Advisory Council in India sheds light on the shifting demographics of OECD countries, highlighting a global trend of declining majority

populations and the flourishing of minority communities.

- This study, coupled with previous research, offers valuable insights into demographic shifts and challenges prevalent worldwide.

The Great Replacement Theory and European Demographics

- Originating in the late 19th century, the Great Replacement Theory posits a conspiracy to replace white Americans and Europeans with non-European populations.
- While initially a theory, it has gained traction, with a significant portion of the French population endorsing its tenets.
- Recent demographic data from European cities like Amsterdam, London, and Brussels underscores this demographic transformation.

Findings from the PM-EAC Study

- The PM-EAC study analyzes demographic changes in OECD countries from 1950 to 2015, revealing a steep decline in the share of majority religious denominations, particularly Roman Catholics.
- This decline is more pronounced in OECD nations compared to the global average. The rise of minority populations, including Muslims, Christians, Sikhs, and Buddhists, indicates their relative prosperity and comfort in these countries.

India's Demographic

- Contrary to some narratives, India has also witnessed a decline in the share of its majority religious denomination, albeit to a lesser extent.
- The study suggests that India provides a conducive environment for fostering diversity, with minority populations thriving.
- This contrasts with neighboring countries where minority populations have dwindled.

Addressing Concerns and Misconceptions

- The study aims to allay fears regarding uncontrolled population growth among minority communities in India.
- Data on Total Fertility Rate (TFR) reveals a decline across all religious groups, indicating a trend towards healthier population patterns.
- This decline in TFR suggests that India is on track to achieving balanced demographic growth in the future.

Conclusion: Embracing Diversity for a Better Future

- The PM-EAC study, along with existing demographic research, underscores the importance of embracing diversity and promoting inclusive societies.
- By understanding and addressing demographic challenges, nations can create environments where all communities can thrive.

- India's trajectory towards balanced population growth reflects a commitment to fostering inclusivity and equity, offering valuable lessons for the global community.

PRIORITIZING HUMAN DEVELOPMENT: A PATH TO INCLUSIVE GROWTH



Introduction: The Challenge of Rising Inequality

- India stands at a crossroads, grappling with the stark reality of widening income disparities and sluggish progress in human development indicators.
- As recent studies highlight the growing chasm between the affluent few and the marginalized majority, it becomes imperative to reassess the nation's development trajectory and prioritize human welfare over mere economic gains.

A Poor Ranking on Human Development Index

- Despite incremental improvements, India's position on the Human Development Index (HDI) remains a cause for concern.
- While climbing one spot to rank 134 out of 193 countries in 2022, the nation lags behind its regional peers such as Bhutan, Bangladesh, Sri Lanka, and China.
- Particularly alarming is the gender gap in labor force participation, reflecting deep-rooted disparities that hinder inclusive growth.

Concerns on Rising Inequality

- The Human Development Report and the World Inequality Lab study underscore the ominous trend of escalating inequality, both within and across nations.
- As economic power becomes increasingly concentrated in the hands of a privileged few, the majority grapples with limited agency and access to opportunities.
- This disparity not only stifles social mobility but also undermines the fabric of democracy and equitable progress.

Addressing the Widening Divide

- The staggering income divide, where the bottom 50% of the population commands a mere 15% of the national income, demands urgent attention.

- ⇒ Such stark inequality not only dampens aggregate demand and consumption but also perpetuates cycles of poverty and exclusion.
- ⇒ Moreover, burgeoning household debt levels and dwindling financial savings underscore the fragility of the economic landscape, necessitating a paradigm shift in growth strategy.

Charting a New Course: Prioritizing Human Development

- ⇒ To reverse the tide of inequality and foster inclusive growth, India must pivot towards a development model that places human welfare at its core.
- ⇒ This entails recalibrating policies to address the multifaceted challenges facing the populace, from access to quality education and healthcare to equitable employment opportunities and social protection schemes.

Fostering Political Will for Long-term Sustainability

- ⇒ Such a transformation demands political will and foresight, transcending short-term electoral gains in favor of sustainable and equitable development.
- ⇒ By investing in human capital and nurturing a conducive environment for innovation and entrepreneurship, India can unleash the latent potential of its vast populace and chart a course towards prosperity for all.

Conclusion: A Call to Action

- ⇒ As India navigates the complexities of a rapidly evolving global landscape, the imperative to prioritize human development cannot be overstated.
- ⇒ By bridging the gap between rhetoric and action, policymakers can lay the groundwork for a more resilient and inclusive society, where every citizen has the opportunity to thrive and contribute meaningfully to the nation's progress.
- ⇒ It is time to embrace a paradigm shift towards a future where prosperity is measured not merely in economic terms but in the holistic well-being of its people.

ROTI, KAPDA, MAKAN, GOOD AIR: MAKING CLEAN AIR A NATIONAL PRIORITY



Introduction: The Missing Piece in Political Discourse

- ⇒ In a welcome development, environmental and air pollution concerns have found a place in the manifestos of major political parties for the 2024 Lok Sabha elections.
- ⇒ However, the larger question looms: Will air quality ever ascend to the top of voters' priority lists in India?

Historical Trends in Political Manifestos

- ⇒ Over the years, political manifestos have mirrored the evolving aspirations of the populace, from the basic needs of food, clothing, and shelter to infrastructure, employment, and governance transparency.
- ⇒ Yet, amidst this evolution, the issue of air quality has remained conspicuously absent, largely due to insufficient awareness and inadequate efforts by local governments to educate citizens about the perils of air pollution.

The Stark Reality of Air Quality in India

- ⇒ Studies paint a grim picture of the impact of air pollution on India's economy and public health.
- ⇒ Annual deaths attributable to air pollution result in an economic loss of Rs 2.7 lakh crore, amounting to 1.36% of the country's GDP.
- ⇒ Moreover, the Indian GDP could have been 4.5% higher if air pollution had grown slower—an alarming statistic that underscores the urgent need for action.

The Development-Environment Conundrum

- ⇒ Nobel laureate Simon Kuznets' seminal work highlighted the inverse relationship between economic development and environmental degradation.
- ⇒ While economic growth initially exacerbates environmental harm, it eventually leads to improvements.
- ⇒ This underscores the potential for environmental concerns, including air quality, to become mainstream issues as India progresses economically.

Pathways to Making Clean Air a Priority

- ⇒ To catalyze meaningful change, air pollution must become a political agenda item, garnering widespread attention in media and public discourse.
- ⇒ This necessitates concerted efforts by academics, experts, and policymakers to raise awareness about the importance of clean air as a fundamental right.

Strengthening the National Clean Air Programme

- ⇒ While the National Clean Air Programme (NCAP) marks a step in the right direction, its efficacy can be enhanced through targeted measures.
- ⇒ Increased funding for on-ground pollution reduction activities, decentralization of air pollution programs, protection of green zones, and robust public awareness campaigns are key strategies to bolster the NCAP's impact.

Conclusion: Mobilizing for Clean Air

- ⇒ As citizens, we must demand clean air with the same fervor as we advocate for other basic necessities.
- ⇒ Mass movements and grassroots initiatives can amplify this demand, compelling policymakers to prioritize air quality.
- ⇒ Just as power cuts and inadequate infrastructure provoke public outcry, so too should the need for clean air galvanize collective action for a healthier, more sustainable future.

NAVIGATING CHANGES IN HIGHER EDUCATION: IMPLICATIONS OF UGC'S ANNOUNCEMENT



Introduction:

- ⇒ The recent announcement by the UGC chairperson has stirred debates regarding eligibility for the National Eligibility Test (NET) for lectureship and PhD programmes in India.

Changes After the Announcement:

1. **Eligibility Shift:** The eligibility criteria for NET have expanded from a Master's degree to include candidates with four-year undergraduate degrees.
2. **Teaching Opportunities:** Graduates with four-year degrees can now potentially teach undergraduate students, raising questions about their recruitment.

Argument in Favor:

1. **Streamlined Process:** The change aims to streamline the PhD admission process by allowing candidates to choose subjects for their PhD, reducing the need for separate entrance tests.
2. **Dismantling Perceptions:** The UGC seeks to dispel the notion of PhD as an exclusive qualification, promoting accessibility to higher education.

Addressing Misconceptions:

1. **Depth of PhD:** A PhD signifies rigorous research and critical thinking, distinct from undergraduate or postgraduate specializations.
2. **Avoiding Elitism:** Equating foundational academic rigor with elitism overlooks the essential nature of academic progression and undermines scholarly pursuits.

Maintaining Standards:

1. **Rigor in Education:** The emphasis should be on maintaining conceptual and methodological rigor at undergraduate and postgraduate levels.
2. **Value of MPhil Programs:** Eliminating MPhil programs and easing entry into PhD may dilute academic standards and hinder research alignment.

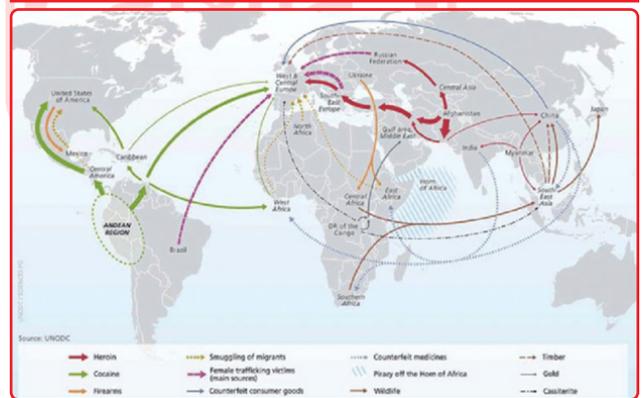
Challenges with Four-Year Undergraduates:

1. **Inequities in Education:** Disparities in schooling systems pose challenges in transitioning to advanced academic requirements.
2. **Need for Mentorship:** Developing critical research questions requires exposure to diverse theoretical frameworks and sustained mentoring.
3. **Linguistic and Academic Capital:** Allowing undergraduates to pursue PhDs without adequate preparation may further exclude marginalized students.

Conclusion:

1. **Call for Investment:** Publicly-funded research institutes and increased fellowships are crucial for fostering meaningful academic pursuits.
2. **Preserving Rigor:** While expanding access, it is essential to uphold academic standards and ensure robust mentorship for aspiring scholars.

UNDERSTANDING TRANSNATIONAL ORGANIZED CRIME



Definition and Scope

- ⇒ Transnational organized crime (TOC) encompasses illegal activities coordinated by groups or networks spanning multiple countries.
- ⇒ These activities often involve violence, corruption, and financial gain.

Various Forms

1. **Money Laundering:** Criminals disguise illicit funds, estimated globally at 2% to 5% of GDP, to appear legitimate.
2. **Drug Trafficking:** A significant criminal enterprise valued at USD 650 billion globally.
3. **Human Trafficking:** Involves exploiting individuals for profit, victimizing millions with annual profits around USD 150 billion.

4. **Migrant Smuggling:** Facilitates illegal movement across borders, generating USD 6.6 billion in 2009.
5. **Illicit Firearms Trafficking:** Estimated annual revenue between USD 170 to 320 million, contributing to violent crime.
6. **Natural Resource Trafficking:** Involves illegal trade in minerals, wildlife, forestry, and fishery products, impacting the environment.
7. **Fraudulent Medicines:** Counterfeit medicines contribute to over 1 million deaths annually.
8. **Cybercrime and Identity Theft:** Exploiting the internet for illegal gains, including data theft and financial fraud.

Impacts of Transnational Organized Crime

- ⇒ **Public Health:** Counterfeit medicines contribute to over 1 million deaths annually, particularly impacting Africa.
- ⇒ **Economic Resilience:** Illicit financial flows undermine financial integrity and economic stability, draining foreign exchange reserves.
- ⇒ **Environmental Degradation:** Organized environmental crime drives deforestation, biodiversity loss, and contributes to climate change.
- ⇒ **Peace and Security:** Illicit arms trade fuels armed conflicts and violence, particularly in regions like Central and South America.
- ⇒ **Local Effects:** Destabilizes countries, increases corruption and violence, and strains public resources.

Significance of Targeting Illicit Profits

- ⇒ **Alignment with Development Goals:** Targeting illicit profits supports sustainable development goals, promoting financial stability and inclusive growth.
- ⇒ **Disruption of Criminal Activities:** By cutting off funds, it becomes harder for criminals to sustain their networks and fund other illegal activities.
- ⇒ **Rule of Law Promotion:** Confiscating illicit profits reinforces the rule of law and discourages criminal behavior.
- ⇒ **Economic Development:** Redirecting illicit funds towards legitimate purposes can stimulate economic growth.
- ⇒ **Enhanced Security:** Targeting illicit profits helps combat money laundering and terrorism financing, contributing to global security.
- ⇒ **Protection of Vulnerable Populations:** Many criminal activities financed by illicit profits exploit vulnerable populations, making it crucial to target these funds.
- ⇒ **Encouragement of International Cooperation:** Targeting illicit profits fosters collaboration among nations in combating transnational organized crime.

Challenges in Controlling TOC

- ⇒ **Legal Complexity:** Diverse legal systems complicate international efforts to combat TOC.
- ⇒ **Lack of Consensus:** Varying national interests hinder global consensus on strategies to address TOC.

- ⇒ **Corruption:** TOC often involves corruption, undermining law enforcement efforts.
- ⇒ **Technological Advancements:** Criminals exploit technology for illicit activities, staying ahead of law enforcement.
- ⇒ **Armed Conflict:** TOC fuels violence and instability in conflict regions, complicating control efforts.

Strategies for Progress

1. **Blockchain Forensics:** Utilize blockchain technology to track illicit cryptocurrency flows.
2. **Dark Web Infiltration:** Develop units to navigate the dark web and gather intelligence on TOC operations.
3. **Transparency Initiatives:** Promote transparency measures in government institutions to reduce opportunities for corruption.
4. **Political Will:** Foster international cooperation through multilateral instruments and political commitment.
5. **Real-Time Fusion Centers:** Establish centers for immediate collaboration between law enforcement and intelligence agencies for coordinated responses to organized crime.

DEFENCE & SECURITY

ADVANCING INDIA'S NAVAL DOMINANCE: EXPLORING DRDO'S SMART SYSTEM AND ITS DEVELOPMENT RANGE



Introduction:

- ⇒ India's pursuit of technological excellence in defense has reached new heights with the development of the SMART (Supersonic Missile Assisted Release of Torpedo) system by the Defense Research and Development Organization (DRDO).
- ⇒ This groundbreaking system promises to revolutionize naval warfare capabilities, offering a blend of speed, precision, and versatility. In this article, we delve into the SMART system's outlook, development, and impressive range of capabilities.

Unveiling the SMART System:

- ⇒ The SMART system represents a paradigm shift in naval warfare, combining the speed of supersonic missiles with the lethal impact of torpedoes.

➤ It is designed to be launched from various platforms, including ships, submarines, and aircraft, providing the Indian Navy with unprecedented operational flexibility and firepower.

Key Features and Capabilities:

The SMART system boasts a host of cutting-edge features:

- Supersonic Speed:** With the ability to achieve supersonic speeds, the missile component of the SMART system ensures rapid response and swift target engagement.
- Precision Guidance:** Equipped with advanced guidance systems, the SMART system delivers pinpoint accuracy, enabling precise targeting of enemy vessels and maritime assets.
- Torpedo Payload:** Upon reaching the designated target area, the SMART system releases a torpedo with devastating impact, significantly enhancing its lethality and effectiveness.
- Multi-Platform Launch Capability:** The SMART system's versatility allows for launch from surface ships, submarines, and aircraft, making it adaptable to a wide range of operational scenarios.
- Extended Range:** The SMART system's impressive range capabilities enable Indian naval forces to engage targets effectively across vast distances, enhancing their operational reach and deterrence capability.

Significance and Outlook:

The SMART system holds immense significance for India's defense strategy and future naval operations:

- Strategic Deterrence:** By bolstering India's offensive capabilities, the SMART system serves as a potent deterrent against potential adversaries, enhancing India's ability to defend its maritime interests.
- Force Projection:** With its ability to target enemy vessels and disrupt hostile maritime activities, the SMART system strengthens India's ability to project power and assert its influence in the Indo-Pacific region.
- Technological Advancement:** The successful development and deployment of the SMART system showcase India's growing prowess in indigenous defense technology, positioning it as a global leader in naval innovation.
- Future Development:** Ongoing research and development efforts aim to further enhance the SMART system's capabilities, including improvements in range, speed, and stealth, ensuring its relevance and effectiveness in future naval operations.

Conclusion:

➤ The SMART system represents a significant leap forward for India's naval capabilities, offering unparalleled speed, precision, and versatility in maritime warfare.

➤ As India continues to invest in its defense technology and modernize its armed forces, the SMART system will play a pivotal role in safeguarding India's maritime interests and maintaining peace and stability in the Indo-Pacific region.

➤ With its impressive range of capabilities and ongoing development initiatives, the SMART system exemplifies India's commitment to technological excellence and self-reliance in defense.

INDIAN NAVY BOOSTS LOGISTICS WITH LSAM 20 BARGE



Introduction:

- The Indian Navy recently added another feather to its cap with the launch of the sixth barge of the LSAM 16 series, known as the 'Ammunition Cum Torpedo Cum Missile Barge, LSAM 20.'
- This article delves into the purpose, significance, and indigenous construction of the ACTCM barge, while also exploring broader developments in India's defense manufacturing sector.

Purpose and Significance of ACTCM Barges:

- **Enhancing Logistics:** The ACTCM barge serves a crucial role in facilitating the transportation of articles and ammunition to ships, streamlining logistics operations both at jetties and outer harbors.
- **Operational Efficiency:** With the addition of these barges, the Indian Navy gains the ability to efficiently embark and disembark goods and ammunition, bolstering its operational commitments and readiness.

Indigenous Design and Construction:

- **Proudly 'Make in India':** The ACTCM barges are a testament to India's indigenous manufacturing capabilities, designed and built under Naval Rules and Regulations by Suryadipta Projects Pvt Ltd in Thane, Maharashtra.
- **Rigorous Testing:** Prior to construction, extensive model testing of the barge was conducted at the Naval Science and Technological Laboratory in Visakhapatnam, ensuring adherence to stringent quality standards.

About LSAM and Naval Logistics:

- **Supporting Naval Operations:** LSAM, short for Landing Ship Ammunition, underscores the Indian Navy's focus on bolstering its logistics support infrastructure to sustain its operational capabilities.
- **Private Sector Participation:** The LSAM project exemplifies the success of the 'Make in India' initiative, promoting private sector involvement in defense manufacturing and reducing reliance on imports.

Broader Defense Manufacturing Trends:

- **Strengthening Self-Reliance:** India's defense sector has witnessed a concerted push towards self-reliance, with initiatives like 'Make in India' aimed at fostering indigenous manufacturing capabilities and reducing dependency on foreign suppliers.
- **Collaborative Efforts:** The LSAM 20 barge project symbolizes successful collaboration between the Indian Navy and private sector shipyards, highlighting the potential for further synergy in defense production.

Conclusion:

- The launch of the LSAM 20 barge marks a significant milestone in India's quest for self-reliance in defense manufacturing and maritime logistics.
- By harnessing indigenous expertise and fostering collaboration between public and private stakeholders, the Indian Navy strengthens its operational capabilities and underscores its commitment to safeguarding the nation's maritime interests.
- As India continues to make strides in defense innovation and manufacturing, initiatives like the LSAM project pave the way for a more resilient and self-sufficient defense ecosystem.

LEFT WING EXTREMISM

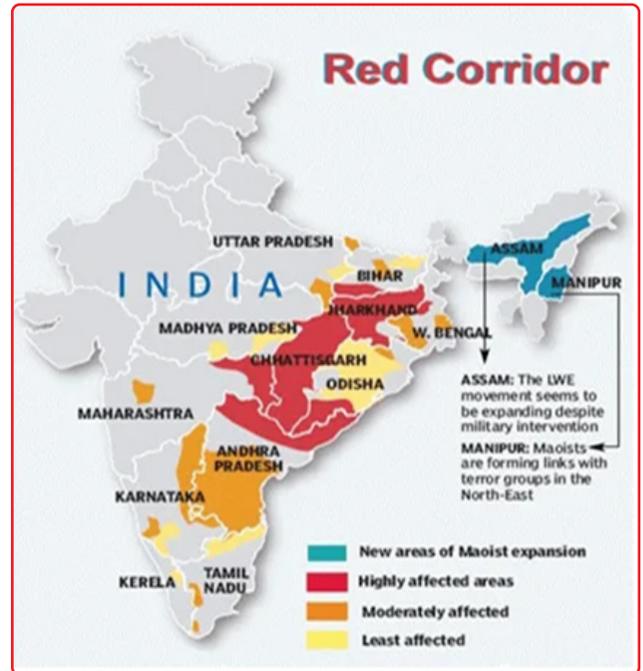
Why in News?

- Recently, two separate incidents of Naxalite attacks were reported: In the Kanker area of Chhattisgarh, security forces conducted one of the largest operations, resulting in the killing of 29 Naxalites.
- In eastern Assam's Tinsukia district, three vehicles of the paramilitary Assam Rifles were ambushed in another incident.

Understanding Naxalism: Causes, Impact, and Government Initiatives

Origin of Naxalism:

- The term "Naxalism" originates from the village Naxalbari in West Bengal, where it began as a rebellion against local landlords following a land dispute incident.
- The movement quickly spread across Eastern India, particularly in underdeveloped regions of states like Chhattisgarh, Odisha, and Andhra Pradesh.



- Left-wing extremists associated with Naxalism are globally known as Maoists and in India as Naxalites.

Objectives of Naxalism:

- Naxalites advocate for the armed overthrow of the Indian government and the establishment of a communist state based on Maoist principles.
- They perceive the state as oppressive and serving the interests of the ruling elite, seeking to address socio-economic grievances through armed struggle and people's war.

Modus Operandi of Naxalites:

- Naxalite groups engage in guerrilla warfare, attacks on security forces, extortion, intimidation, and propaganda.
- They aim to capture state power through armed insurgency, mass mobilization, and strategic alliances, targeting government institutions, infrastructure, and economic interests.
- In areas under their control, Naxalites establish parallel governance structures, providing basic services and dispensing justice.

Status of Left-Wing Extremism (LWE) in India:

- Violent incidents in Naxalism-affected states have significantly decreased, with a 77% reduction in 2022 compared to the peak in 2010.
- The number of affected districts dropped from 90 to 45, and deaths of security forces and civilians in LWE violence decreased by 90%.
- States Affected by LWE: Chhattisgarh, Jharkhand, Odisha, Bihar, West Bengal, Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh, and Kerala.

Causes of Naxalism:

Socio-Economic Factors:

- ⇒ High poverty rates and lack of development in underdeveloped regions.
- ⇒ Displacement of indigenous communities (Adivasis) from their traditional lands due to mining and development projects.
- ⇒ Exploitation of tribal communities by powerful entities.
- ⇒ Caste discrimination, particularly against Dalits.

Political Factors:

- ⇒ Weak governance and lack of infrastructure in Naxalism-affected areas.
- ⇒ Disillusionment with democracy and failure of the democratic system to address grievances.

Initiatives of the Government Against Naxalism:

- ⇒ National Policy and Action Plan to address Left-Wing Extremism.
- ⇒ Initiatives like SAMADHAN, Aspirational Districts Programme, Security Related Expenditure (SRE) Scheme, and Special Central Assistance (SCA) for LWE-affected districts.
- ⇒ Projects for fortifying police stations, improving road connectivity, and enhancing socio-economic development in affected areas.

Way Forward:

- ⇒ Targeted security operations using intelligence-based approaches.
- ⇒ Rehabilitation and reintegration of former extremists.
- ⇒ Empowering local peace ambassadors and fostering open communication channels.
- ⇒ Promoting socio-economic development and ecological sustainability in affected areas.

MODERNIZING THE INDIAN NAVY: PROPULSION UPGRADES AND INDIGENOUS DEVELOPMENT



Introduction

- ⇒ The Indian Navy, in its pursuit of enhancing operational capabilities and extending the longevity of its fleet, has embarked on a comprehensive modernization program.

- ⇒ Central to this initiative is the conversion of warship propulsion systems from steam to diesel, accompanied by a strategic focus on indigenous development efforts.
- ⇒ This article delves into the key aspects of the Navy's modernization plan, highlighting the significance of propulsion upgrades and the drive towards self-reliance in defence manufacturing.

Conversion of INS Beas: Flagship of the Project

- ⇒ The conversion project kicks off with the INS Beas, a Brahmaputra-class frigate slated for a mid-life upgrade and re-powering. Cochin Shipyard Limited (CSL) has been entrusted with the task, with the contract signed in October 2023.
- ⇒ Commencing in April 2024, the conversion process is expected to span two years, culminating in INS Beas rejoining the active fleet in 2026.
- ⇒ This flagship endeavor sets the stage for subsequent conversions within the class, namely INS Brahmaputra and INS Betwa.

Benefits of Diesel Propulsion

- ⇒ A transition from steam to diesel propulsion heralds a multitude of benefits for the Indian Navy.
- ⇒ Foremost among these is the significant extension of warship service life. INS Beas, post-conversion, is anticipated to remain operational for over two decades, a substantial increase compared to its previous projected lifespan.
- ⇒ Moreover, diesel-powered vessels offer streamlined maintenance procedures and improved working conditions for crew members.
- ⇒ Eliminating issues such as steam leaks and high temperatures associated with ageing steam systems enhances operational efficiency and crew safety.

Indigenous Development of Marine Diesel Engines

- ⇒ Parallel to propulsion upgrades, the Indian Navy is spearheading efforts towards indigenous development of marine diesel engines.
- ⇒ Collaborative ventures involving Kirloskar Oil Engines Ltd and Garden Reach Shipbuilders and Engineers Ltd (GRSE) exemplify this commitment to self-reliance.
- ⇒ Under the 'Make in India' initiative, these engines, upon successful development, will find deployment in next-generation corvettes and naval vessels.
- ⇒ This endeavor not only bolsters the Navy's capabilities but also fosters domestic expertise in critical defence technologies, reducing reliance on foreign suppliers.

Conclusion: Towards a Modern and Self-Reliant Navy

- ⇒ The modernization program undertaken by the Indian Navy underscores a strategic shift towards enhanced capabilities and self-sufficiency.

- By upgrading propulsion systems and fostering indigenous development of marine diesel engines, the Navy aims to bolster its operational readiness while promoting domestic manufacturing capabilities.
- As INS Beas leads the charge in propulsion conversion, accompanied by collaborative endeavours in engine development, the Indian Navy sets sail towards a future of modernity and self-reliance in maritime defence.

THE SIGNIFICANCE OF CARRIER AVIATION



Context:

- On March 5, both aircraft carriers of the Indian Navy, INS Vikramaditya and INS Vikrant, showcased "twin carrier operations" with MiG-29K fighter jets taking off simultaneously from both and landing cross deck.

INS Vikrant

- INS Vikrant is indigenously designed and constructed and commissioned in September 2022.
- A carrier is a floating city. The design work on the Indigenous Aircraft Carrier (IAC)-I, later christened Vikrant, began in 1999; however 2005-2006 were probably the most crucial years for the carrier and for India's war shipbuilding.
- The crucial decision was on the warship grade steel, which till then was procured from Russia.
- After much brainstorming, it was decided that it would be developed and produced in India, a collaborative effort between the Steel Authority of India, the Defence Research Development Organisation (DRDO) and the Indian Navy.
- The decision on the development of DMR-249 steel was a commercial decision and thereafter DMR-249 steel is now being used for the construction of all warships in the country.
- The keel of Vikrant was finally laid in 2009, launched into water in 2013 and went through extensive user acceptance trials between August 2021 and July 2022 before its eventual commissioning.

The composition

- Delays notwithstanding, Vikrant is an engineering marvel.

- It has a total area in excess of 12,450 m² which equals to about two and a half hockey fields.
- The 262m long and 62m wide ship is powered by four General Electric LM2500 engines generating 88 MW of power giving it a maximum speed of 28 Knots and an endurance of 7,500 nautical miles.
- The ship has around 2,200 compartments, for a crew of around 1,600 that include specialized cabins to accommodate women officers and sailors.
- Noting that among manufacturing activities, shipbuilding has one of the highest employment multipliers of 6.48, the economic Survey 2022-23 said that Vikrant alone engaged approximately 500 MSMEs, 12,000 employees from ancillary industries, and 2,000 CSL employees.

It's Abilities

- Vikrant can operate an air wing of 30 aircraft comprising MiG-29K fighter jets, Kamov-31, MH-60R multi-role helicopters, in addition to indigenous Advanced Light Helicopters and Light Combat Aircraft (Navy).
- It uses the STOBAR (Short Take-Off but Arrested Recovery) method to launch and recover aircraft for which it is equipped with a ski-jump to launch aircraft, and three 'arrestor wires' for their recovery.
- The flight deck has an independent lighting system to assist for bad weather and night operations.
- The aircraft with a speed of more than 250 kmph is stopped within a distance of just 90m in just 2-3 seconds.
- Vikrant has larger deck space and visibly larger hallways compared to previous carriers including Vikramaditya, which is of similar size.
- While the present Vikrant was the first carrier built in the country, India has had a long history of operating carriers.
- The erstwhile 19,500 tonne Vikrant was India's first carrier purchased from the U.K., which arrived in 1961 and played a vital role in the 1971 war.
- Then came the 28,700 tonne INS Viraat commissioned in 1987, formerly HMS Hermes, also from the U.K.
- INS Vikramaditya procured from Russia and commissioned in 2013 is India's third carrier.

Way forward

- An aircraft carrier is fundamental to command, control and coordination of operations from the sea and to project combat power ashore, over the seas or in the air
- The fragile maritime security situation across the Indian Ocean Region (IOR) and India's stature as the largest resident naval power necessitate a strong and robust Navy.
- Aircraft carriers play a pivotal role in this and concurrent availability of two Carrier Battle Groups facilitate credible presence and preparedness on both Western and Eastern seabords.

⇒ The current global trajectory shows that, the growing carrier targeting missiles and drones notwithstanding, the days of carrier aviation seem to be bright for the foreseeable future.

GAGAN STRIKE-II JOINT EXERCISE: ENHANCING MILITARY CAPABILITIES THROUGH INTEGRATION AND VALIDATION



Introduction

- ⇒ Gagan Strike-II, a recent joint military exercise conducted by the Indian Army's Kharga Corps and the Indian Air Force (IAF), showcased the integration and validation of tactical capabilities in Punjab, India.
- ⇒ Designed to refine operational processes and enhance coordination between ground and aerial units, the exercise aimed to bolster India's defense preparedness in the region.
- ⇒ With a focus on utilizing assets such as Apache helicopters and special forces, Gagan Strike-II underscored the importance of synergy between different branches of the military in addressing contemporary security challenges.

Objective

- ⇒ Gagan Strike-II, a three-day joint military exercise, served as a platform for the Indian Army's Kharga Corps and the Indian Air Force (IAF) to refine their operational processes, strengthen coordination, and validate the deployment of attack helicopters in developed terrain.
- ⇒ The exercise aimed to bolster India's defense capabilities, particularly in the context of its strategic positioning vis-à-vis neighboring countries.

Key Highlights:

1. Integration of Assets:

- Gagan Strike-II emphasized the integration of various military assets, including Apache and ALH-WSI helicopters, Unarmed Aerial Vehicles (UAVs), and the Army's special forces.
- This integration aimed to optimize the effectiveness of both ground and aerial units, ensuring seamless coordination during combat operations.

2. Combat Simulation Scenarios:

- Throughout the exercise, participants engaged in a series of combat simulation scenarios designed to mimic real-world battlefield situations.
- These scenarios tested the ability of participating units to respond swiftly and effectively to dynamic threats, highlighting the importance of synchronized efforts between ground troops and aerial support.

3. Role of Kharga Corps:

- As the leading force behind Gagan Strike-II, the Kharga Corps showcased its expertise and readiness in executing complex military maneuvers.
- Established in 1971 and headquartered in Ambala, Haryana, the Kharga Corps, also known as III Corps, holds a pivotal role in India's defense strategy, particularly in operations against Pakistan.
- Its rapid mobilization capabilities and offensive positioning make it a formidable force in maintaining India's territorial integrity and sovereignty.

4. Utilization of Apache Helicopters:

- A notable feature of Gagan Strike-II was the utilization of Apache helicopters, renowned for their versatility and firepower.
- Developed by McDonnell Douglas (now Boeing), the AH-64 Apache is equipped with a 30mm M230 chain gun, Hydra 70 rocket pods, and AGM-114 Hellfire missiles, making it a formidable asset for destroying enemy armor and fortifications.
- The integration of Apache helicopters into the exercise underscored the importance of aerial firepower in modern warfare scenarios.

Conclusion:

- ⇒ Gagan Strike-II exemplified the Indian military's commitment to enhancing its operational capabilities through integrated training exercises.
- ⇒ By fostering interoperability between ground and air forces, the exercise aimed to strengthen India's defense posture and readiness to address evolving security challenges.
- ⇒ As geopolitical dynamics continue to evolve, such joint exercises play a crucial role in maintaining regional stability and safeguarding national interests.

JOINTNESS 2.0: JOINT CULTURE IN ARMED FORCES

Why in News?

- ⇒ The Chief of Defence Staff (CDS) has called upon the three services to create a Joint Culture which are prerequisites to the creation of functional Integrated Theatre Commands (ITC).



About the Joint Culture' in Armed Force

➤ The Indian Armed Forces have embarked on a transformative journey towards fostering a 'Joint Culture'—a strategic initiative aimed at enhancing interoperability, efficiency, and combat readiness across its military branches.

Importance and Need

- The concept of Joint Culture within the armed forces is not merely about uniformity; it's about harmonising the distinct strengths and capabilities of the Army, Navy, and Air Force to forge a cohesive, formidable force.
- In an era where threats are becoming increasingly complex and multi-dimensional, the need for a unified approach to defence strategy and operations is paramount.
- Jointness & Integration are prerequisites to the creation of functional Integrated Theatre Commands.
- The creation of such commands will separate the 'operational' functions from the Raise-Train-Sustain (RTS) and other administrative functions, and will allow greater focus of the operational commander to matters of security
- Integrated Theatre Commands will lead to many reforms like Single to Multi Domain operations, fusing space and cyberspace into traditional domains, digitisation of battlefield information and visualisation, net centric to data centric among others.

India's Stride Towards Jointness

- India's Chief of Defence Staff (CDS) has been a vocal advocate for the development of a Joint Culture.
 - He emphasised the need for a de-novo approach that respects the uniqueness of each service while distilling the best of each to enhance war fighting ability and interoperability.
- The Indian Armed Forces have taken concrete steps towards this goal with initiatives such as the establishment of Integrated Theatre Commands (ITC).
 - These commands are designed to streamline operational functions and foster a joint operational structure, propelling the forces into the next orbit of military preparedness

- The 'Joint Training Doctrine Indian Armed Forces – 2017' underscores the importance of synergy and integration among the services. It serves as a foundation for promoting diplomacy, civil-military interface, and stimulating creativity for enhanced joint operations.
- Various initiatives of symbology that were being processed towards fostering the Joint Culture, including Tri-Services participation in national events.

Challenges

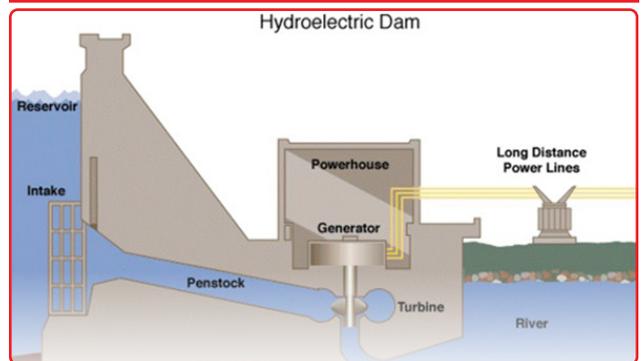
- The path to achieving a Joint Culture is fraught with challenges.
 - These include overcoming inter-service rivalries, aligning strategic objectives, and ensuring equitable resource allocation.

Conclusion and the Way Forward

- The pursuit of a Joint Culture in the Indian Armed Forces is a testament to India's commitment to building a 'Future Ready' military.
- By embracing this culture, the forces aim to achieve greater strategic depth, operational flexibility, and a robust defense mechanism capable of countering contemporary and future threats.
- As the Indian Armed Forces continue to evolve, the Joint Culture will undoubtedly be the cornerstone of its quest for integrated military excellence.
- Joint Culture, though different from Service specific Culture, needs to respect the uniqueness of each service.

SCIENCE AND TECHNOLOGY

EXPLORING THE SIGNIFICANCE AND CHALLENGES OF HYDROPOWER ENERGY



In the Headlines

- Recent droughts in Colombia and Ecuador have brought attention to the vulnerabilities of hydropower as a source of energy.

The Importance of Hydropower Energy

Hydropower utilizes the kinetic energy of flowing water to generate electricity, offering numerous benefits:

- ⇒ **Renewable Source:** Relies on the continuous water cycle driven by the sun, ensuring sustainability.
- ⇒ **Clean Energy:** Produces electricity without air pollution or toxic byproducts, contributing to environmental preservation.
- ⇒ **Energy Independence:** Enables domestic energy production, reducing reliance on imported fuels and enhancing security.
- ⇒ **Flexibility:** Allows for rapid adjustment of output to meet fluctuating demand, providing reliable backup power.
- ⇒ **Scalability:** Projects can range from small-scale systems to large-scale infrastructure, catering to diverse needs.
- ⇒ **Multipurpose Use:** Often involves the construction of dams and reservoirs, offering benefits beyond electricity generation.
- ⇒ **Combatting Climate Change:** Responds to weather changes by managing water resources effectively.
- ⇒ **Cost-Effectiveness:** Offers low-cost electricity with long-term viability, offsetting initial construction expenses.
- ⇒ **Synergy with Other Renewables:** Complements wind and solar energy, ensuring a stable energy supply.
- ⇒ **Eco-Friendly Solution:** Plays a crucial role in creating clean and secure electricity systems, aligning with global sustainability goals.
- ⇒ **Expansion Potential:** Expected to grow substantially due to its cost-effectiveness and scalability.

Challenges Facing Hydropower Energy

Despite its advantages, hydropower encounters several challenges:

- ⇒ **Global Decline:** Experienced a significant drop in output in recent years, impacting its reliability.
- ⇒ **Climate Change Vulnerability:** Altered weather patterns and extreme events threaten infrastructure and water availability.
- ⇒ **Drought Impact:** Reduced reservoir levels during droughts lead to power shortages and rationing.
- ⇒ **Overreliance:** Heavy dependence on hydropower leaves countries vulnerable to climate impacts and supply disruptions.
- ⇒ **Limited Alternatives:** Insufficient capacity for alternative energy sources poses challenges during crises.
- ⇒ **Environmental Impacts:** Construction of dams disrupts ecosystems, alters water quality, and affects wildlife.
- ⇒ **Water Allocation Conflicts:** Competing demands for water use create tensions over rights and distribution.
- ⇒ **Social Disruptions:** Large-scale projects displace communities, leading to loss of livelihoods and cultural heritage.
- ⇒ **Geological Hazards:** Infrastructure is susceptible to natural disasters, posing safety risks and operational challenges.

- ⇒ **High Costs:** Construction of large-scale plants requires significant investment and resources.

Future Directions

Efforts are underway to address these challenges and promote sustainable energy solutions:

- ⇒ **Embracing Diverse Technologies:** Ghana and Kenya are diversifying their energy portfolios beyond hydropower.
- ⇒ **Exploring Innovations:** Floating solar panels on reservoirs and medium-scale plants offer promising alternatives.
- ⇒ **Advocating for Sustainability:** Organizations like the International Hydropower Association advocate for integrated approaches to achieve energy goals.

Conclusion

- ⇒ In navigating the complexities of hydropower energy, prioritizing environmental stewardship, social responsibility, and technological innovation will be key to ensuring a resilient and sustainable energy future.

INDIA'S TECHNOLOGICAL IMPERATIVE: NAVIGATING THE NEW GLOBAL LANDSCAPE



Introduction:

- ⇒ While the upcoming government grapples with geopolitical complexities, internal reforms are imperative to position India as a frontrunner in emerging technologies.

China's Deep Tech Push:

- ⇒ China's ambitious drive to lead the world in science and technology is evident through its "new productive forces" campaign.
- ⇒ President Xi Jinping's initiative aims to elevate China beyond its manufacturing prowess to dominate sectors like electric vehicles, space exploration, and artificial intelligence.
- ⇒ Despite progress in areas like solar panels, China trails behind the US in critical technologies.

The West's Technological Investments:

- ⇒ The pursuit of technological dominance extends beyond China, with major economies intensifying efforts in advanced technology sectors.

- ⇒ The Biden administration's focus on industrial policy underscores the US's commitment to reclaiming leadership in technology.
- ⇒ Legislative acts such as the Infrastructure Investment Act and the CHIPS Act signify a strategic push towards bolstering American technological supremacy.
- ⇒ Additionally, the US seeks to curtail support for Chinese technological development and foster global technology coalitions, including partnerships with India.

The Task for India – Beyond Manifestos:

- ⇒ India has historically prioritized science and technology in its development agenda.
- ⇒ Prime Minister Narendra Modi's emphasis on digital technologies, renewable energy, semiconductor production, and AI reflects a concerted effort to propel India into the technological forefront.
- ⇒ Technology also features prominently in India's foreign policy, particularly in fostering strategic alliances with the US and Europe.
- ⇒ However, to compete in the global race for technological mastery, India must revamp its technology infrastructure, increase R&D expenditure, and foster private sector participation in technology development.

Conclusion:

- ⇒ Revitalizing India's technological landscape is paramount for economic prosperity and national security. As India vies for a prominent position in the global technology arena, modernizing technology departments, enhancing R&D investment, and promoting private sector engagement are imperative.
- ⇒ Only through such measures can India assert its position as a key player in the evolving realm of technology.

ISRO STUDY REVEALS ABUNDANCE OF WATER ICE ON THE MOON'S POLAR REGIONS



Introduction:

- ⇒ A recent collaborative study involving scientists from ISRO's Space Applications Centre (SAC) and

other research institutions has shed light on the significant presence of water ice within the polar craters of the Moon.

- ⇒ This study, utilizing advanced research tools aboard the Lunar Reconnaissance Orbiter, has unveiled crucial insights into the distribution and potential abundance of subsurface ice on Earth's natural satellite.

1. Discovery of Subsurface Water Ice:

- Researchers have found substantial quantities of water ice in the first few meters beneath the lunar surface, particularly concentrated within polar craters.
- The study indicates a notable disparity in ice distribution between the northern and southern polar regions, with the former hosting double the amount found in the latter.

2. Origins of Lunar Water Ice:

- The primary source of subsurface water ice on the Moon's poles is attributed to outgassing during volcanic activity in the Imbrian period.
- Mare volcanism and preferential impact cratering are believed to influence the distribution of water ice across lunar polar regions.

3. Research Tools Utilized:

- The research team employed a suite of sophisticated instruments onboard the Lunar Reconnaissance Orbiter, including radar, laser, optical, neutron spectrometer, ultraviolet spectrometer, and thermal radiometer.
- These tools facilitated comprehensive analysis of the origin and distribution of water ice on the Moon.

4. Significance of the Study:

- Accurate knowledge of water ice occurrence in lunar polar regions is paramount for the success of future missions exploring lunar volatiles.
- The findings support ISRO's forthcoming in-situ volatile exploration plans on the Moon.

5. ISRO's In-Situ Volatile Exploration Plans:

- ISRO is actively planning future missions to explore and study water ice and other volatiles in the permanently shadowed polar regions of the Moon.
- Key objectives include in-situ resource utilization (ISRU) of lunar water ice for generating rocket propellant and other resources to enable sustainable lunar exploration.

6. Technological Developments:

- ISRO is developing advanced landers and rovers equipped with drilling capabilities to extract and analyze subsurface volatile deposits like water ice.
- Technologies such as cryogenic sample handling, volatile extraction plants, and ISRU propellant production plants are being developed to harness lunar resources effectively.

7. Chandrayaan-3 Mission:

- The upcoming Chandrayaan-3 mission, set for launch in 2024, will feature a small lander and rover tasked with studying the composition of lunar soil and investigating the lunar exosphere.
- This mission marks a significant step towards ISRO's goal of understanding and utilizing lunar resources for future exploration endeavors.

8. Long-Term Vision:

- In the long run, ISRO aims to establish a Lunar Polar Exploration Mission to identify ideal locations for harvesting water to support sustained lunar habitats.
- Thorough research and utilization of lunar volatiles are critical components of ISRO's overarching strategy to establish lunar bases and conduct human spaceflight missions to the Moon.

Conclusion:

- The comprehensive study conducted by ISRO and its partners underscores the importance of understanding the distribution and abundance of water ice on the Moon's polar regions.
- This knowledge not only informs future lunar exploration endeavors but also lays the groundwork for sustainable utilization of lunar resources, bringing humanity one step closer to establishing a sustained presence beyond Earth.

WHAT IS COVISHIELD CONTROVERSY?



Context

- Recently, the British pharmaceutical company AstraZeneca has acknowledged in court documents submitted to the High Court in London that its COVID-19 vaccine, developed in collaboration with the University of Oxford, can cause Thrombosis with Thrombocytopenia Syndrome (TTS) in very rare cases.
- This admission comes as AstraZeneca faces a class-action lawsuit in the UK, with claimants alleging that the vaccine has caused fatalities and severe injuries.

About Thrombosis with Thrombocytopenia Syndrome (TTS)

- TTS is a rare condition characterized by the formation of blood clots (thrombosis) accompanied by low platelet count (thrombocytopenia).
- Symptoms of TTS may include breathlessness, chest pain, pinhead-sized red spots or bruising on the skin, headaches, and numbness in body parts.
- TTS can lead to serious complications such as stroke, heart attack, and severe breathing problems, depending on the location of the blood clot.

AstraZeneca's Admission and Lawsuit

- In court documents, AstraZeneca stated that the vaccine "can, in very rare cases, cause TTS," but the causal mechanism is unknown.
- The company is facing a class-action lawsuit in the UK, with 51 cases lodged in the High Court, and victims and grieving relatives seeking damages estimated to be worth up to £100 million.
- AstraZeneca maintains that patient safety is its highest priority and that regulatory authorities have clear and stringent standards to ensure the safe use of all medicines, including vaccines.

Previous Concerns and Regulatory Responses

- Concerns about the potential link between AstraZeneca's vaccine and TTS have been raised in the past, with several European countries temporarily pausing the use of the vaccine in March 2021.
- The World Health Organization (WHO) and regulatory authorities have acknowledged the risk of TTS but have stated that the benefits of vaccination outweigh the risks of extremely rare potential side effects.
- In India, where AstraZeneca's vaccine is manufactured and sold under the brand name Covishield by the Serum Institute of India, the product information includes a warning about the risk of TTS.

Impact and Perspective from Doctors

- Doctors in India have stated that the information about the potential risk of TTS is not new and that they have been aware of the warning since the vaccine's introduction.
- They emphasize that any adverse events associated with the vaccine would have occurred within 21 days to a month of the first dose and that the vaccine has protected millions of people from severe COVID-19.
- Doctors also highlight that COVID-19 itself is known to increase the risk of clotting, heart attacks, and stroke, both during and after recovery.

NASA TELESCOPE TO HUNT BIG BANG-ERA BLACK HOLES IN 2026

Introduction:

- The upcoming launch of NASA's Nancy Grace Roman Space Telescope in 2026 has sparked significant interest among astronomers, particularly in light of its mission to hunt for primordial black holes.



- These ancient cosmic entities, theorized to have formed shortly after the Big Bang, could provide valuable insights into the early universe and challenge existing theories, including those proposed by renowned physicist Stephen Hawking.

Understanding Primordial Black Holes:

- Primordial black holes differ from their stellar counterparts in that they could vary greatly in size, potentially being as small as an atom yet possessing significant mass.
- The search for these elusive objects is not merely an exercise in astronomical curiosity; it has profound implications for our understanding of physics, gravitational effects, and the origins of the cosmos.

Research Developments:

- A recent study conducted by a research group at the University of California, Santa Cruz, led by postdoctoral researcher William DeRocco, has outlined the methods that the Roman telescope will employ in its quest to detect primordial black holes.
- If successful, this endeavor could revolutionize our understanding of the universe's earliest epochs and prompt a reevaluation of fundamental concepts in cosmology.

Significance and Implications:

- The significance of this mission extends beyond astronomy; it represents a convergence of disciplines, with implications for both particle physics and cosmology.
- Finding primordial black holes would not only change current astronomical theories, but it would also help us learn more about the events that formed the universe.
- This mission is a big step forward in both astronomy and particle physics.
- It could change the way we think about theories and give us more information about how the world works.

About the Nancy Grace Roman Space Telescope:

- The Nancy Grace Roman Space Telescope, formerly known as WFIRST (Wide Field Infrared Survey Telescope), is a NASA telescope slated for launch in the mid-2020s.

- It boasts a 2.4-meter screen and cutting-edge instruments designed for studying dark energy, exoplanets, and infrared astrophysics.
- Named after Nancy Grace Roman, NASA's inaugural Chief of Astronomy, the telescope will conduct an infrared wide-field survey of the universe.
- This survey aims to pinpoint the locations of galaxies and unravel the mysteries surrounding the expansion of the universe across time.

UNDERSTANDING THE PHENOMENON OF INHERITED FOOD HABITS IN WORMS



Introduction

- Researchers from Princeton University have made a fascinating discovery regarding the dietary habits of *Caenorhabditis elegans* worms, shedding light on a previously unknown aspect of inherited behavior.

The Worm: A Model Organism

- *Caenorhabditis elegans*, often referred to simply as "the worm," holds a special place in scientific research due to its extensive use in studying neuronal and molecular biology.
- This tiny roundworm was the first multicellular organism to have its entire genome sequenced and its neural connections mapped, providing invaluable insights into fundamental biological processes.

Message from the Worm's Diet

- Upon ingesting a disease-causing strain of the bacterium *Pseudomonas vranovensis*, *C. elegans* worms exhibited a remarkable change in behavior.
- They subsequently avoided consuming the bacteria, thus protecting themselves from potential illness.
- Even more astonishing was the finding that this learned avoidance behavior was passed down to subsequent generations of worms for up to four generations.

Unraveling the Molecular Mechanism

- Further investigation revealed that the bacteria produced a small RNA molecule known as sRNA. When ingested by the worms, this sRNA altered their feeding behavior, leading to a lasting aversion to the disease-causing bacteria.

⇒ This transgenerational transmission of behavioral traits was attributed to a process called RNA interference, which regulates gene expression in many organisms.

Implications and Future Directions

- ⇒ The implications of this discovery extend beyond the realm of worm biology, raising intriguing questions about the potential for similar mechanisms in other organisms, including humans.
- ⇒ Could microorganisms in our gut influence our behavior through the transfer of RNA molecules?
- ⇒ Exploring these possibilities could open new avenues for understanding inherited traits and their role in shaping behavior across generations.

Conclusion

- ⇒ The study of *Caenorhabditis elegans* continues to yield groundbreaking insights into fundamental biological processes.
- ⇒ By uncovering the phenomenon of inherited food habits in these tiny worms, researchers have opened doors to further exploration of the molecular mechanisms underlying behavior and inheritance.

UNVEILING THE RICH BIODIVERSITY: DISCOVERY OF GLYPTOTHORAX PUNYABRATAI IN ARUNACHAL PRADESH



-Glyptothorax punyabratai

Introduction

- ⇒ The recent discovery of *Glyptothorax punyabratai*, a new species of catfish, in the Tung Stream of the Brahmaputra River drainage system marks a significant addition to India's diverse aquatic fauna.
- ⇒ Unveiled by the leading institute for fish genetic resources, ICAR-NBFGR, this discovery sheds light on the rich biodiversity of Arunachal Pradesh and underscores the importance of conservation efforts in preserving these unique species.

Distinctive Features of *Glyptothorax punyabratai*

- ⇒ *Glyptothorax punyabratai*, named in honor of Dr. Punyabarata Das, showcases distinctive characteristics that set it apart within the genus *Glyptothorax*.

- ⇒ With its adapted body shape and armor-like skin features, this catfish species is well-suited for clinging onto rocks in fast-flowing waters, contributing to its ecological niche within its native habitat.
- ⇒ Its discovery highlights the remarkable adaptations of aquatic organisms to diverse environments.

Contributions to Aquatic Ecosystems

- ⇒ Like other members of the *Glyptothorax* genus, *Glyptothorax punyabratai* plays a crucial role in the aquatic ecosystem.
- ⇒ As a part of the food web, it contributes to nutrient cycling and maintains ecological balance.
- ⇒ Understanding the ecological significance of such species is vital for informed conservation strategies and sustainable management of freshwater resources.

Other Notable Species in Arunachal Pradesh

Arunachal Pradesh, renowned for its rich biodiversity, harbors numerous species of fish, each with its own unique adaptations and ecological roles. Some notable species found in the region include:

1. ***Neolissochilus hexagonolepis* (Hexagon Barb):** Endemic to the Brahmaputra basin, this barb species exhibits distinct hexagonal scales and is prized for its ornamental value in the aquarium trade.
2. ***Oreichthys crenuoides* (Hillstream Loach):** Adapted to fast-flowing streams, this loach species possesses specialized morphological features, such as flattened bodies and suction cup-like mouths, enabling it to thrive in its rocky habitat.
3. ***Tor progeneius* (Progeneius Mahseer):** A flagship species of the region, the Progeneius Mahseer is an iconic freshwater fish known for its large size and sporting qualities, making it a target species for anglers and a symbol of conservation efforts.

Conservation Efforts and Future Research

- ⇒ The discovery of *Glyptothorax punyabratai* underscores the importance of continued research and conservation efforts to safeguard the biodiversity of Arunachal Pradesh.
- ⇒ Institutions like ICAR-NBFGR play a crucial role in studying, conserving, and managing fish genetic resources, ensuring the sustainable utilization of aquatic ecosystems for future generations.

About ICAR-NBFGR

- ⇒ Established in 1983, the ICAR-National Bureau of Fish Genetic Resources is dedicated to the conservation, management, and study of fish genetic resources in India.
- ⇒ Through its research initiatives, the bureau contributes to the development of sustainable aquaculture practices and the enhancement of fish production, ultimately supporting food security and economic growth in the aquaculture sector.

CHINA'S CHANG'E-6 MISSION TO THE FAR SIDE OF THE MOON



Introduction:

- China has launched its Chang'e-6 mission, marking its second endeavor to explore the far side of the Moon.
- If successful, this mission will be a historic achievement, as it aims to bring back samples from an unexplored region.

China's Exclusive Far Side Moon Exploration:

- China holds the distinction of being the only country to achieve a soft landing on the far side of the Moon.
- Its Chang'e-4 mission in 2019 successfully explored the Von Karman crater with a rover.

Chang'e-6 Mission Details:

- Duration:** A 53-day-long mission.
- Objectives:** The orbiter will circle the Moon while the lander descends into the South Pole-Aitken basin, a 2,500-kilometer-wide area on the lunar surface.
- Sample Collection:** Samples will be collected through scooping and drilling. An ascent vehicle will transfer them to the orbiter's service module for return to Earth.
- Scientific Significance:** The basin's formation is believed to have excavated material from the lunar mantle, providing valuable insights into the Moon's internal history.

Significance of the Far Side of the Moon:

- Unique Features:** The far side of the Moon has a thicker crust, abundant craters, and a scarcity of plains formed by ancient lava flows (maria).
- Radio Astronomy:** Its isolation from Earth makes it ideal for radio astronomy and scientific research.
- Insights into Lunar Origins:** Samples from the far side can unravel mysteries about the Moon's origin and evolution, complementing studies on the near side.

Comparison with India's Chandrayaan-4 Mission:

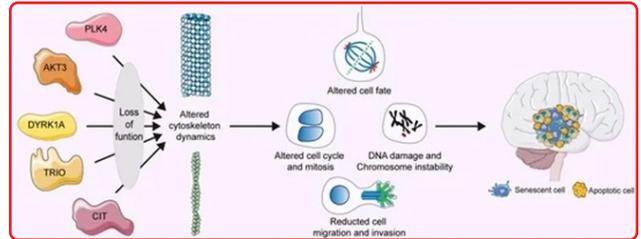
- Objective:** Chandrayaan-4 aims to collect samples from the Moon's south pole region, contributing to India's goal of landing an astronaut on the Moon by 2040.

- Launch Date:** Expected to launch in 2027, Chandrayaan-4 differs from Chang'e-6 in its target region and timeline.

Conclusion:

- China's Chang'e-6 mission represents a significant milestone in lunar exploration, offering the potential to deepen our understanding of the Moon's far side.
- As China ventures into uncharted territory, it paves the way for further scientific discoveries and international collaboration in space exploration.

DECIPHERING THE INTRICACIES OF MICROCEPHALY: THE ROLE OF SASS6 GENE AND NEURONAL SENSITIVITY



Context

- Microcephaly, a condition characterized by significantly smaller head size and accompanying neurological impairments, has long been a subject of scientific inquiry.
- Recent advancements shed light on the interplay between genetic mutations, cellular dynamics, and neuronal development, particularly implicating the SASS6 gene in this intricate process.

Understanding Microcephaly

- Clinical Manifestations:** Microcephaly manifests with a smaller-than-normal head size, often accompanied by intellectual disabilities, poor motor function, speech impairments, and distinct facial features. Its origins are rooted in disrupted brain development during the embryonic phase, where aberrant cell division of neuronal precursor cells occurs.
- Diagnostic Techniques:** Clinicians employ prenatal ultrasound and magnetic resonance imaging (MRI) to diagnose microcephaly before birth, allowing for early intervention and management strategies.

The SASS6 Gene: A Key Player

- Gene Implication:** Since 2014, the SASS6 gene and its variants have been implicated in the pathogenesis of microcephaly. Studies highlight the crucial role of SASS6 in centriole assembly, essential for cellular division and subsequent neuronal differentiation.
- Functional Implications:** Research findings underscore the importance of functional SASS6 genes for cellular differentiation, particularly evident in studies involving mouse embryo-derived cells. The

absence of functional SASS6 genes impedes centriole formation, crucial for neuronal differentiation, elucidating the genetic basis of microcephaly.

Genetic Risk and Consanguinity

- 1. Consanguinity Impact:** Geneticists identify consanguineous marriages as significant contributors to congenital microcephaly cases, increasing the likelihood of inheriting mutated copies of genes from both parents. The risk escalates with the rarity of the mutated gene in the general population.
- 2. Mutational Spectrum:** Microcephaly can stem from mutations in various genes, with 30 genes implicated in its etiology. Notably, mutations affecting centriole assembly and spindle formation during cell division play pivotal roles.

The Ile62Thr Mutation: Unraveling the Molecular Basis

- 1. Discovery and Characterization:** Researchers discovered the SASS6 gene and its protein's evolutionary conservation across species, highlighting its fundamental role in cellular dynamics. The Ile62Thr mutation, correlated with microcephaly, underscores the critical amino acid alterations disrupting centriole assembly.
- 2. Functional Consequences:** While individuals with slightly defective SASS6 genes may survive to adulthood, the severity of neurological deficits underscores the neuronal sensitivity to centriole aberrations. The finicky nature of neuronal cells renders them highly susceptible to imperfect centrioles, elucidating the profound impact of SASS6 mutations on brain development.

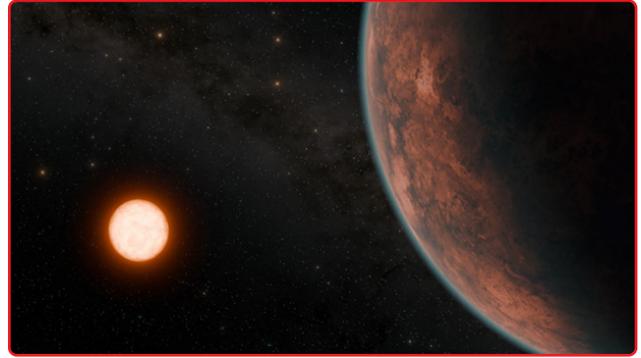
Conclusion: Navigating Cellular Sensitivity

- The intricate dance of genetic mutations, cellular dynamics, and neuronal sensitivity elucidates the complex pathogenesis of microcephaly.
- While advancements in genetic understanding offer insights into diagnostic and therapeutic avenues, the nuanced interplay between genes like SASS6 and neuronal development underscores the multifaceted nature of this condition.
- Moving forward, unraveling the intricacies of cellular sensitivity holds promise for deciphering and addressing the underlying mechanisms of microcephaly, offering hope for improved clinical management and outcomes.

EARTH-SIZED EXOPLANET DISCOVERED: POTENTIAL FOR LIFE 40 LIGHT-YEARS AWAY

Introduction:

- Astronomers have made a groundbreaking discovery, locating a potentially habitable exoplanet, Gliese 12 b, merely 40 light-years away from Earth.



- This Earth-sized world, with an average surface temperature cooler than most exoplanets, holds promise for further exploration to ascertain its habitability.

Key Details of the Discovery:

- Detailed in a study published in the Monthly Notices of the Royal Astronomical Society, Gliese 12 b's attributes captivate scientists.
- It boasts an average surface temperature of 42 degrees Celsius, slightly cooler than Earth's, and shares similarities in size with Venus and Earth.

Crucial Investigations Required:

- Despite its promising characteristics, researchers emphasize the necessity of additional analysis, particularly regarding Gliese 12 b's atmosphere.
- The presence of a conducive atmosphere is imperative for the sustenance of life and warrants further scrutiny.

Significance of the Discovery:

- Masayuki Kuzuhara, a project assistant professor at the Astrobiology Center in Tokyo, heralded the discovery, highlighting its proximity and potential habitability.
- The exploration of Earth-sized exoplanets holds paramount importance in understanding our cosmic surroundings and humanity's place in the universe.

Technical Validation and Observations:

- Utilizing data from NASA's Transiting Exoplanet Survey Satellite (TESS) and the European Space Agency's CHEOPS, astronomers validated Gliese 12 b's existence.
- The exoplanet orbits a M dwarf star, Gliese 12, every 12.8 days, accompanied by seven other planets.

Habitability and Atmospheric Conditions:

- With three planets within the star's habitable zone, Gliese 12 b presents intriguing prospects for habitability.
- Moreover, its host star's metal-poor nature suggests the potential for an atmosphere conducive to life, although differing from Earth's.

Implications and Future Endeavors:

- The discovery of Gliese 12 b holds promise for NASA's James Webb Space Telescope (JWST), capable of discerning atmospheric features.

- The ongoing pursuit involves determining the exoplanet's mass, density, and internal structure to unravel its mysteries further.

Conclusion:

- Gliese 12 b represents a milestone in humanity's quest to unravel the mysteries of the cosmos.
- Its discovery underscores the burgeoning potential of space exploration and the quest for life beyond our solar system.
- As astronomers delve deeper into its characteristics, Gliese 12 b promises to unveil further revelations about our universe and the possibility of extraterrestrial life.

GLIESE 12 B: A POTENTIALLY HABITABLE EXOPLANET



Introduction:

- Astronomers have made an exciting discovery with the identification of Gliese 12 b, a potentially habitable exoplanet located approximately 40 light-years away from Earth.
- This discovery, made possible by advanced space telescopes, offers valuable insights into the diversity of planetary systems beyond our solar system.

Discovery and Validation:

- Initial identification of Gliese 12 b as a potential planet candidate was made by NASA's Transiting Exoplanet Survey Satellite (TESS).
- The European Space Agency's CHaracterising ExOPlanet Satellite (CHEOPS) confirmed its status as an exoplanet, adding credibility to the discovery.

Physical Characteristics:

- **Surface Temperature:** Gliese 12 b boasts an average surface temperature of 42 degrees Celsius, making it warmer than Earth but cooler than many other known exoplanets.
- **Size:** Comparable in size to Venus and slightly smaller than Earth, Gliese 12 b presents an intriguing target for further study.
- **Orbital Details:** The exoplanet orbits an M dwarf star, Gliese 12, every 12.8 days, with three planets residing in the habitable zone, where liquid water could potentially exist.

Star Characteristics:

- Gliese 12, the host star, is classified as an M dwarf star, characterized by its low mass.
- **Metallicity:** The star exhibits low metallicity, suggesting potential differences in magnetic activity and geological processes compared to Earth.
- **Magnetic Activity:** The star's low magnetic activity increases the likelihood that Gliese 12 b could retain an atmosphere, an essential factor for habitability.

Scientific Significance:

- **Proximity:** As one of the closest potentially habitable exoplanets discovered, Gliese 12 b offers a unique opportunity for in-depth study and comparison to our own solar system.
- **Comparative Study:** By examining the divergent evolutionary paths of Earth and Venus, scientists hope to gain insights into factors influencing habitability, such as water retention and greenhouse effects.

Future Research:

- **Atmospheric Analysis:** Determining the presence and composition of Gliese 12 b's atmosphere is crucial for assessing its habitability.
- **Temperature Suitability:** Despite its warm surface temperature, Gliese 12 b may harbor conditions suitable for life forms adapted to extreme environments.
- **Potential Greenhouse Effect:** Investigations will explore whether the exoplanet experiences a runaway greenhouse effect akin to Venus, which could impact its habitability.
- **James Webb Space Telescope (JWST):** Gliese 12 b is a promising target for the JWST, offering opportunities to detect atmospheric features and further unravel its mysteries.

Conclusion:

- The discovery of Gliese 12 b opens new avenues for exploration and underscores the ongoing quest to understand the diversity of exoplanetary systems and the potential for life beyond Earth.

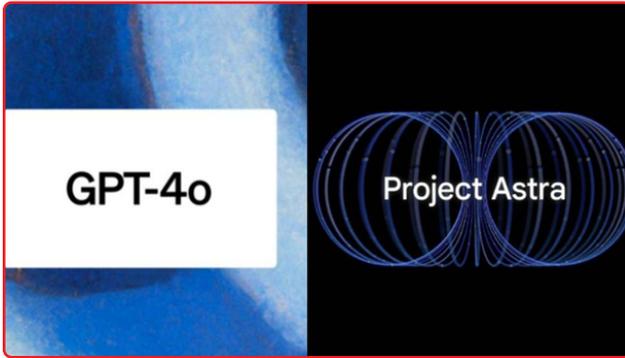
GOOGLE AND OPENAI UNVEIL NEXT-GEN AI ASSISTANTS: PROJECT ASTRA AND GPT-4O

Introduction:

- At Google I/O 2024, groundbreaking advancements in artificial intelligence were revealed, ushering in a new era of human-computer interaction.
- Google and OpenAI introduced their latest AI assistants, Project Astra and GPT-4o, promising enhanced flexibility and utility in user interactions.

Project Astra: Redefining AI Interaction

- Google's Project Astra aims to revolutionize AI interaction by integrating multimodal language support into smart glasses and smartphones.



- This innovation enables users to engage with AI assistants through speech, text, and visual inputs, including photos and videos.
- Leveraging real-time data capture capabilities of device cameras, Project Astra empowers AI to access online information and learn from its environment, akin to the intelligent assistant depicted in Avengers: Infinity War.

The Innovation of Gemini:

- Project Astra is built upon Google's Gemini, a multimodal foundation model designed to comprehend and process diverse inputs simultaneously.
- Demonstrated during Google I/O, devices like the Google Pixel phone and prototype smart glasses showcased Gemini's prowess in interpreting continuous streams of audio and video data, facilitating real-time interactions and environmental awareness.

OpenAI's GPT-4o: The Omni-Model Approach

- Concurrently, OpenAI introduced GPT-4o (omni), a versatile model capable of multifaceted tasks such as language translation, mathematical problem-solving, and code debugging.
- Initially showcased on smartphones, GPT-4o boasts comparable capabilities to Project Astra, marking a significant advancement in AI functionality.

Multimodal AI Language: Enhancing Interaction and Accessibility

- Multimodal AI language models, exemplified by GPT-4 and Google's PaLM, amalgamate text with diverse data types like images and sounds, enhancing interpretation and generation capabilities.
- Utilizing transformer structures, these models streamline complex tasks such as visual question answering and audio sentiment analysis, while also improving accessibility technology for individuals with visual impairments.
- However, the development of multimodal systems necessitates substantial computing power and extensive data sets, underscoring the importance of advanced GPUs and large-scale storage solutions.

- Moreover, innovations in data error management and privacy protection are crucial for merging diverse data sources seamlessly.

Conclusion:

- The unveiling of Project Astra and GPT-4o signifies a significant leap forward in AI technology, promising unparalleled versatility and utility in human-computer interaction.
- As these advanced AI assistants become increasingly integrated into daily life, they hold the potential to transform how individuals connect with technology and navigate the digital landscape.

INDIA PROPOSES DIGITAL COMPETITION BILL, 2024 TO REGULATE TECH GIANTS



Context

- In a move mirroring European regulatory models, the Indian government has introduced the Digital Competition Bill, 2024.
- This legislation aims to oversee the activities of major technology corporations such as Google, Facebook, and Amazon, preventing them from exploiting their dominant market positions.

Key Provisions of the Digital Competition Bill:

- **Predictive Regulation:** Unlike the reactive framework of the current Competition Act, 2002, the bill adopts a proactive regulatory approach (ex-ante), anticipating and forestalling anti-competitive practices.
- **Systematically Significant Digital Enterprises (SSDEs):** The bill identifies SSDEs based on factors like turnover, user base, and market influence, imposing restrictions on practices like self-preferencing and anti-steering.
- **Associate Digital Enterprises (ADEs):** The legislation also regulates ADEs benefiting from shared data within corporate groups, ensuring their activities uphold competitive practices.

Criticism and Industry Concerns:

- Large tech corporations have criticized the bill, fearing heavy compliance burdens and stifled innovation.
- Concerns have been raised about potential arbitrary decisions by the Competition Commission of India

(CCI) and adverse impacts on platform-based small businesses.

Fostering Digital Competition:

- Government officials argue for the bill's necessity, citing historical instances of anti-competitive behavior by tech giants.
- They emphasize the need for a robust framework to manage the dynamics of the digital market, promoting fair competition and innovation.

Insights from the Digital Markets Act (DMA) of the European Union:

- The DMA, enacted in 2022, targets major online platforms as "gatekeepers" and imposes restrictions on self-preferencing and mandates interoperability of messaging services.
- It enforces data portability and imposes fines up to 10% of global turnover for non-compliance, aiming to enhance consumer choices and foster a fair digital economy.

Conclusion

- The Digital Competition Bill, 2024 reflects India's commitment to promoting competition and fairness in the digital sphere, aligning with global efforts to regulate tech giants for the benefit of consumers and smaller market players.

INDIA'S FORAY INTO SPACE TOURISM: OPPORTUNITIES AND CHALLENGES



Introduction:

- With Blue Origin's recent sub-orbital spaceflight featuring Indian expatriate Gopi Thotakura as the first Indian space tourist, India's potential in the space tourism sector has garnered attention.
- This article explores India's space tourism prospects, challenges, and steps taken to capitalize on this emerging industry.

Space Tourism: A New Frontier:

- Space tourism, involving human space travel for recreational purposes, has gained traction globally.
- The world's first space tourist, Dennis Tito, set the precedent, and now, with Gopi Thotakura's journey, India enters the fray.

India's Space Tourism Potential:

- India's space industry, spearheaded by ISRO, has made significant strides, boasting successful satellite launches, lunar exploration, and Mars missions.
- Leveraging cost-effective launch services like the PSLV and GSLV, India can offer competitive pricing in the space tourism market.

Unique Selling Proposition:

- India's diverse landscapes and rich cultural heritage present unique selling points for space tourism.
- From the Himalayas to coastal regions, picturesque views await tourists in space.
- Integrating cultural experiences like yoga and meditation can further enhance the appeal of Indian space tourism packages.

Collaboration and Policy Initiatives:

- India's decision to ease FDI norms in the space sector signals its commitment to fostering collaboration with private players.
- IN-SPACe's efforts to promote private participation in space missions, including tourism, bode well for the industry's growth.

Challenges Ahead:

- Despite the promising prospects, India faces several challenges in realizing its space tourism ambitions.
- Infrastructure development, addressing environmental concerns, and ensuring safety and regulation remain key hurdles.

Steps Taken by India:

- ISRO's ambitious space tourism program aims for operational readiness by 2030.
- Furthermore, initiatives like IN-SPACe aim to facilitate private sector involvement, driving innovation and competitiveness in the space tourism market.

Conclusion and Way Forward:

- India stands at the cusp of a new era in space exploration with its burgeoning space tourism aspirations.
- To succeed, India must navigate challenges, prioritize sustainability, and differentiate itself through unique offerings and competitive pricing.
- A robust regulatory framework and strategic partnerships will be instrumental in shaping India's journey towards becoming a prominent player in the global space tourism landscape.

"MICROPLASTICS FOUND IN HUMAN AND CANINE TESTICLES: IMPLICATIONS FOR REPRODUCTIVE HEALTH"

Introduction:

- Recently, researchers at the University of New Mexico conducted a groundbreaking study revealing the presence of microplastics in the testicles of both humans and dogs.



- This discovery underscores the pervasive impact of pollution on the environment and human health, particularly in the realm of reproductive biology.

Study Findings:

- The study examined tissue samples from both humans and dogs, detecting microplastics in all samples analyzed.
- Notably, human tissue exhibited significantly higher levels of microplastics compared to canine tissue, with concentrations measuring approximately 329.44 micrograms per gram of tissue versus 122.63 micrograms.
- Predominantly, the microplastics identified were composed of polyethylene, a common material used in everyday items like plastic bags and containers.

Impact on Male Fertility:

- While the study did not assess sperm count in human subjects, it did find a correlation between microplastic exposure and reduced sperm count in dogs, particularly linked to polyvinyl chloride (PVC).
- These findings raise concerns about the potential impact of microplastics on male fertility in humans, prompting further investigation into reproductive health implications worldwide.

Biological Comparisons and Future Research:

- Given the anatomical similarities between dogs and humans, comparative studies have become instrumental in understanding the broader effects of microplastics on male reproductive systems.
- Future research aims to establish direct associations between various types of plastics and their effects on spermatogenesis—the process through which spermatozoa are produced from spermatogonial stem cells.
- This intricate process, occurring within the seminiferous tubules of the testes, involves spermatocytogenesis, meiosis, and spermiogenesis, regulated primarily by testosterone and follicle-stimulating hormone (FSH).
- Moreover, factors such as age and genetics play pivotal roles in influencing the rate and quality of sperm production, with sperm production declining as men age, particularly beyond the age of 35.

Conclusion:

- The discovery of microplastics in testicular tissue highlights the urgent need for comprehensive research into the implications of environmental pollution on human health and reproductive biology.
- By elucidating the mechanisms through which microplastics affect male fertility, we can better address the challenges posed by pollution and safeguard reproductive health for future generations.

MORE SOLAR STORMS BREWING AFTER LAST WEEK'S AURORAE AS SUN 'WAKES UP'



Context

- Beautiful though the aurorae are, the events on the Sun that produce them can trigger blackouts on the earth, knock out satellites in space, endanger the lives of astronauts, and affect space weather throughout the Solar System.
- Studying, understanding, and, in future, predicting them is thus a key goal of solar physics research.

Aurorae

- Aurorae like these are created when some violent events on the Sun's surface throw up a mass of charged particles into space.
- A geomagnetic storm happens on the earth when these particles become trapped in the planet's magnetic field and interact with atoms in the upper atmosphere.
- These interactions finally produce aurorae.
- These storms are rare, occurring around once every few decades. The last time charged particles from the Sun blew into the earth with similar energy and intensity was in 2003.
- And both events happened as the Sun was nearing the peak of its solar cycle – an 11-year period during which the star's magnetic field flips.
- The peak is when the flip actually happens, creating magnetically active patches on the star's surface called sunspots.
- These sunspots grow and shrink as solar cycles begin and end. The charged particles that struck the earth on May 10 are rooted in events at these sunspots.

- ☞ This is definitely a sign that the Sun is 'waking up' and is becoming more active, especially compared to the last solar cycle.
- ☞ The supercharged magnetic fields in such sunspots sometimes disconnect and reconnect in fractions of a second, releasing a great burst of energy that sends plumes of charged particles called coronal mass ejections (CMEs) into space.
- ☞ CMEs happen together with solar flares – powerful flashes of radiation – and all these active events are collected under the term 'solar storms'.

Surging currents

- ☞ Magnetic fields deflect charged particles, but the earth's couldn't prevent many of the particles from slipping through to locations close to the planet's magnetic poles.
- ☞ Here, their interactions with oxygen atoms in the upper atmosphere produced vivid red light, and with oxygen, and nitrogen in the lower atmosphere producing green and purple light, respectively. Thus, the world had its aurorae.
- ☞ The fluctuations in the earth's magnetic field during a geomagnetic storm can send currents surging through cables, like what happened in Sweden and South Africa in 2003.
- ☞ These storms can also affect satellites in orbit on which our communication and GPS navigation networks depend.

Waiting for Aditya

- ☞ Space scientists have long wanted to anticipate a solar storm before it even begins brewing.
- ☞ Currently, the best they can do is catch a CME and/or flares as soon as they happen.
- ☞ Many spacecraft that monitor the Sun for these events are parked in the L1 point in space, about 1.5 million km in the earth-Sun direction, from where they have an uninterrupted view of the star.
- ☞ One of these spacecraft is Aditya-L1 of the Indian Space Research Organisation (ISRO), which reached L1 in March this year.
- ☞ The principal investigator of its primary instrument, the Visible Emission Line Coronagraph (VELC), is still being calibrated, so it hasn't chimed in on the events since May.

Conclusion

- ☞ **Of the other instruments:** ISRO said on May 14 the ASPEX payload had "captured the enhancement of the alpha particle and proton flux of the solar wind" as signatures of the solar storm.
- ☞ It also said the SoLEXS and HELIOS payloads had detected "the multiple X- and M-class flares ... during the last few days".
- ☞ The Chandrayaan-2 orbiter around the moon also reportedly detected "signatures" of the emissions from the Sun.

SCIENTISTS DEVELOP CHEAPER, SAFER LITHIUM-ION BATTERIES USING IRON



Addressing Material Cost and Scarcity

- ☞ The traditional reliance on cobalt and nickel in lithium-ion batteries poses challenges due to their high cost and limited availability.
- ☞ These metals contribute significantly to the expense of battery production, with concerns arising about potential future scarcity.
- ☞ The quest for alternative materials has been fueled by the need to mitigate cost and supply chain risks associated with cobalt and nickel.

Iron-Based Cathode Material

- ☞ Researchers at Oregon State University have pioneered a breakthrough in battery technology by developing a cathode material composed of iron.
- ☞ Iron, abundant and economical (costing less than a dollar per kilogram), presents a promising alternative to cobalt and nickel.
- ☞ By synthesizing iron salts combined with lithium fluoride and lithium phosphate, researchers have enhanced the reactivity of iron, resulting in cathodes with higher energy density compared to current advanced materials used in electric vehicles (EVs).

Cost-Effectiveness and Sustainability

- ☞ While iron-based cathodes may not match the cost-effectiveness of nickel and cobalt counterparts initially, their widespread availability offers long-term sustainability benefits.
- ☞ The utilization of iron reduces dependency on scarce resources and can be integrated into existing battery systems without requiring modifications to other components or production processes.
- ☞ This environmentally friendly approach addresses concerns about resource depletion and aligns with efforts towards sustainable battery manufacturing.

Implications for Electric Vehicle Manufacturing

- ☞ The advent of iron-based cathode materials heralds a potential paradigm shift in electric vehicle production.
- ☞ By significantly reducing production costs, this innovation could accelerate the adoption of

electric cars, thereby curbing carbon emissions and promoting the transition to renewable energy sources.

- ⇒ The integration of such technologies represents a significant advancement in the pursuit of battery solutions that balance cost, performance, and environmental impact, paving the way for a more sustainable future.

UNDERSTANDING MAGNETIC RESONANCE IMAGING (MRI)



Introduction:

- ⇒ Magnetic Resonance Imaging (MRI) revolutionized medical diagnostics, providing detailed images of soft tissues without surgery.
- ⇒ The Nobel Prize in Medicine was awarded to Paul Lauterbur and Peter Mansfield in 2003 for their contributions to MRI technology.

MRI in Medical Diagnosis:

- Non-Invasive Imaging:** MRI obtains images of soft tissues without invasive procedures, aiding in diagnosing various conditions.
- Wide Applications:** It is used to image the brain, cardiovascular system, joints, muscles, liver, arteries, and more.
- Medical Importance:** MRI plays a crucial role in cancer diagnosis, tracking neurological conditions, and understanding brain activity.

Working Principle:

- Hydrogen Atoms:** MRI utilizes hydrogen atoms abundant in water and fat, which are present in the body's soft tissues.
- Magnetic Field:** A powerful superconducting magnet in the MRI machine generates a stable magnetic field around the body.
- Radiofrequency Pulse:** A device emits a radiofrequency pulse at the area being scanned, exciting the hydrogen atoms.
- Emission Detection:** A detector receives emissions from the excited atoms, which are converted into signals for image reconstruction.

Pros of MRI:

- High Precision:** MRI scans can image small portions of the body with high precision, owing to gradient magnets and specific pulse sequences.

- Tissue Differentiation:** Different tissues exhibit varying relaxation times (T1), allowing MRI to differentiate them and enhance visibility.
- Contrast Agents:** Contrast agents improve tissue visibility by altering relaxation times, aiding in diagnosis.

Cons of MRI:

- Cost:** MRI machines are expensive to procure and maintain, adding to healthcare expenses.
- Discomfort:** Patients must remain still for extended periods during scans, which can be uncomfortable, especially for claustrophobic individuals.
- Noise:** MRI machines produce loud noises during operation, further discomforting patients.

Way Forward:

- Safety Assurance:** Extensive research confirms the safety of MRI scans, with no long-term harm to scanned tissues.
- Pregnancy Concerns:** While MRI safety is established, more research is needed on its effects during pregnancy to ensure safety.

Conclusion

- ⇒ MRI continues to advance medical diagnostics, offering detailed insights into the human body's inner workings while prioritizing patient safety and comfort.

UNVEILING OEOCLADIUM SAHYADRICUM: A NEW ALGAL SPECIES DISCOVERED IN KERALA'S WESTERN GHATS



Introduction

- ⇒ In a significant scientific breakthrough, a team of phycologists from Catholicate College's Department of Botany has unearthed a new species of algae in the verdant landscapes of the Western Ghats.
- ⇒ This discovery marks a pivotal advancement in our understanding of the rich biodiversity thriving within the rugged terrain of India's Western Ghats.

Background of the Discovery

- ⇒ Led by researchers Merin Grace Jiji, Binoy T. Thomas, and Thomas V.P., the expedition into the heart of the

Kumbhavurutti region in the Kollam district yielded the groundbreaking discovery of *Oedocladium sahyadricum*.

- The Western Ghats, renowned for their unparalleled ecological diversity, provided the ideal habitat for this newfound algal species to flourish.

Characteristics of *Oedocladium Sahyadricum*

- *Oedocladium sahyadricum* distinguishes itself through several remarkable traits. Notably, it is identified as a dioecious species thriving in terrestrial environments.
- Its reproductive structures, including an advanced operculum, oval oogonium, and oospore, contribute to its unique biological profile.
- Exhibiting a soft green mat-like appearance in wet soil, the algae undergo a transformative shift to a yellowish-green hue as they mature, predominantly thriving during the monsoon season.

Exploring the Western Ghats

1. Geographical Significance:

- Stretching over 1,600 kilometers along India's western coastline, the Western Ghats stand as a geological marvel predating the Himalayas.

2. Biodiversity Hotspot:

- Recognized among the world's eight 'hottest hotspots' of biological diversity, the Western Ghats host an astonishing array of flora and fauna.
- Boasting approximately 7,402 species of flowering plants, 139 mammal species, 508 bird species, and 179 amphibian species, the region is a treasure trove of biodiversity.

3. Endemic Species and Ecological Impact:

- Many species endemic to the Western Ghats underscore its ecological significance.
- Influencing India's monsoon weather patterns by intercepting rain-laden monsoon winds, the Ghats play a vital role in regulating the region's climate.

4. Natural Wonders:

- Featuring the majestic Anamudi Peak, towering at 2,695 meters, the Western Ghats offer breathtaking vistas and challenging terrains.
- The renowned 'Valley of Flowers' captivates with its seasonal blooms of endemic alpine flowers, adding to the region's allure.

UNESCO Recognition

- In acknowledgment of its exceptional biodiversity and endemic species, UNESCO bestowed World Heritage status upon the Western Ghats in 2012, reaffirming its status as a global ecological treasure.

Conclusion

- In conclusion, the discovery of *Oedocladium sahyadricum* serves as a testament to the inexhaustible wonders concealed within the Western Ghats.

- As scientists delve deeper into this ecological tapestry, each revelation underscores the urgent need for conservation efforts to preserve these invaluable ecosystems for generations to come.

ENVIRONMENT & ECOLOGY

ARCTIC WILDLIFE FACES NEW THREAT: WALRUS DEATH FROM BIRD FLU RAISES ALARM



Introduction:

- The Arctic, known for its stark beauty and pristine wilderness, has recently become the site of a concerning development: the first reported case of a walrus dying from bird flu.
- Christian Lydersen, a researcher from the Norwegian Polar Institute, made the alarming discovery on Hopen Island in the Svalbard archipelago.
- This incident has sparked fears among scientists about the potential impact on Arctic wildlife populations, particularly as walrus, essential inhabitants of the region, face the risk of contracting this deadly virus.

The Walrus Tragedy:

- On the remote Hopen Island, located within the Arctic Circle, Lydersen and his team stumbled upon a heartbreaking scene – the lifeless body of a walrus, a majestic symbol of the Arctic, succumbing to bird flu.
- This discovery, while tragic, sheds light on the vulnerability of Arctic marine mammals to infectious diseases previously thought to be limited to avian species.
- Further investigation revealed a grim reality: a total of six dead walrus scattered across the Svalbard islands, situated approximately 1,000 kilometers away from the North Pole.
- Testing conducted at a specialized laboratory in Germany confirmed the presence of the bird flu virus in the deceased walrus, though the specific strain – whether the highly pathogenic H5N1 or the H5N8 variant – remains unclear.

Ecological Implications:

- The emergence of bird flu in the Arctic poses significant ecological challenges. Walrus,

renowned for congregating during the summer months when sea ice retreats, now face the added threat of infectious diseases spreading among their populations.

- While bird flu traditionally spreads through avian hosts like ducks and geese, the recent incident highlights the potential for mammalian species, including marine mammals like walruses, to become infected, possibly through the consumption of infected birds.
- Alarmingly, this is not an isolated case. Previous incidents have documented sea lions and fur seals falling victim to the disease, underscoring the broader ecological implications of avian flu outbreaks in marine environments.
- Furthermore, there is a looming risk of apex predators like polar bears being exposed to the virus, with reports already confirming the death of one polar bear in Alaska due to bird flu.

Call to Action:

- In light of these developments, researchers and conservationists emphasize the critical need for continued monitoring and proactive measures to mitigate the spread of bird flu among Arctic wildlife.
- Enhanced surveillance efforts, collaboration between international scientific communities, and engagement with local stakeholders are essential to safeguarding the fragile ecosystems of the Arctic and ensuring the long-term survival of its iconic inhabitants.

Conclusion:

- The walrus death from bird flu serves as a stark reminder of the interconnectedness of ecosystems and the vulnerability of Arctic wildlife to emerging infectious diseases.
- As we confront the challenges of a rapidly changing climate and evolving ecological dynamics, collective action and commitment to conservation are paramount.
- By working together, we can protect the Arctic's rich biodiversity and preserve its natural wonders for future generations to cherish and admire.

DOMESTIC MANUFACTURING OF ELECTROLYSERS CAN BE GAME CHANGER FOR INDUSTRIAL EMISSIONS

Context

- As India's economy continues in an upward trajectory, the rise of emission-intensive sectors looms large. Industries such as power, steel, cement and fertilisers stand as formidable contributors, accounting for over half of the nation's emissions.

Net Zero by 2070

- India has pledged to reduce the emission intensity of its GDP by 45 per cent by 2030 from 2005 levels, along with becoming Net Zero by 2070.



- In the power sector, India plans to increase its renewable energy-based installed capacity to 50 per cent by 2030 as a part of its nationally determined contribution, which would substantially limit the emissions of the sector.

Challenges

- Yet, challenges persist for other hard-to-abate sectors like steel and fertilisers, urging exploration of alternative avenues to curb their emission footprint, along with increasing their production.
- There are many avenues to reduce emissions, but among the most promising options is the use of green hydrogen in these sectors.
- Conventionally, hydrogen production has relied on fossil fuels such as natural gas or coal. Steam methane reforming and coal gasification are the predominant methods for using natural gas and coal, respectively, in producing hydrogen, primarily for applications in the fertiliser industry's ammonia production.
- However, hydrogen, particularly sourced from renewable energy sources such as solar, wind, or hydro, referred to as green hydrogen, offers a transformative alternative. Produced through electrolysis, green hydrogen is derived using direct current passed through water, which splits the molecules into individual elements and produces hydrogen at the cathode.

Required capacity for achieving Net Zero scenario (2021-2030)

- The production of green hydrogen necessitates the deployment of electrolyzers. Presently, China takes the lead in both installed electrolyser capacity, boasting nearly 220 megawatts as of 2022, with an additional 750 MW under construction slated for online integration by 2023.
- Moreover, China dominates the manufacturing landscape for electrolyzers, contributing to 40 per cent of the global capacity.
- In contrast, the European Union witnessed a surge in installations, with approximately 80 MW added in 2022, doubling the capacity installed in the preceding year.

National Green Hydrogen Mission (NGHM)

- In a significant move, the Government of India has unveiled the National Green Hydrogen Mission

(NGHM), backed by a substantial budget of Rs 19,744 crore spanning from 2023-24 to 2029-30.

- The initial outlay is delineated into specific allocations: Rs 17,490 crore earmarked for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, Rs 1,466 crore dedicated to pilot projects, Rs 400 crore allocated for research and development endeavours and Rs 388 crore directed towards other essential components of the mission.
- Investing in a homegrown electrolyser manufacturing infrastructure is anticipated to drive down the price of green hydrogen and enhance the nation's competitive edge.

Tender issued by the Solar Energy Corporation of India (SECI)

- In a tender issued by the Solar Energy Corporation of India (SECI) in July 2023, inviting participation for the establishment of a 1.5 GW manufacturing capacity for electrolyser production, a remarkable response was witnessed.
- A total of 21 firms submitted bids, vying for incentives to establish a cumulative annual electrolyser manufacturing capacity of 3.4 GW, surpassing the initial offering of 1.5 GW.
- Furthermore, 14 companies expressed keen interest in incentives to develop production facilities for 553,730 tonnes of green hydrogen, exceeding the offered capacity of 450,000 tonnes.
- The Asia Society Policy Institute, however, noted in a recent report that while the SIGHT initiative marks a significant step forward, its effectiveness hinges on its adaptability to cater to the diverse needs of both flourishing startups and established international players.
- Moreover, while the programme initially aims to reduce system expenses for electrolyser manufacturers, its viability over the long term necessitates fine-tuning to ensure sustained appeal for investment and project resilience.
- In the second phase of bid invitation by SECI (Tranche-II) for incentivising electrolyser manufacturing, consideration has been given for smaller units, including startups, under bucket 2B of the scheme guidelines released by the ministry.
- The main objective is to encourage the indigenous design and manufacturing of the electrolysers, making India self-reliant.

Output of Pilot projects

- The output of pilot projects in sectors such as steel, shipping and mobility (transport), which are under various stages of implementation following MNRE scheme guidelines, will propel the way for adoption and commercialisation of green hydrogen, Singh added.
- Research and development activities will majorly focus on making the electrolysers more efficient and durable as well as affordable, by using commonly

available cheaper materials to manufacture them rather than rare and costly materials.

- While the outlays allocated to these initiatives alone are not enough to achieve the 5 MMTPA green hydrogen production target, these programmes are expected to leverage public capital to attract private capital to the tune of Rs 8 lakh crore by 2030.

Following solutions to ensure unhindered progress towards the 5 MMTPA target:

- Arriving at clear, measurable and globally accepted standards for green hydrogen production
- Creating demand visibility for the offtake of the planned green hydrogen production
- Striking balance between imports and domestic content requirements for electrolysers and other green hydrogen equipment

Way Forward

- MNRE has release guidelines and allocation funds for green hydrogen-based steel production in India. Implementation of such projects will significantly reduce the emissions from that sector.
- Similar initiatives have to come for other hard-to-abate sectors which have proven technologies for green hydrogen.

FLOODS IN UAE AND OMAN



Context

- As per the researchers, the Deadly storms that submerged Dubai and caused fatalities in Oman were likely made worse by climate change.

Heaviest Rainfall

- Over a period of less than 24 hours, the United Arab Emirates experienced its heaviest rainfall since records began 75 years ago.
- Dubai, a glitzy desert city accustomed to months with no precipitation at all – experienced the equivalent of more than a year and a half's worth of rain in that time.
- Also, the Arabian Peninsula, on which the UAE and Oman sit, occasionally experiences intense bouts of rain in April and May from what's known as mesoscale convective systems – several thunderstorms that together act as a single weather system.

Reasons for the Extreme Rainfall

Global Warming

- ⇒ A team of 21 scientists and researchers, under the World Weather Attribution initiative, found that climate change was causing extreme rainfall events in the two countries – which typically fall during El Niño years – between 10 and 40% more intense than they would have been without global warming.
- ⇒ The atmosphere in a 1.2-degree warmer world can now hold 8.4% more moisture, which is making extreme rain events more intense.
- ⇒ Changing circulation patterns driven by global warming are also increasing rainfall intensity.

El Nino:

- ⇒ The rainfall happened after months of hotter-than-average sea surface temperatures partly caused by El Niño – which is when warm waters rise to the surface of parts of the Pacific Ocean.
- ⇒ The higher ocean temperatures added more moisture to the atmosphere, making heavy rainfall more likely.
- ⇒ Infrastructure and Soil of the Region: Cities built without adequate storm management combined with very dry soils in the region that struggle to absorb excess water also made the impact worse.
- ⇒ The UAE and Oman floods have shown that even dry regions can be strongly affected by precipitation events, a threat that is increasing with increasing global warming due to fossil fuel burning.

What are Floods?

- ⇒ Floods are the most frequent type of natural disaster and occur when an overflow of water submerges land that is usually dry.

Types of Floods

- ⇒ Flash floods are caused by rapid and excessive rainfall that raises water heights quickly, and rivers, streams, channels or roads may be overtaken.
- ⇒ River floods are caused when consistent rain or snow melt forces a river to exceed capacity.
- ⇒ Coastal floods are caused by storm surges associated with tropical cyclones and tsunamis.
- ⇒ Urban flooding occurs as a result of land development. Permeable soil layers are being replaced by impermeable paved surfaces, through which water cannot infiltrate.

What Causes Floods?

Natural Causes:

- ⇒ **Prolonged rainfall:** When rain falls for a prolonged period of time, the soil can become saturated. When water is unable to infiltrate into the saturated soil, it is forced to flow over the soil, thus increasing surface runoff.
- ⇒ **Intense/Heavy rainfall:** When rain falls heavily, the raindrops hit the ground with a force. This can cause the rain drops to bounce off the soil instead of infiltrating into the soil. The water from the rain

is then forced to flow over the surface instead, thus increasing the surface runoff.

- ⇒ Relief refers to the difference in height between the highest point and the lowest point on land.
- ⇒ When rain falls, the surface runoff can move very quickly from mountainous or hilly areas to low lying areas making these low lying areas more prone to flooding.

Anthropogenic Causes

- ⇒ **Deforestation:** The lack of vegetation encourages water to flow over the surface rather than infiltrate into the soil thus increasing surface runoff.
- ⇒ **Poor land use practices:** Slash and burn agriculture, over-cultivation and overgrazing eventually cause the soil to become infertile and unable to sustain vegetative growth. Consequently, the lack of green cover encourages water to flow over the surface rather than infiltrate into the soil thus increasing surface runoff.
- ⇒ Urbanization leads to the replacement of permeable soil with that of an impervious layer of pitch and concrete, through which water cannot infiltrate.
- ⇒ **Improper waste disposal:** Oftentimes, garbage that is not properly disposed enters into drainage systems and clogs drains.
- ⇒ Quarrying is the clearing of land for the removal of aggregates (mainly sand and gravel) which is to be utilized in the construction industry. The action of quarrying leaves land bare and devoid of any trees and shrubs hence increasing surface runoff produced.
- ⇒ **Collapsed Dams:** If the dams begin to collapse, they will discharge more water downstream, resulting in flooding.
- ⇒ **Climate change:** Uncontrolled human activities can contribute to climatic changes, which are responsible for flooding in most regions.

Implications

- ⇒ Drowning accounts for 75% of deaths in flood disasters. Flood disasters are becoming more frequent and this trend is expected to continue.
- ⇒ Drowning risks increases in low- and middle-income countries where people live in flood prone areas.
- ⇒ Floods can also have medium- and long-term health impacts, including:
 - water- and vector-borne diseases, such as cholera, typhoid or malaria
 - injuries, such as lacerations or punctures from evacuations and disaster cleanup chemical hazards,
 - mental health effects associated with emergency situations,
 - disrupted health systems, facilities and services, leaving communities without access to health care.
- ⇒ Damaged basic infrastructure, such as food and water supplies, and safe shelter.

⇒ Economic losses to the State and individuals are also major concerns of the flooding.

Prevention

- ⇒ **Drainage Improvement:** Ensure that there is proper drainage or expand on existing drainage systems whenever there's new settlements or structures being constructed.
- ⇒ **Diversion of Flood Water:** Diverting all or a part of the discharge into a natural or artificially constructed channel, lying within or in some cases outside the flood plains is a useful means of lowering water levels in the river.
- ⇒ **Catchment Area Treatment/Afforestation:** Watershed management measures such as developing the vegetative cover i.e. afforestation and conservation of soil cover serve as an effective measure in reducing flood peaks.
- ⇒ **Anti-erosion Works:** Bank erosion can be minimized by adopting measures that aim at deflecting the current away from the river bank or which aim at reducing the current along the bank of the river and induce silt.
- ⇒ **Inspection, Rehabilitation and Maintenance:** Structural works require a periodic and systematic inspection, rehabilitation and maintenance programme to ensure that the design capabilities are maintained.

- ⇒ Topics under discussion included renewables, energy efficiency, phasing out fossil fuels, and research into advanced energy technologies.
- ⇒ This gathering marked the first significant political session since the global commitment made at COP28 to shift away from coal, oil, and gas.

Outcome of the Meeting:

- ⇒ G7 ministers neared agreement on committing to phase out coal-fired power plants by the first half of the 2030s.
- ⇒ The latest draft released after the meeting pledges to eliminate unabated coal power generation within the specified timeframe, aligning with efforts to limit global temperature rise to 1.5°C.

Significance:

- ⇒ A fixed timeline for phasing out coal would represent a crucial milestone in the global transition towards sustainable energy.
- ⇒ Italy, holding the G7 presidency, aims for Turin to serve as a bridge between previous climate talks and the upcoming COP29 in Azerbaijan.

Criticisms and Challenges:

- ⇒ Despite these commitments, a recent report indicates that the G7 is falling short of its climate targets.
- ⇒ Criticism is directed towards the group's continued dependence on fossil fuels and insufficient climate finance for developing nations.
- ⇒ Protests in Turin underscore public demands for concrete actions and accountability from G7 leaders.

Way Ahead for G7 Countries:

- ⇒ Urgent action is needed to address the escalating climate crisis, particularly in vulnerable regions.
- ⇒ Innovative financing models and increased climate finance for developing nations are essential.
- ⇒ G7 nations must leverage their political influence, resources, and technological capabilities to expedite the transition away from fossil fuels.

G7 MINISTERS DISCUSS PHASING OUT COAL AT TURIN MEETING



Context:

- ⇒ G7 energy ministers convened on April 29 in Turin to deliberate on the urgent need to phase out coal-fired power plants.
- ⇒ Against the backdrop of the UN's stern warning on the inadequacy of climate action, the discussions aimed to establish a collective commitment towards reducing reliance on fossil fuels.

Highlights of the Recent G7 Meeting:

- ⇒ The meeting, hosted in Turin, brought together energy and ecological transition ministers from the G7 nations for a two-day engagement.
- ⇒ Deliberations centered on the shared goal of shutting down coal-fired power plants and transitioning towards renewable energy sources.

G7 NATIONS UNITE TO COMBAT CLIMATE CHANGE: LANDMARK AGREEMENT TO PHASE OUT COAL POWER BY 2035



Introduction:

- ⇒ In a monumental move to address the pressing threat of climate change, energy ministers from the

Group of Seven (G7) nations have forged an historic agreement to shutter their coal-fired power plants by the year 2035.

- This landmark pact signifies a significant stride towards fulfilling the objectives outlined at the COP28 United Nations climate summit, signaling a collective commitment to curbing greenhouse gas emissions and transitioning towards cleaner, more sustainable energy sources.

The Coal Phase-Out Agreement:

- Amid mounting concerns over the detrimental environmental impacts of coal combustion, the G7 nations have taken decisive action to accelerate the transition to renewable energy.
- By pledging to decommission their coal-fired power facilities within the next decade and a half, these advanced economies are poised to reduce their carbon footprint and mitigate the adverse effects of global warming.

Global Leadership in Climate Action:

- The Group of Seven, comprising Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States, along with the European Union as a non-enumerated member, stands as a beacon of global leadership in the fight against climate change.
- Grounded in shared values of pluralism, liberal democracy, and representative governance, the G7 forum serves as a platform for fostering international cooperation and advancing collective efforts to address pressing global challenges.

Origins and Evolution of the G7:

- The roots of the G7 can be traced back to a modest gathering of finance ministers in 1973, convened with the aim of coordinating economic policies among industrialized nations.
- Since its inception, the forum has evolved into a prestigious assembly of world leaders, convening annually to deliberate on a wide array of issues spanning trade, security, economics, and, increasingly, climate change.

Promoting Sustainable Development:

- The decision to phase out coal power reflects the G7's unwavering commitment to promoting sustainable development and safeguarding the health of the planet for future generations.
- By embracing clean energy alternatives and embracing innovation, these nations are poised to not only reduce their greenhouse gas emissions but also spur economic growth and foster a more resilient and equitable global society.

Conclusion:

- The G7's bold initiative to eliminate coal-fired power generation represents a watershed moment in the global effort to combat climate change.
- As the world grapples with the urgent imperative to transition towards a low-carbon future, the collective

action and leadership demonstrated by the G7 nations serve as a beacon of hope and inspiration.

- By working together, we can forge a path towards a more sustainable and prosperous world for all.

INDIA-KENYA COLLABORATION: REVIVING THE CHEETAH IN INDIAN WILDLIFE SANCTUARIES



Introduction

- India's ambitious Project Cheetah, aimed at reintroducing cheetahs to the country after their local extinction in 1952, is set to enter its next phase with a potential collaboration with Kenya.
- This article explores the forthcoming discussions between India and Kenya regarding the sourcing of cheetahs for the Gandhi Sagar wildlife sanctuary in Madhya Pradesh, shedding light on the significance of this initiative in the context of wildlife conservation.

India's Interest in Cheetah Sourcing from Kenya

- India has expressed keen interest in acquiring cheetahs from Kenya for the next stage of Project Cheetah.
- A delegation from Kenya is scheduled to visit India to deliberate on the translocation process, including the number of cheetahs that Kenya may be willing to provide.
- With the Gandhi Sagar wildlife sanctuary identified as the designated location for this phase of the project, India aims to introduce 8 to 14 cheetahs annually over five years, contingent upon availability.

Project Cheetah: A Conservation Milestone

- Project Cheetah, initiated by the Government of India, is a pioneering conservation effort aimed at restoring the cheetah population in the country.
- Building on the translocation of eight African cheetahs from Namibia to Kuno National Park in Madhya Pradesh in 2022, the project seeks to establish a sustainable cheetah population, re-establish their historical range, and enhance biodiversity in Indian ecosystems.
- Intensive monitoring, habitat management, and community engagement are integral to the project's success.

Assessment of Gandhi Sagar Sanctuary

- As part of the upcoming visit, the Kenyan delegation will assess the preparations made by the Madhya

Pradesh forest department at the Gandhi Sagar wildlife sanctuary.

- This evaluation underscores the importance of ensuring suitable habitat and infrastructure for the successful reintroduction and conservation of cheetahs in their new environment.

Gandhi Sagar Wildlife Sanctuary: A Haven for Biodiversity

- The Gandhi Sagar wildlife sanctuary, nestled in the northern boundary of the Mandasaur and Nimach districts in Madhya Pradesh, serves as an ideal habitat for diverse flora and fauna.
- Established in 1974 and spanning 368.62 square kilometers, the sanctuary is home to a plethora of animal species, including leopards, chital, sambar, nilgai, and sloth bears, making it a sanctuary of significant ecological importance.

Understanding the Cheetah: Characteristics and Ecological Role

- *Acinonyx jubatus*, commonly known as the cheetah, is a remarkable feline species renowned for its speed and agility.
- As top predators, cheetahs play a crucial role in maintaining ecological balance by regulating prey populations.
- Their unique adaptations, such as non-retractable claws and high-speed chases, underscore their evolutionary prowess and ecological significance.

Conclusion

- The collaboration between India and Kenya to reintroduce cheetahs into Indian wildlife sanctuaries represents a landmark effort in wildlife conservation.
- Through Project Cheetah, India aims to not only revive a charismatic species but also to foster international cooperation in biodiversity conservation.
- As discussions unfold and preparations progress, the prospect of witnessing cheetahs roaming once again in Indian landscapes evokes hope for a brighter future for both the species and the ecosystems they inhabit.

INDIAN OCEAN IS HEATING UP MUCH FASTER THAN WE THINK, AT A RATE OF 1.7-3.8°C PER CENTURY

Context

- The Indian Ocean is experiencing unprecedented and accelerated warming, which may continue throughout the century unless greenhouse gases (GHGs) are reduced immediately.
- A new study published in journal Science Direct has predicted that between 2020 and 2100, the Indian Ocean could warm at a rate of 1.7-3.8 degrees Celsius per century.
- This could lead to widespread socio-economic impacts, along with significant effects on biodiversity, especially on coral reefs.



Impact of accelerated warming

- This warming of the ocean's surface, along with the heat accumulated in the first 2,000 metres below the surface, has significant repercussions for the southwest monsoon season, which provides about 70 per cent of India's annual rainfall and also affects rainfall patterns in other South Asian countries.
- Currently, the heat content of the first 2,000 metres below the ocean surface is increasing at a rate of 4.5 zettajoules per decade, with projections indicating a dramatic increase to 16-22 zettajoules per decade in the future, according to the study.
- This warming could also lead to more frequent and intense extreme weather events, such as tropical cyclones and floods, as well as a rise in sea levels due to thermal expansion.

Rate of heating up

- The study also examined the Indian Ocean's warming over the past century, finding that the ocean basin heated at a rate of 1.2°C per century between 1950 and 2020.
- The northwestern parts of the Indian Ocean, including the Arabian Sea, experienced the most significant warming, while the southeastern parts of the ocean, off the coasts of Sumatra and Java, experienced the least warming.
- The study also discovered that the seasonal cycle of surface temperatures has shifted and might shift further due to warming.
- Between 1980 and 2020, the maximum sea surface temperatures (SST) across the Indian Ocean generally stayed below 28°C (ranging from 26-28°C).
- If GHGs are emitted at current levels, the minimum SSTs in the Indian Ocean could exceed 28°C (28.5-30.7°C) all year round by the end of the 21st century, according to the study.
- Generally, SSTs above 28°C are conducive to the formation of tropical cyclones and extremely heavy rainfall.
- Heavy rainfall events and extremely severe cyclones have already become more frequent since the 1950s and are projected to increase further with rising ocean temperatures, according to Koll.

Thermal Expansion

- The increased ocean heat would also cause thermal expansion in the Indian Ocean, resulting in rising sea levels in the 40 countries that border it.
- Thermal expansion of water accounts for more than half of the sea level rise in the ocean, exceeding the contribution from glacier and sea-ice melting.

Indian Ocean Dipole (IOD)

- Other natural climatic phenomena, such as the Indian Ocean Dipole (IOD), are also expected to change due to the warming of the Indian Ocean.
- The positive and negative phases of the IOD influence rainfall during the southwest monsoon and affect the formation of tropical cyclones.
- In the positive phase of the IOD, when the western parts of the Indian Ocean are warmer than the eastern parts, monsoon rainfall generally increases across many regions in India and the rest of South Asia.
- In the negative phase, when the western parts of the ocean are cooler than the eastern parts, less than normal rainfall is observed during the post-monsoon period in northwestern India.
- The study predicted that the frequency of extreme IOD events may increase by 66 per cent, while the frequency of moderate events is projected to decrease by 52 per cent by the end of the century.

Marine Heatwaves

- The authors of the study also describe a concerning outlook for the Indian Ocean in terms of marine heatwaves, which are events when large areas of the ocean become much warmer than usual and remain so for extended periods.
- The number of days with marine heatwaves is expected to increase from 20 to 220-250 days a year, according to the study.
- This would mean that most of the Indian Ocean could be in a near-permanent state of marine heatwave conditions.
- Marine heatwaves lead to habitat destruction through coral bleaching, seagrass loss and the degradation of kelp forests, adversely affecting the fisheries sector.
- They also result in the rapid intensification of cyclones, where a cyclone can intensify from a depression to a severe category within a few hours, according to the study.

Change in Bio-geochemical characteristics

- The bio-geochemical characteristics of the Indian Ocean are also expected to change due to the warming.
- For instance, the pH levels of the ocean's waters are projected to decrease from about 8.1 currently to 7.7 by the end of the century.
- The projected changes in pH may be detrimental to the marine ecosystem since many marine organisms – particularly corals and organisms that depend on

calcification to build and maintain their shells – are sensitive to the change in ocean acidity.

- The change may be easier to fathom when we realise that a 0.1 fall in human blood pH can result in rather profound health consequences and multiple-organ failure.
- The productivity and surface levels of chlorophyll are also expected to decline by 2100, with the greatest reduction in the western Arabian Sea, where levels could fall by 8-10 per cent from their current state.

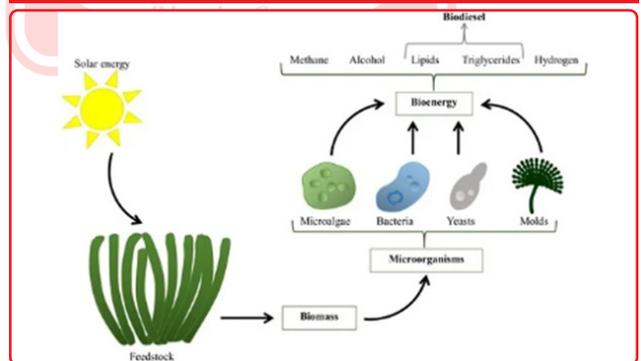
Way Forward

- The study recommended a multifaceted approach to address the imminent challenges in the Indian Ocean.
- Reducing GHG emissions and building climate-resilient infrastructure are the most effective strategies to mitigate the current and future impacts of warming.

Conclusion

- Concurrently, conserving marine ecosystems through sustainable practices and improving forecasting capabilities can strengthen the region's resilience to extreme weather events.
- Additionally, promoting adaptive agriculture and encouraging international collaboration are essential for ensuring food security and preserving biodiversity.

MICROBES, NOT FOSSIL FUELS, PRODUCED MOST NEW METHANE: STUDY



Context

- A modelling study has found methane emissions from fossil fuels declined between 1990 and the 2000s and have been stable since, whereas microbes have been producing more methane of late.

Evolving understanding

- Methane is the second most abundant anthropogenic greenhouse gas after carbon dioxide (CO₂) but it warms the planet more.
- Over a century, methane has a global warming potential 28-times greater than CO₂, and even higher over shorter periods like two decades.
- It wasn't until recently that policymakers began to focus on methane vis-a-vis addressing global warming.

- At the U.N. climate talks in 2021, member countries launched the 'Global Methane Pledge' to cut the gas's emissions and slow the planet's warming. Yet our understanding of methane also continues to evolve.
- For instance, scientists have recently reported that microbes have been the biggest sources of methane in the atmosphere, not the burning of fossil fuels.

The sources of methane

- Scientists are increasingly recognising various sources of methane, most of which fit in two categories: biogenic and thermogenic.
- When fossil fuels such as natural gas or oil are extracted from deep within the earth's crust, thermogenic methane is released.
- Biogenic methane comes from microbial action.
- The microbes that produce methane are archaea – single-celled microorganisms distinct from bacteria and eukaryotes – and are called methanogens.
- They thrive in oxygen-deficient environments, such as the digestive tracts of animals, wetlands, rice paddies, landfills, and the sediments of lakes and oceans.
- Methanogens play a crucial role in the global carbon cycle by converting organic matter into methane.
- While methane is a potent greenhouse gas, its production by methanogens is an essential part of natural ecosystems.
- But human activities like agriculture, dairy farming, and fossil fuel production have further increased methane emissions.
- Both biogenic and thermogenic activities produce different isotopes of methane.

Modelling with a supercomputer

- Tracking the isotopes is a way to track which sources are the most active and according to scientists, carbon-13 is key.
- If there are fewer carbon-13 atoms than a certain level in a group of 1,000 methane molecules, the methane is from a biological source.
- If the methane is from thermogenic sources, such as trapped fossil fuels or geological activities, there will be more carbon-13 atoms in 1,000 molecules.
- A team compared their own results with two emissions inventories, called EDGAR and GAINS, and found some discrepancies.
- EDGAR had reported that methane emissions from oil and natural gas exploration had increased between 1990 and 2020.
- GAINS had recorded a large "unconventional" rise in emissions since 2006. Their findings disagreed with both inventories.

Need for local data

- One possible reason could be an increase in cattle-rearing in Latin America and more emissions from waste in South and Southeast Asia, Latin America, and Africa. And number of wetlands worldwide had increased as well.

- Studies in the past have pointed to microbes like anaerobic archaea as potentially top contributors of atmospheric methane using satellite data.
- But according to scientists, Most studies that use satellites cannot measure the actual [changes over time] of methane.
- Satellite data is interpreted using models and thus are prone to uncertainties.

Conclusion

- The only way is to reduce methane. For that, anthropogenic activity should be first controlled. Waste and landfills, rice fields, enteric fermentation, oil and gas are the majority of it.

NABARD'S CLIMATE STRATEGY 2030: ADDRESSING INDIA'S GREEN FINANCING NEEDS



Why in News?

- Recently, the National Bank for Agriculture and Rural Development (NABARD) unveiled its Climate Strategy 2030, focusing on green financing to meet India's environmental challenges.

NABARD's Climate Strategy

Overview:

- NABARD's Climate Strategy 2030 revolves around four key pillars: enhancing green financing in diverse sectors, fostering a supportive market for green finance, embracing sustainability in NABARD's operations, and mobilizing resources for green initiatives.

Objective:

- The strategy aims to bridge the financial gap for sustainable projects, aiming to meet India's ambitious goal of USD 2.5 trillion investment by 2030.
- However, only about USD 49 billion out of the required USD 170 billion annually has been secured as of 2019-20. Furthermore, most funds focus on mitigation, with only USD 5 billion allocated to adaptation and resilience efforts.

Green Financing:

- Green financing entails channeling funds into projects with positive environmental impacts, such as renewable energy, energy efficiency, sustainable infrastructure, and climate-resilient agriculture.

⇒ It aims to balance short-term profit goals with long-term environmental sustainability, fostering a transition to a low-carbon economy and unlocking new economic avenues.

Challenges in Green Financing:

High Initial Costs:

⇒ Green projects often demand substantial upfront investments, discouraging investors despite their long-term benefits.

Mismatched Timeframes:

⇒ The longer payback periods of green projects may not align with investors' short-term financial objectives.

Lack of Standardization and Greenwashing:

⇒ The absence of globally accepted standards for green investment leads to ambiguity and inconsistency in assessing environmental impact and financial performance, raising the risk of greenwashing.

Enhancing Green Financing:

- ⇒ Developing AI algorithms to assess environmental and financial risks accurately.
- ⇒ Encouraging traditional financial institutions to participate in green financing.
- ⇒ Utilizing satellite imagery and data analytics for evaluating environmental impact.
- ⇒ Introducing green infrastructure bonds with government guarantees to attract private investors.
- ⇒ Establishing micro-grant programs for local communities to implement small-scale green projects.
- ⇒ Introducing a system of "green impact scores" for financial products to empower consumers with environmental information.

THE POULTRY INDUSTRY NEEDS URGENT REFORMS



Context:

⇒ India's environmental laws and regulations must reflect what the public health crisis is showing us: that animal welfare is closely interlinked with public health, ecosystem health and biodiversity conservation – the One Health principle.

Historical background

⇒ The first H5N1 infection spilt over to humans directly from chickens in Hong Kong in 1997.

⇒ In India, the first H5N1 patient was reported in Maharashtra in 2006.

⇒ An outbreak in December 2020 and early 2021 spread across 15 States.

⇒ This pathogen has crossed many species barriers, causing mortality among the polar bears in the Arctic and seals and seagulls in Antarctica.

⇒ With humans, the World Health Organization (WHO) estimates the fatality rate for H5N1 at 52%, based on the 463 deaths recorded since 2003 among the 888 people diagnosed with the virus.

Avian influenza

⇒ Avian influenza, or bird flu, is a highly contagious viral disease of birds caused by the influenza A viruses.

⇒ It was previously known as "fowl plague" and was recognised as an infectious disease of poultry in Italy as far back as 1878.

⇒ Although avian influenza A viruses occur naturally among wild aquatic birds worldwide, they are also known to infect other animals, including ducks, chickens, turkeys, pigs, whales, horses, seals, dogs and cats.

⇒ Exposure to animal influenza viruses can lead to infection and disease in humans – ranging from mild, flu-like symptoms or eye inflammation to severe, acute respiratory disease or death.

Scale of the biosecurity issue

⇒ Almost all cases of human infection with avian influenza A (H5N1) have been linked to close contact with infected birds, or contaminated environments.

⇒ These contaminated environments are created by cramming chickens in wired cages, or 'battery cages', in high densities.

⇒ The resultant air quality and waste problem has a significant footprint in India due to the odour, particulate matter, and other greenhouse gas emissions.

⇒ For instance, antibiotics are regularly given to birds as a prophylactic and as growth promoters so that more animals can be grown for greater profit.

⇒ Experts predict the rising demand for protein will cause a surge in antibiotic use in livestock.

⇒ Several antibiotics classified as critically important and highly important by the WHO are widely sold to farmers for preventative use.

⇒ Animals are heavily stocked in unsanitary conditions.

⇒ Not only does this have a detrimental effect on the welfare of animals and the health of those who consume the food derived, but also on the people working at these facilities and residing in the vicinity.

⇒ The impact of the emissions in the atmosphere, effluents in the water systems, and solid wastes in the soil generated by these industries is felt by humans, other animals, and the environment.

- The faecal matter generated at these facilities is collected periodically by local farmers for use as fertilizer but the amount of piled-up manure exceeds the carrying capacity of the land and becomes a pollutant.
- Farmers complain of their crops getting damaged and piles of waste becoming a breeding ground for disease vectors such as flies.
- Residents are compelled to adopt measures such as spraying insecticides inside homes, leading to breathlessness and a nauseating smell.

Path to legal reform

- Keeping animals in intensive confinement constitutes a crime under the provisions of the Prevention of Cruelty to Animals (PCA) Act, 1960.
- Moreover, the operational activities at these industrial facilities cause unnecessary pain and suffering to the animals because of mutilation, starvation, thirst, overcrowding, and other ill-treatment, which is also a violation of the PCA Act.
- The Central Pollution Control Board (CPCB) has classified poultry units with more than 5,000 birds as a polluting industry that requires compliance and regulatory consent to establish and operate.
- The 269th Law Commission of India Report in 2017 placed on record a representation by the Tata Memorial Centre that contained evidence that non-therapeutic antibiotics given to poultry cause antibiotic resistance since living conditions are unhygienic.
- It further said that with more open, cleaner, and ventilated living spaces, animals are less likely to need constant antibiotics, making their eggs and meat safer for consumption.
- These rules laid down guidelines as per existing laws and international best practices for animal care, waste management, and antibiotic use, among others.
- However, the Draft Rules for the egg industry released by the Ministry of Agriculture and Farmers' Welfare in 2019 are weak and tokenistic.

Way forward

- Strict oversight for compliance and enforcement of environmental regulations is the need of the hour, given the CPCB's reclassification of the poultry industry as a highly polluting 'orange category' industry.
- In light of the bird flu public health crisis and the climate emergency, it is crucial for the situation to be addressed.

WEATHER CHALLENGES AHEAD: INDIA GEARS UP FOR MONSOON TRIALS

Introduction:

- As political shifts dominate the discourse, India braces for the impending monsoon season, a crucial determinant of its economic trajectory.



- Echoing historical sentiments, the nation's prosperity often hinges on the capricious nature of the monsoon, heightening concerns amid successive poor seasons.

Current Water Levels:

- Major reservoirs languish at a mere 28.2% capacity, sounding alarms, particularly in southern regions where reservoirs teeter on the brink of depletion.
- Critical water sources in Andhra Pradesh, Telangana, and Karnataka face imminent scarcity, raising alarms of potential water crises.

Impact on Agriculture:

- Last year's lackluster monsoon, compounded by El Niño's influence, has already exacted a toll on agricultural output.
- Reduced rice and wheat procurement, alongside soaring prices of essential commodities, highlight agricultural distress.
- Anomalously warm temperatures further jeopardize crop yields, particularly in central India.

Understanding Weather Phenomena:

- El Niño and La Niña, opposing phases of the ENSO cycle, significantly influence global weather patterns.
- El Niño's warm Pacific waters contrast with La Niña's cooling effect, with both phenomena peaking in the Northern Hemisphere winter.
- While El Niño occurrences are more frequent, La Niña's prolonged spells can disrupt weather patterns for extended periods.

Current Status and Forecast:

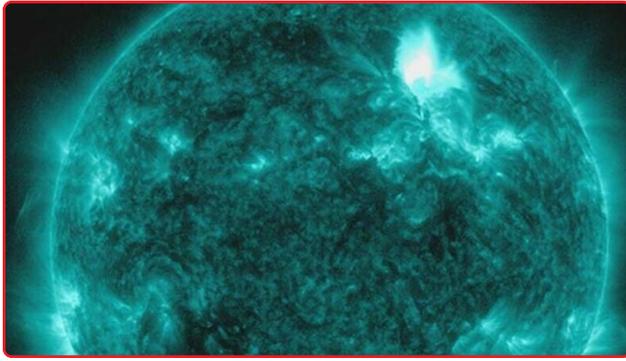
- Positive indicators suggest El Niño's retreat, with models forecasting its transition to a "neutral" phase by June, possibly evolving into La Niña during the monsoon period.
- Historically, La Niña events correlate with surplus rainfall in India, aligning with optimistic forecasts of above-normal monsoon rainfall by meteorological experts.

Conclusion:

- As India readies itself for the monsoon's onset, the post-election administration confronts the daunting task of managing potential food inflation amidst unpredictable weather dynamics.

- ⊖ While hope surrounds forecasts of a favorable monsoon, prudent planning remains imperative.
- ⊖ Striking a balance between optimism and preparedness is essential to navigate the uncertainties of the upcoming monsoon season effectively.

EXTREME SOLAR STORM STRIKES EARTH



Introduction

- ⊖ On May 11, 2024, Earth encountered a powerful solar storm, the most significant in over twenty years.
- ⊖ Triggered by multiple coronal mass ejections (CMEs) from the sun, the event captured global attention due to its profound impact on communication networks, satellite operations, and power grids.
- ⊖ Additionally, it treated observers to dazzling auroras spanning from Tasmania to Britain.

Understanding Coronal Mass Ejections (CMEs)

- ⊖ Coronal mass ejections are colossal eruptions of solar wind and magnetic fields from the sun's corona into space.
- ⊖ These ejections are notable for carrying billions of tons of plasma intertwined with magnetic fields.
- ⊖ During the recent event, the expelled CMEs traveled towards Earth at approximately 800 kilometers per second, significantly slower than solar flares.

The "Extreme" Geomagnetic Storm

- ⊖ The recent solar event was categorized as an "extreme" geomagnetic storm, reminiscent of the Halloween Storms of October 2003.
- ⊖ Geomagnetic storms arise from disturbances in Earth's magnetosphere due to changes in solar wind.
- ⊖ Notably, the captivating auroras, or northern/southern lights, were visible globally during this event.

Impact on Technologies and Essential Services

- ⊖ The fluctuations in Earth's magnetic field during the storm posed risks to satellite operations and power transmission infrastructure.
- ⊖ Potential consequences included disruptions to communication networks, satellite functions, and power grids.
- ⊖ NOAA issued alerts to prepare for such contingencies, emphasizing the importance of readiness in communication and power supply sectors.

Biological and Cumulative Effects

- ⊖ Apart from technological disruptions, geomagnetic storms can affect biological entities relying on Earth's magnetic field for navigation, such as pigeons.
- ⊖ Anecdotal evidence suggests disruptions in pigeons' homing abilities during similar events, highlighting potential ecological impacts.

Scientific and Public Engagement

- ⊖ The solar storm sparked scientific and public engagement with space weather.
- ⊖ Academic institutions and space weather monitoring bodies provided guidance on observing these phenomena safely, enhancing public awareness and understanding.

Auroras Captured in India

- ⊖ The Indian Astronomical Observatory documented the rare auroral occurrence in Hanle and Merak, Ladakh.
- ⊖ Observations included intense red auroras indicative of energetic particles at higher altitudes and rarer blue and violet bands suggesting lower atmospheric interactions.

Historical Perspective: The Carrington Event

- ⊖ While severe, the recent storm is dwarfed by the historical Carrington Event of 1859, the most intense geomagnetic storm on record.
- ⊖ The event caused widespread telegraph system failures and produced brilliant auroras visible closer to the equator than usual, highlighting the potential global impact of such events on modern infrastructure.

Conclusion

- ⊖ The recent extreme solar storm underscores the importance of monitoring and preparing for space weather events.
- ⊖ As society becomes increasingly reliant on technology, understanding and mitigating the risks posed by geomagnetic storms are essential for ensuring the resilience of critical infrastructure and minimizing disruptions to essential services.

FRESHWATER QUEST: THE EMERGING GLOBAL CHALLENGE



Context

- As freshwater becomes an increasingly scarce resource, nations are turning their attention to exploring and exploiting freshwater reservoirs above and below the ocean bed, within their maritime zones.
- With only a small fraction of freshwater accessible on the surface, the search for new freshwater sources is becoming a pressing concern for many countries.

Legal Framework and UNCLOS

- The United Nations Law of the Sea Convention (UNCLOS) provides the legal framework for governing oceanic resources.
- However, customary international law remains a significant source of maritime law.
- While UNCLOS supersedes previous conventions on the law of the sea, non-signatory states may not recognize its provisions, leading to complexities in jurisdictional matters.

Exploration Beyond Exclusive Economic Zones

- Countries may expand their exploration efforts beyond their Exclusive Economic Zones (EEZs) into the "Area" defined by UNCLOS.
- This vast expanse, beyond national jurisdiction, is considered the common heritage of mankind, available for the benefit of all nations and future generations.

Emerging Challenges and Opportunities

- The depletion of freshwater resources is leading to concerns about future conflicts over water access and territorial expansion.
- As freshwater becomes scarcer, the exploration and extraction of freshwater from the "Area" under UNCLOS may become a viable solution.
- Just as oil wells are explored and capped for future use, freshwater wells could be identified and preserved for future generations.

International Cooperation and Sustainable Development Goals

- Addressing the challenges of freshwater scarcity requires international cooperation and legislative reforms.
- Developing a non-controversial legislative framework to govern exploratory activities for freshwater extraction from the "Area" should be a priority for the international community.
- India, with its commitment to Sustainable Development Goals, could play a leading role in facilitating this process.

Conclusion: A Global Imperative

- In a world where freshwater is becoming increasingly scarce, the quest for new freshwater sources is a global imperative.
- Rather than focusing solely on extraterrestrial exploration, addressing the challenges of freshwater scarcity on Earth should be a priority.

- By working together to develop sustainable solutions and legislative frameworks, nations can ensure equitable access to freshwater resources for future generations.

INDIAN OCEAN TEMPS LINKED TO GLOBAL DENGUE INTENSITY



Introduction

- Recent research published in the journal Science has identified a significant relationship between sea-surface temperatures in the Indian Ocean and the intensity of dengue outbreaks worldwide.
- This discovery introduces the Indian Ocean Basin-Wide (IOBW) index as a potential predictor for dengue epidemics, offering countries valuable lead time for preparation and response.

What is the IOBW Index?

- The Indian Ocean Basin-Wide (IOBW) index is a climatological measure used to monitor and predict climate variability in the Indian Ocean region.
- It assesses deviations from normal sea surface temperatures across the entire Indian Ocean basin.
- The index is crucial for understanding phenomena such as the Indian Ocean Dipole and its impacts on regional climates and monsoon systems.
- It aids in forecasting weather patterns, which is vital for agricultural planning, water resource management, and disaster preparedness in surrounding countries, thus influencing economies and ecosystems.

Correlation with Dengue Outbreaks

- Researchers have found a close correlation between the IOBW index and the occurrence of dengue outbreaks in both the Northern and Southern hemispheres.
- Higher index values (positive indices) are associated with increased local temperatures globally, potentially leading to heightened dengue transmission.

Impact on Dengue Outbreaks

- Dengue, primarily transmitted by Aedes mosquitoes, has expanded from affecting nine countries before 1970 to nearly half of the global population today.

- The link between the IOBW index and dengue suggests that positive index values are associated with a significant increase in dengue cases, and vice versa.
- This correlation holds true for both hemispheres, with a stronger association noted in the Southern Hemisphere.

Seasonal Variations and Geographic Disparities

- Dengue epidemics peak between July and October in the Northern Hemisphere and from February to April in the Southern Hemisphere, corresponding to local summer periods.
- Countries like Brazil in the Southern Hemisphere are particularly affected, demonstrating the index's pronounced impact in tropical regions.

Challenges and Future Directions

- While the initial findings are promising, the study acknowledges limitations such as the unavailability of comprehensive dengue incidence data from some countries and the exclusion of other influencing factors like vector control efforts and socio-economic conditions.
- Future research is recommended to include these variables to refine the early warning system for dengue more comprehensively.
- In conclusion, the potential of the IOBW index to forecast dengue outbreaks could revolutionize how global health authorities anticipate and combat this disease, thus mitigating its impact on public health.

Additional Notes on Dengue

- Dengue is a mosquito-borne viral infection prevalent in tropical and subtropical climates worldwide, mostly in urban and semi-urban areas.
- It is caused by the dengue virus (DENV) transmitted through the bites of infected Aedes mosquitoes, primarily Aedes aegypti.
- Symptoms include high fever, headache, vomiting, muscle and joint pains, and a characteristic skin rash.
- Severe forms can develop into dengue hemorrhagic fever, leading to bleeding, blood plasma leakage, and potentially fatal shock (dengue shock syndrome).
- Preventative measures focus on mosquito control and avoiding mosquito bites.
- Currently, there is one dengue vaccine, Dengvaxia, approved in several countries, but its use is limited to seropositive individuals due to concerns about effectiveness and safety in those who have never been infected.

Additional Notes on Aedes Species Mosquitoes

- Aedes mosquitoes are a genus primarily known for transmitting various major diseases, including Zika, dengue fever, chikungunya, and yellow fever.
- They are easily identifiable by white markings on their legs and a marking resembling a lyre on the upper surface of their thorax.

- Aedes species are particularly common in tropical and subtropical zones but have spread to other areas due to global trade and travel.
- Unlike other mosquitoes, Aedes typically bite during the day, particularly around dawn and dusk.
- Their capacity to breed in small amounts of water makes them difficult to control.

INTRODUCTION TO DRISHTI-10 DRONE

Context

- The Indian Army is anticipating the arrival of its first Hermes-900 Starliner drone, which is colloquially referred to as the Drishti-10.
- Scheduled for delivery on June 18, this cutting-edge UAV marks a significant advancement in India's defense surveillance capabilities.
- Facilitated by Adani Defence Systems under a contract leveraging emergency powers granted by the Defence Ministry, the procurement of the Drishti-10 underscores India's commitment to bolstering its national security infrastructure.

Features of Hermes-900 Starliner

- The Hermes-900 Starliner, developed by Elbit Systems, an Israeli defense electronics company, boasts remarkable capabilities tailored for extensive surveillance missions.
- With the ability to sustain flights exceeding 30 hours and cover distances up to 2,000 km, the Drishti-10 excels in long-duration reconnaissance operations.
- Leveraging advanced technologies, including satellite communication systems sourced partly from Elbit, the drone promises enhanced operational efficiency and effectiveness.

Indigenous Manufacturing and 'Make in India' Initiative

- Integral to the procurement deal is a mandate for domestically sourced components, aligning with India's 'Make in India' initiative.
- With over 60% of the drone's components sourced domestically, the agreement not only fosters indigenous manufacturing but also fortifies India's self-reliance in defense technology.
- Adhering to this directive, Adani Defence Systems aims to bolster local production capabilities through technology transfer agreements, ensuring sustained growth in the domestic defense industry.

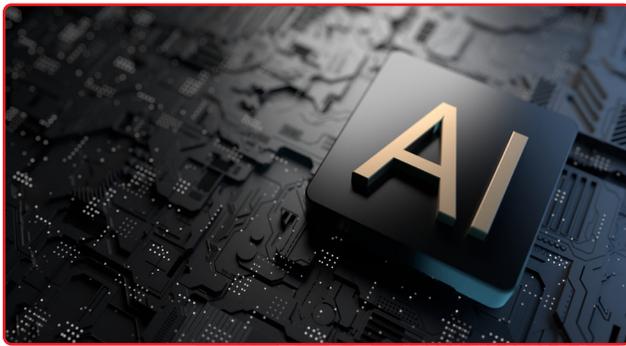
Deployment and Operational Strategy

- Following delivery, the Drishti-10 drones will be stationed at the Army's Bhatinda base in Punjab, strategically positioned to monitor the western frontier with Pakistan.
- This deployment enhances the Army's reconnaissance and security operations, offering real-time intelligence gathering and surveillance capabilities crucial for safeguarding national borders.

Conclusion

- The introduction of the Drishti-10 drone signifies a significant milestone in India's defense modernization efforts.
- With its advanced capabilities and indigenous manufacturing focus, the UAV embodies India's commitment to bolstering its national security infrastructure while fostering self-reliance in defense technology.
- Positioned at the forefront of surveillance and reconnaissance operations, the Drishti-10 promises to enhance India's defense preparedness and situational awareness along its western borders.

AI SKILLS BECOME ESSENTIAL FOR EMPLOYMENT: INSIGHTS FROM THE 2024 WORK TREND INDEX



Context

- The integration of Artificial Intelligence (AI) into workplaces is reshaping the global job market, with the 2024 Work Trend Index Annual Report by Microsoft and LinkedIn highlighting the increasing importance of AI skills across diverse industries.

Recent Developments in AI Adoption

- Released on May 8, 2024, the report unveils a significant surge in AI utilization in the workplace, nearly doubling in the past six months.
- This growth is supported by data from a comprehensive survey involving 31,000 individuals from 31 countries, along with analysis of labor trends on LinkedIn and productivity data from Microsoft 365.

Impact on Knowledge Workers

- A noteworthy revelation is that approximately 75% of knowledge workers globally now integrate AI into their daily tasks.
- Employees report that AI tools save time, boost creativity, and enable them to focus on critical tasks amidst the increasing pace and volume of work in modern business environments.

Leadership Perspectives on AI

- While 79% of business leaders recognize the importance of adopting AI for maintaining competitiveness, around 59% express concerns about quantifying AI's productivity benefits.

- Additionally, about 60% admit their organizations lack a coherent vision and strategy for effective AI implementation.

Emerging Trends: Bring Your Own AI (BYOAI)

- The report highlights the emergence of the 'Bring Your Own AI' (BYOAI) trend, where 78% of AI users introduce personal AI tools at work.
- This shift underscores employees' desire to leverage personal AI technologies to enhance productivity and job satisfaction.

Addressing the Skills Gap

- A significant skill gap exists, with 55% of leaders worried about finding adequate talent to fill AI-related roles, particularly in cybersecurity, engineering, and creative design.
- However, there's a notable increase in professionals adding AI skills to their profiles on platforms like LinkedIn, indicating a proactive response to employer demands.

Challenges and Future Outlook

- Many leaders face challenges in translating AI experimentation into tangible business impacts due to the lack of a clear AI vision and strategy within their organizations.
- This situation presents both challenges and opportunities for companies willing to invest in structured AI training and integration strategies to fully leverage AI technology.

About the Work Trend Index Annual Report

- Produced by Microsoft, the Work Trend Index Annual Report offers insights into emerging trends affecting work and workplaces globally.
- It gathers data from surveys conducted across different countries and analyzes changes in work habits and environments.

KERALA TEMPLES BAN OLEANDER AFTER WOMAN'S DEATH

Why in News?

- In response to the tragic death of a 24-year-old woman, Surya Surendran, who accidentally consumed oleander leaves, two major religious temple boards in Kerala have taken action to prevent future incidents by imposing a ban on the use of oleander flowers in temple offerings.

Incident and Immediate Action

- The victim inadvertently chewed oleander leaves, resulting in severe poisoning and her subsequent demise.
- Prompt action by the Travancore Devaswom Board and the Malabar Devaswom Board aims to mitigate risks by restricting the flower's use in religious offerings and prasada, ensuring the safety of devotees.

Understanding Oleander and Its Risks

- Nerium oleander, widely cultivated for its ornamental value, harbors potent cardiac glycosides in all its

parts, including leaves, stems, flowers, and roots, posing a significant health hazard.

- ⇒ Symptoms of oleander toxicity range from gastrointestinal distress to irregular heart rate and can even prove fatal in severe cases.

Dual Nature of Oleander in Traditional Medicine

- ⇒ While parts of the oleander plant have historically been utilized in Ayurvedic remedies for treating skin conditions and other ailments, medical experts caution against its unchecked usage due to its narrow therapeutic window and high toxicity.

Safety Measures and Medical Intervention

- ⇒ Immediate measures following oleander ingestion are crucial, including rinsing the mouth and consuming fluids to aid detoxification.
- ⇒ Hospital admission is often necessary to manage symptoms, with timely medical intervention crucial for recovery.

About Ayurvedic Pharmacopoeia of India

- ⇒ The Ayurvedic Pharmacopoeia of India (API), a governmental document, sets standards for Ayurvedic drugs and substances, ensuring their quality, purity, and efficacy.
- ⇒ It provides guidelines for practitioners, researchers, and manufacturers, crucial for standardizing Ayurvedic practices and product manufacturing.

Conclusion

- ⇒ The recent ban on oleander in temple offerings underscores the importance of public awareness and regulatory responses to mitigate the risks associated with toxic plants, emphasizing the paramountcy of safety in religious practices.

AN OVERLOOKED MOLECULE COULD SOLVE THE VENUS WATER MYSTERY



Introduction

- ⇒ More than four billion years ago, Venus boasted enough water to envelop its surface with an ocean 3 km deep.
- ⇒ However, today, the planet only retains sufficient water to form a mere 3 cm deep ocean.

Following the Water Trail

- ⇒ Venus lost its water primarily due to two factors.

- ⇒ Firstly, its harsh atmosphere, rich in carbon dioxide, generates a potent greenhouse effect, resulting in surface temperatures exceeding water's boiling point at a scorching 450 degrees Celsius. Consequently, water can only exist as vapor in Venus' atmosphere.
- ⇒ Secondly, the planet's proximity to the Sun subjects it to intense heat and ultraviolet radiation, causing water molecules to disintegrate into hydrogen and oxygen atoms in the ionosphere.
- ⇒ Two theories have been proposed to explain this water loss: thermal processes, such as hydrodynamic escape, and non-thermal processes, which involve the escape of hydrogen atoms from Venus' atmosphere, thereby reducing water levels.

The Key Findings

- ⇒ Recent discoveries have centered around the formyl cation (HCO^+), a positively charged molecule.
- ⇒ While scientists have long known about HCO^+ 's role in driving hydrogen escape on Mars, its relevance to Venus remained unexplored until now.
- ⇒ By modeling similar reactions observed in Mars' upper atmosphere, researchers found that the HCO^+ dissociative recombination reaction (DR) occurs in bulk in Venus' ionosphere, accelerating the escape of hydrogen atoms into space.
- ⇒ This accelerated water loss rate, due to HCO^+ DR, suggests that if Venus once harbored oceans, they may have endured longer than previously estimated.
- ⇒ However, the absence of concrete evidence for the presence of HCO^+ ions in Venus' atmosphere poses a significant challenge.
- ⇒ Past space missions overlooked the detection of HCO^+ ions, prompting the need for future missions dedicated to exploring Venus' upper atmosphere, similar to NASA's MAVEN mission to Mars.

Conclusion

- ⇒ The enigma of Venus being 100,000-times drier than Earth prompts a deeper investigation into planetary water distribution.
- ⇒ Questions regarding the abnormal dryness of Venus and the wetness of Earth drive scientific inquiry, highlighting the need for continued exploration and research to unravel the mysteries of our neighboring planets.

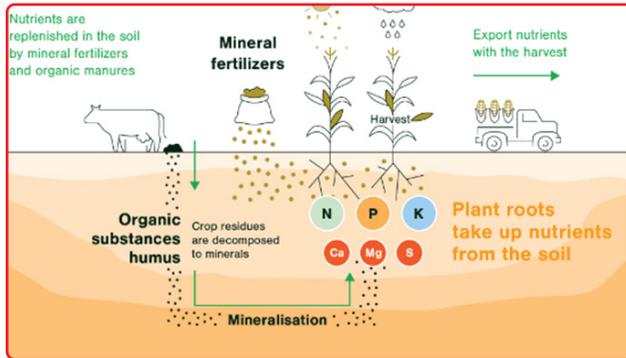
ADDRESSING PLANT NUTRIENT IMBALANCE: THE IMPERATIVE OF BALANCED FERTILISATION

Why in News?

- ⇒ Post the Lok Sabha polls, the government is poised to prioritize capping the consumption of urea and DAP to rectify worsening plant nutrient imbalances.

Need for Balanced Fertilisation:

- ⇒ Overutilization: India has witnessed a surge in fertilizer use, particularly urea, with consumption increasing by 16.9% from 2013-14 to 2024.



- ⇒ Imbalance in Usage: The ratio of NPK (Nitrogen, Phosphorus, Potassium) usage has become skewed, with excessive nitrogen (N) use, leading to reduced efficiency and environmental concerns.
- ⇒ Challenges with Nutrient Based Subsidy (NBS): While NBS aimed at promoting balanced fertilization, it inadvertently led to imbalances due to urea's exclusion and recent price controls on non-urea fertilizers.

Initiatives and Concerns:

- ⇒ Success of Neem-Coated Urea: Neem-coated urea improved nitrogen use efficiency; however, urea consumption persists despite regulations.
- ⇒ Import Dependency and Price Volatility: India's reliance on imports exposes it to price fluctuations, impacting foreign exchange and subsidy burden.
- ⇒ Opportunity Amidst Price Drops: Cooling international prices offer a window for the government to rationalize prices and adjust subsidy rates.

Nutrient Based Subsidy Scheme:

- ⇒ **Aim:** Introduced in 2010 to promote balanced fertilization and agricultural productivity.
- ⇒ **Coverage:** Provides subsidies for non-urea-based fertilizers based on their nutrient content, administered by the Department of Fertilizer.
- ⇒ **Objectives:** Encourage balanced fertilizer use, reduce subsidy burden, improve availability, and foster competition among fertilizer companies.

Future Directions:

- ⇒ **Establishing Price Hierarchy:** Adjusting prices to reflect nutrient content can incentivize balanced fertilization, promoting optimal usage.
- ⇒ **Promoting Complex Fertilizers:** Encouraging the use of complex fertilizers tailored for diverse crops and soils can enhance nutrient profiles.
- ⇒ **Innovative Fertilizers:** Exploring options like sulphur-coated urea for gradual nutrient release can optimize uptake and minimize environmental impact.
- ⇒ **Encouraging Sustainable Practices:** Promoting sustainable fertilization practices can enhance crop yields, mitigate environmental risks, and bolster agricultural resilience.

Conclusion:

- ⇒ Balanced fertilization is pivotal for sustainable agricultural growth.
- ⇒ As the government deliberates on policy interventions post-elections, prioritizing balanced fertilization can foster efficient resource utilization, enhance agricultural productivity, and promote environmental sustainability in the long run.

CARBON FARMING: A PATH TO SUSTAINABLE AGRICULTURE IN INDIA



Introduction:

- ⇒ Carbon, essential to life on Earth, plays a vital role in processes like photosynthesis and respiration.
- ⇒ Conversely, farming involves cultivating land and raising crops or livestock.
- ⇒ Carbon farming combines these concepts, employing regenerative practices to restore ecosystems, enhance productivity, and mitigate climate change by storing carbon and reducing emissions.

How Can Carbon Farming Help?

1. **Diverse Practices:** Carbon farming encompasses rotational grazing, agroforestry, conservation agriculture, integrated nutrient management, agro-ecology, livestock management, and land restoration.
2. **Agroforestry:** Practices like silvopasture and alley cropping diversify farm income and sequester carbon in trees and shrubs.
3. **Conservation Agriculture:** Techniques like zero tillage, crop rotation, cover cropping, and residue management enhance soil health and organic content.
4. **Integrated Nutrient Management:** Organic fertilizers and compost reduce emissions while promoting soil fertility.
5. **Agro-ecology:** Crop diversification and intercropping enhance ecosystem resilience.
6. **Livestock Management:** Rotational grazing and waste management reduce methane emissions and increase carbon storage in pasture lands.

Challenges to Carbon Farming:

1. **Geographical Variation:** Effectiveness depends on factors like soil type, water availability, and biodiversity.

2. **Water Scarcity:** Limited water availability hinders plant growth and restricts carbon sequestration.
3. **Species Selection:** Plant selection is crucial, with fast-growing trees and deep-rooted grasses being more effective.
4. **Financial Barriers:** Farmers may lack resources to invest in sustainable practices, particularly in developing countries like India.

Carbon Farming Schemes Worldwide:

1. **Initiatives:** Carbon trading programs incentivize mitigation activities globally, from no-till farming to reforestation.
2. **Examples:** Chicago Climate Exchange, Carbon Farming Initiative in Australia, and Kenya's Agricultural Carbon Project highlight global efforts.
3. **'4 per 1000' Initiative:** Launched during COP21, emphasizes the role of soil in mitigating greenhouse gas emissions.

Opportunities in India:

1. **Adaptation Strategies:** Climate-resilient practices can benefit agriculture, particularly in regions like the Indo-Gangetic plains and Deccan Plateau.
2. **Grassroots Initiatives:** Organic farming demonstrates potential to sequester carbon and generate economic benefits.
3. **Carbon Credit Systems:** Incentivize farmers and bridge the gap between emissions reductions and climate stabilization.

Conclusion:

- Promoting carbon farming in India aligns with climate mitigation efforts while enhancing soil health, biodiversity, and economic opportunities.
- Addressing challenges and fostering awareness and policy support are crucial to realizing its full potential in combating climate change.

CENTRE FINALLY GREENLIGHTS KARNATAKA CLIMATE ACTION PLAN AFTER 3-YEAR WAIT; BUT IMPLEMENTATION IS KEY



Context

- Amidst mounting climate challenges, Karnataka's long-awaited climate action plan receives central approval, signaling a pivotal step in addressing the state's climate vulnerabilities.

- However, the true test lies in the effective execution of the Karnataka State Action Plan for Climate Change (KSAPCC), necessitating concerted efforts and robust implementation strategies.

Key Components of the Climate Action Plan

- The KSAPCC, meticulously crafted by the Environment Management and Policy Research Institute (EMPRI) in 2021, outlines a comprehensive roadmap encompassing diverse sectors.
- With an estimated budget of Rs 52,827 crore spanning from 2025 to 2030, the plan delineates measures across agriculture, horticulture, forestry, rural development, and more.
- Notably, emphasis is placed on initiatives such as afforestation and renewable energy adoption to bolster climate resilience.

Urgency of Implementation

- The plan advocates for a multi-sectoral approach and underscores the urgency of swift implementation.
- The state renewable energy department stands ready to initiate action post the lifting of the Model Code of Conduct (MCC) following the electoral outcomes on June 4, 2024.
- Prompt execution is deemed critical to address pressing climate concerns and safeguard the state's environmental integrity.

Karnataka's Proactive Stance

- Karnataka's proactive stance in formulating the climate action plan positions it as a frontrunner in climate resilience efforts.
- As one of the first states to receive approval from the Union Ministry of Environment, Forests, and Climate Change (MOEF&CC), Karnataka demonstrates a steadfast commitment to combatting climate change challenges.

Navigating Climate Extremes

- The state grapples with a stark dichotomy of climate extremes, experiencing floods in southern districts juxtaposed with droughts in northern and eastern regions.
- Effective implementation of the climate action plan necessitates a holistic approach, encompassing water conservation, afforestation, sustainable agricultural practices, and urban planning reforms to address these challenges.

Collaborative Efforts and Stakeholder Engagement

- Effective climate action requires collaboration among key stakeholders, including government bodies, experts, and corporations. Financial institutions advocate for leveraging Corporate Social Responsibility (CSR) funds to bolster climate resilience initiatives.
- Collaboration between central and state authorities remains imperative to expedite climate resilience measures.

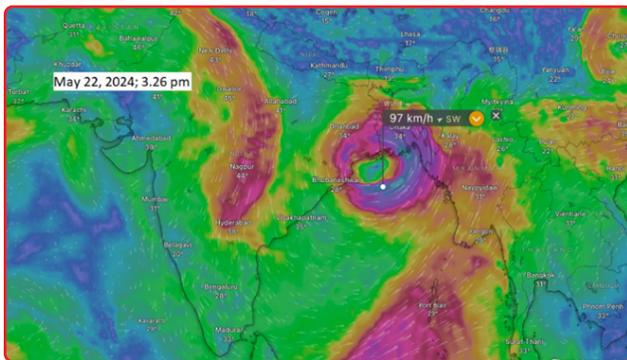
Overcoming Political Hurdles

- The delay in plan approval amidst political tensions underscores the urgency of addressing climate change as a global imperative transcending political boundaries.
- While the state government emphasizes prompt action, fostering intergovernmental cooperation is essential to expedite climate resilience measures and ensure sustainable development.

Conclusion

- As Karnataka embarks on its climate action journey, prioritizing effective implementation and fostering collaboration are paramount to mitigate climate risks and foster environmental sustainability.

CYCLONE REMAL IN MAKING



Context

- A low-pressure area formed over southwest and adjoining west central Bay of Bengal in the early morning hours of May 22, 2024, according to the latest update from India Meteorological Department (IMD).
- The weather agency said the storm system is likely to move northeast and intensify into a depression by the morning of May 24.
- After that, the depression may continue moving in the same direction, intensify further and reach the northeast and adjoining northwest Bay of Bengal by the evening of May 25, according to IMD.

About cyclone Remal

- IMD has not yet mentioned anything about the system strengthening into the season's first cyclone, which would be named Remal.
- The Joint Typhoon Warning Centre (JTWC) of the United States Navy also issued an alert for a depression in the Bay of Bengal.
- The JTWC highlighted favourable environmental conditions for the system's intensification, such as warm sea-surface temperatures of 28-29 degrees Celsius and low vertical wind shear, and stated all global weather models agree with this assessment.
- Warm sea-surface temperatures provide the necessary heat and moisture for the storm system to grow and low vertical wind shear, which are

upwardly mobile winds in the vicinity of a cyclone, would not disrupt the top structure of the cyclone leading to its dissipation.

Formation of Remal

- The weather analysis and visualisation platform Windy.com also currently shows the formation of a low-pressure area just off the coast of Tamil Nadu.
- The platform's forecast, based on data from the US Global Forecasting System (GFS), showed the formation of cyclone Remal on May 26 morning in the northwest Bay of Bengal.
- It further indicated that the cyclone may move close to the coasts of West Bengal and Bangladesh.

Warning

- The weather tracking and analysis website The Weather Channel (TWC) also put out an alert regarding cyclone Remal.
- "There's a consensus that a cyclonic storm is more likely than a more intense system. The Weather Channel's meteorological team suggests the possibility of a cyclone forming, but the chances of it intensifying into a severe or very severe cyclonic storm are slim," TWC wrote on its website.

Way Forward

- Regarding the potential impacts of the cyclone, the IMD stated there would be light to moderate rainfall in many places, with isolated heavy rainfall over North and South 24 Parganas and Purba Medinipur districts of West Bengal and Balasore district of Odisha on May 25 and 26.
- IMD has made a similar prediction for Mizoram, Tripura and south Manipur for the same dates. TWC forecasts 200 millimetres or higher rainfall totals for Assam, Meghalaya, Manipur, Mizoram and Tripura from May 26-28.

Conclusion

- In recent years, forecasting cyclones has been challenging due to increasing unpredictability in sea-surface temperatures, especially below the surface and the behaviour of winds around the cyclone.

DAYS AFTER CYCLONE REMAL



Introduction

- Cyclone Remal prompts us to consider nature's unpredictability.

- ⇒ Part of the rise in global temperatures is due to modern lifestyle flaws, negatively impacting the climate.
- ⇒ This leads to rising sea levels and resulting floods. Scientists warn that if these trends persist, cities such as London, New York, Chennai, and Bangkok could be submerged.

Natural Disasters and Their Impacts

Floods in Mississippi and Hurricane Katrina

- ⇒ Recurring Floods and Hurricanes:
 - The Mississippi River areas frequently experience severe hurricanes and subsequent flooding.
 - Notable incident: Hurricane Katrina in 2005, which caused 85% of New Orleans to be submerged.
- ⇒ Historical Flood Management (1927):
 - In 1927, the Mississippi River's overflow threatened to devastate New Orleans.
 - A critical decision was made to use dynamite to create a new drainage path for the river, diverting it into the sea.
 - This decision faced strong opposition due to fears of property destruction but was ultimately implemented, saving the town.

Inadequate Infrastructure and Response in the US

- ⇒ Persistent Flood Challenges:
 - Despite significant resources and technological advancements, the US struggles to establish effective flood management infrastructure.
 - The repeated flood damage remains a source of ongoing sorrow and concern.

Japan's Earthquake Challenges and Technological Responses

- ⇒ **Frequent Earthquakes:**
 - Japan, a highly advanced nation, frequently faces severe earthquakes, accounting for 20% of global quakes of magnitude 6 and above.
 - Historical example: The 1923 earthquake devastated Tokyo and Yokohama, destroying over 300,000 houses and killing more than 140,000 people.
- ⇒ **Technological Advancements Post-1923:**
 - Japan has since developed sophisticated mechanisms to mitigate earthquake damage.
 - Innovations include quake-resistant structures like the Imperial Hotel, designed by Frank Lloyd Wright, which withstood the 1923 quake.
 - Modern advancements: Tokyo now has quake-resistant reservoirs providing 10 days of drinking water and comparable food storehouses.

Global Examples of Natural Disasters

Mexico Earthquake (1985):

- ⇒ A severe earthquake in 1985 impacted Mexico, with tremors felt as far away as Houston, USA (1,200 km).

- ⇒ Rescue operations highlighted the effectiveness of trained dogs in locating survivors trapped in debris.

Limitations of Disaster Prediction

- ⇒ **Unpredictability of Natural Disasters:**
 - Despite advancements, predicting natural disasters remains challenging.
 - Example: The US Parkfield Prediction Experiment, despite using sophisticated technology, illustrates the limitations in accurately forecasting earthquakes.

Conclusion

- ⇒ In China, Pakistan, India and in several other places, we have faced earthquakes and other natural disasters in which lakhs of people perished and vast areas were laid to waste.
- ⇒ But we should remember that what we have heard so far was not the roar of the earth but its murmur.

DOOMSDAY GLACIER: THWAITES GLACIER'S ALARMING MELTING RATE



Context

- ⇒ Scientists have long monitored the Thwaites Glacier in Antarctica, aptly nicknamed the "Doomsday Glacier" due to its rapid melting and consequential global sea level rise.
- ⇒ Recent findings reveal an acceleration in its ice loss rate, primarily attributed to warming ocean currents eroding the glacier from below.

Understanding the Acceleration

- ⇒ The disintegration of Thwaites Glacier's ice shelf, its dynamic portion extending over water, has escalated notably.
- ⇒ Researchers interpret this breakdown as indicative of fundamental alterations in the glacier's structural integrity and stability.

Implications for Global Sea Levels

- ⇒ Should Thwaites Glacier's ice continue to melt unchecked, it could potentially contribute to a sea level rise of approximately three meters (ten feet) upon complete dissolution.
- ⇒ This catastrophic scenario could unfold within decades if current melting trends persist, triggering widespread coastal inundation worldwide.

Broader Impact on Antarctic Ice Sheet

- The destabilization of Thwaites Glacier carries ramifications beyond its immediate vicinity, potentially exacerbating the overall instability of the Antarctic ice sheet.
- A cascading effect may ensue, wherein the destabilization of one ice body catalyzes the accelerated melting of adjacent ice masses, compounding sea level rise concerns.

Insights into Thwaites Glacier

- Situated in West Antarctica and spanning an area comparable to the size of Florida, Thwaites Glacier presently contributes approximately 4% to global sea level rise.
- Its geographical configuration, featuring a downward-sloping terrain inland, facilitates the infiltration of warm water, hastening its melt rate.
- The glacier's diminishing ice shelf, which regulates the flow of rapidly moving ice, underscores the urgency of the situation. Recent exploration conducted by Icefin, an underwater robot, has unveiled the mechanisms driving Thwaites' melting, including the retreat of its grounding line, where grounded ice transitions to floating ice.

Context on Sea-Level Rise

- The current annual sea level rise of 3.6 mm marks a significant escalation from the 20th-century average of 1.4 mm, predominantly attributable to anthropogenic climate change.
- Melting glaciers, along with the thermal expansion of warming ocean waters, are principal contributors to this phenomenon.
- Vulnerable coastal regions like Miami and Bangkok face compounded risks due to subsiding land, exacerbating the impacts of rising sea levels.
- Moreover, the melting Arctic exerts a profound influence on global circulation patterns, potentially disrupting weather systems worldwide.
- Projections suggest that if prevailing warming trends persist, Antarctic water levels could surge by as much as three meters by the year 2300, accentuating the imperative for urgent climate action.

G7 COMMITS TO NET ZERO EMISSIONS BY 2050



Introduction:

- The leaders of the G7 nations have fulfilled their pledge to achieve net-zero emissions by the year 2050, marking a significant milestone in global efforts to combat climate change.
- This commitment underscores the growing consensus among world leaders on the urgent need to transition to a sustainable, low-carbon future.

The Evolution of the Net Zero Concept:

- The concept of net zero emissions has evolved over several decades, beginning with discussions on stabilizing greenhouse gas concentrations during the UN's climate change strategy in 1992.
- Agreements like the Kyoto Protocol in the late 1990s paved the way for carbon markets, while advancements in understanding carbon budgets led to a shift from emissions reduction targets to broader temperature goals.

Shift from Emissions Reduction to Temperature Targets:

- Over time, the focus shifted from specific emissions reduction goals to broader temperature targets, such as the European Union's 2°C warming limit in 1996.
- The Paris Agreement of 2015 was a significant milestone, setting temperature goals of 1.5°C and 2°C and introducing net zero as a crucial goal to balance emissions with reductions in the latter half of the century.

Net Zero in the Paris Agreement:

- The inclusion of net zero emissions in the Paris Agreement highlighted the importance of balancing human-made emissions with reductions to mitigate the risks of extreme climate change.
- The IPCC's Special Report on 1.5°C reinforced the urgency of transitioning to net zero emissions by 2050 to limit the impacts of global warming.

More About Net Zero Emissions:

- Achieving net zero emissions requires a comprehensive strategy, including the drastic reduction of fossil fuel use, the expansion of renewable energy sources, and the development of carbon capture and storage technologies.
- Examples of global commitments include Sweden's ambitious target to achieve net zero emissions by 2045 and the commitment of the global shipping industry to achieve net zero emissions by 2050.

Conclusion:

- The commitment of the G7 nations to achieve net zero emissions by 2050 reflects a collective recognition of the urgent need to address climate change.
- By embracing the goal of net zero emissions, countries are taking proactive steps to mitigate the impacts of global warming and transition towards a sustainable, resilient future for generations to come.

KANWAR LAKE, BIHAR'S ONLY RAMSAR SITE, FACES CHALLENGE OF SURVIVAL BUT NOT A POLL ISSUE



Introduction

- ⊖ The appalling condition of Bihar's Kanwar Lake, locally known as 'Kabartal', was not an issue in ongoing Lok Sabha elections.
- ⊖ The lake, located in Begusarai district that went to polls on May 13, 2024, is the first and only wetland in the state of international importance under the Ramsar Convention.
- ⊖ But the dying Kabartal found no mention in the election agenda – no political party expressed its intention to save Asia's largest freshwater oxbow lake from further damage.

Present Condition of Kanwar Lake

- ⊖ The condition of the Kanwar Lake has been deteriorating and the drying area has been increasing.
- ⊖ More and more the lake has been encroached upon for agricultural purposes and the waterbody's bird population has been on the decline.
- ⊖ Considering this, there is a need to take urgent measures to save it.

Impact on Environment & Birds

- ⊖ Environment and bird experts have sounded an alarm over the state of the lake.
- ⊖ Kanwar Lake, a Ramsar site, is slowly drying and dying.
- ⊖ This is a big threat for birds, both migratory and local.
- ⊖ The birds have been facing habitat destruction, habitat encroachment and massive hunting.
- ⊖ Till three or four decades ago, Kanwar Lake was spread over 6,000-7,000 hectares and became the largest hub of migratory birds.
- ⊖ But over the years, the lake size reduced, the amount of water also declined and some areas dried up.
- ⊖ In 1986, the state government notified it as a protected area. Later, the central government declared it as a sanctuary to stop the poaching of birds.

Effects of non-availability of water on Environment

- ⊖ A wetland like Kanwar without water in its major parts is a matter of serious concern. Kanwar needs a

lot of water urgently because most of the issues will be solved if water availability is made possible.

- ⊖ During the dry summer, hardly 1,000 birds, including migratory species, have been spotted in Kanwar due to water shortage. Any other wetland has more birds than Kanwar now because of water shortage.
- ⊖ In summer, water level over large areas shrink but the lake is full in monsoon.
- ⊖ There is no question of its death as long as rainfall continues during monsoon. Even in the hot days of May, water is available in over 1,000 acres of the lake.

Kanwar as a Ramsar site

- ⊖ In the nearly four years since Kanwar was declared a Ramsar site, no effort was made to save it.
- ⊖ In the last two decades, it deteriorated fast.
- ⊖ Different agencies of the state and the central government should work to improve the ecological condition of the lake.
- ⊖ Hunting of birds is rampant despite the fact that the number of migratory birds has drastically fallen".

Effect on Livelihood

- ⊖ According to a district forest official, the drying of the Kanwar Lake has adversely affected the livelihood of thousands of fisherfolk who live near it and forced many to migrate outside in search of other jobs.
- ⊖ This lake was used to be the source of income for the fisher community.
- ⊖ But after the lake started drying and forcibly encroached upon by some powerful farmers, the tension between fisherfolk and farmers became palpable.
- ⊖ Fishers claim right over fishing in the lake and farmers claim right of farming.

Conclusion

- ⊖ Kanwar Lake is a unique wetland and deserves government attention to save it as the lake is facing some challenge for years.
- ⊖ Increasing silt accumulation, deforestation and dispute over farmland in the lake must be resolved.
- ⊖ As natural sources of water around the lake vanished over the years and the water channel from Burhi Gandak River to the lake has been totally disrupted, the lake is left with overdependence on the monsoon rainfall.

THE BURNING HILLS OF UTTARAKHAND: A CRISIS UNFOLDING

Context:

- ⊖ Recent forest fires in Uttarakhand have claimed lives, with the forest department attributing the blazes to out-migration, high-tension wires, and the abundance of inflammable chir pine trees.
- ⊖ While the state government has declared these fires as manmade, the toll is being paid by those whose lives depend on the mountains.



Contributing Factors:

- Migration has left the hills barren, exacerbating the fire risk.
- Lack of environmental education in the academic curriculum hinders youth from tackling forest fires, while older generations struggle to physically control them.
- The Ujjawala scheme, providing cooking gas, has reduced villagers' reliance on wood from forests, contributing to the accumulation of dry fuel.
- Reduced snowfall and dry spells have parched the land, creating ideal conditions for fires.
- Villagers burning stubble and leaving burning cigarettes in the forest exacerbate the situation.

Government Response:

- The government has deployed disaster response forces and employed aerial firefighting techniques.
- Collaborations with institutions like IIT Roorkee are exploring innovative solutions like cloud seeding.
- Financial resources and efforts are being directed towards firefighting and prevention.

Sustainable Solutions:

- Initiatives like generating electricity from pine needles and schemes incentivizing pine leaf collection aim to address the root causes.
- Community participation and the adoption of Assisted Natural Regeneration techniques can mitigate future fires.
- Addressing the snowball effect of fires, which weaken mountains and soil, is crucial to preventing disasters like flash floods and landslides.

The Path Ahead:

- Environmentalists emphasize the need to empower local communities for effective fire control and prevention.
- The burning hills of Uttarakhand serve as a stark reminder of the urgent need for sustainable forest management and community involvement to preserve these invaluable ecosystems and protect lives.

THIS CENTURY, HEATWAVES ARE MOVING SLOWER AND LASTING LONGER

Introduction:

- In recent years, the frequency and intensity of heatwaves have become increasingly apparent, posing significant challenges to human health, agriculture, and ecosystems.
- However, a recent study published in Science Advances has shed new light on the evolving nature of heatwaves, revealing that they are not only becoming more frequent and intense but also moving slower and lasting longer.
- This phenomenon, observed globally, underscores the complex dynamics of climate change and its profound impacts on extreme weather events.

Temperature and Circulation:

- Heatwaves, characterized by prolonged periods of excessively high temperatures, have dire consequences, including increased risks of wildfires, crop failures, and heat-related illnesses.
- The study, spanning from 1979 to 2020, analyzed temperature data from around the world, uncovering a disturbing trend: heatwaves are decelerating in their movement and extending in duration.
- On average, heatwaves have slowed by nearly 8 km/day each decade and lengthened by approximately four days.
- These changes are particularly pronounced in regions like North America and Eurasia, highlighting the global nature of the phenomenon.

The Heat Moves:

- Unlike previous studies that primarily focused on the frequency and intensity of heatwaves, this research delved into their movement over space and time.
- By classifying contiguous heatwaves based on their size and duration, scientists tracked the propagation of large masses of hot air across the globe.
- This approach provided valuable insights into the behavior of heatwaves beyond their mere occurrence, revealing patterns of movement that contribute to their prolonged impact on affected regions.

The Guiding Hand Falts:

- An examination of upper atmospheric circulation patterns uncovered a significant factor contributing to the sluggish movement of heatwaves: the weakening of the jet stream.

- The jet stream, a fast-flowing air current high up in the troposphere, plays a crucial role in guiding atmospheric waves that influence surface temperatures.
- As the jet stream weakens, these atmospheric waves slow down, leading to more persistent weather patterns and prolonged heatwaves.
- While natural climate variability and events also influence heatwave dynamics, human activities and greenhouse gas emissions have emerged as dominant factors in altering atmospheric circulation patterns, exacerbating the trend of slower-moving and longer-lasting heatwaves.

Way Forward:

- To mitigate the impacts of changing heatwaves, especially in densely populated urban areas, proactive measures such as planting more trees and enhancing green infrastructure are crucial.
- These strategies can help mitigate the effects of extreme heat and contribute to climate resilience.
- Additionally, this study serves as another stark reminder of the far-reaching consequences of climate change on daily life, health, and the environment.
- Urgent action is needed to address the root causes of climate change and adapt to its impacts, ensuring a sustainable future for generations to come.

Conclusion

- In conclusion, the evolving nature of heatwaves underscores the urgency of addressing climate change and implementing adaptive measures to mitigate their impacts.
- Through collaborative efforts and informed decision-making, societies can build resilience and confront the challenges posed by increasingly extreme weather events.

ETHICS

A HEALING TOUCH



Introduction:

- A year after it was jolted by ethnic violence, Manipur continues to be on the edge.
- The state has not seen large-scale violence in the last eight months.

- However, lives continue to be lost in clashes between Meiteis and Kuki-Zomis, falsifying the return of normalcy in Manipur.

The after-effects of Manipur violence

- The scars created by the conflict are admittedly deep – more than 200 people have lost their lives, families languish in refugee camps and there have been reports of gruesome violence against women.
- Vigilante groups continue to take the law into their hands.
- But great harm has also been done by the state government's lack of will to initiate a meaningful dialogue between the warring communities.

Recent violence during Lok Sabha polling

- An incident took place two days after the conclusion of round two of the Lok Sabha polls.
- One person lost his life and two others were injured after residents of two adjoining villages waged a gun battle in the early hours of Sunday.
- A day earlier, two CRPF personnel were killed and two others sustained injuries following a blast at the paramilitary force's outpost in Bishnupur district – one of the most brazen attacks on security forces in the past year.
- Violence against security forces has, in fact, been one of the recurring features of the conflict, highlighting that force alone cannot quell a situation that requires sensitivity and compassion in equal measure.

Efforts by the government to start a dialogue among communities

- After the first conflagration on May 3 last year, Union Home Minister Amit Shah announced the formation of a committee with representatives from different ethnicities, political parties and civil society, to begin the process of healing.
- That the committee ran into internal differences soon after does have much to do with the complexities of Manipur's society.
- The situation is also made more fraught by landholding patterns and the continuing impact of colonial policies that segregated the state's tribal-dominated hill areas from the Meitei-dominant Imphal Valley.
- But in the past year, CM Biren Singh's government has done very little to assure communities, especially the hill tribes, that his administration is above the identity politics that has pushed the state to the brink.
- His regime has, instead, stoked tensions and aggravated faultlines with its incessant evocation of the insider-outsider trope.

The lacunas in the Manipur State government's efforts to normalize the situation

- The Manipur government has done well to crack down on drug smugglers.

- But it continues to gloss over political and administrative failures by blaming the problem on illegal migrants from Myanmar with whom the Kuki-Zomis share a common ethnicity.
- In all this, measures to improve livelihoods in a state that has the third lowest per capita income in the country – it ranked the highest in the northeastern region in the 1990s – have taken a backseat.
- The healing touch Manipur requires must necessarily be a combination of economic, political and administrative measures.
- The Biren Singh government would be failing its mandate if it did not recognise this imperative, even after a year of strife in the state.

Conclusion:

- One year after Manipur violence, the state needs a combination of economic, political, and administrative remedies.
- A healing touch from the state to heal the scare of the ethnic violence and animosities among communities.

A NEW MORAL COMPASS



Introduction

- For someone who had never travelled out of his East Prussian home of Königsberg, (renamed Kaliningrad after it was ceded to the erstwhile Soviet Union in 1945), the legacy of Immanuel Kant (1724-1804) still inspires many on the occasion of his 300th birth anniversary this year.

Kant: A Legacy for a Globalized World

- Immanuel Kant, a philosopher long gone, is experiencing renewed relevance in today's globalized world.
- Both Russia and Germany claim his intellectual heritage.
- His ideas, particularly from "Critique of Pure Reason" (1781) and "Perpetual Peace," are being re-evaluated as the international order faces challenges.
- Kant opposed imperialism, colonialism, and slavery.
- He envisioned a world with open trade, free movement of people (including refugees), and a concept of "world citizenship."

- Kant believed in reason, rationality, and morality as guides for international relations.

Kant's Enduring Relevance and the Decolonization Struggle

- Kant's emphasis on reason and ethical principles remains important.
- Colonialism may seem like history, but 17 territories still await self-determination.
- The UN Charter recognizes the right to self-government for these territories.
- Many territories achieved self-governance, independence, or new affiliations.
- Former colonial powers, often proponents of democracy, resist granting full freedom to the remaining 17 territories.

Kant's "Perpetual Peace" in Our World: Unforeseen Challenges

- **Multilateral Institutions:** The UN's structure with permanent members holding veto power might surprise Kant.
- **New Actors:** Global terrorist organizations, corporations, NGOs, and powerful individuals like Musk and Zuckerberg operate across borders in ways Kant wouldn't have imagined.
- **Existential Threats:** Weapons of mass destruction and the rise of AI weaponry present a new level of threat to peace.
- **Information Warfare:** The spread of misinformation and hate speech online would be a new challenge for Kant's vision of objective reason and morality.
- **Persistent Prejudices:** Racism, religious bigotry, and other forms of superiority thinking would still be present, hindering peace.

Why Kant's Ideas Matter in Today's World

- **Blurred Reality:** The distinction between reality and fiction is fading due to competing narratives and geopolitical manipulation. Today, reality is a creation of geopolitics and geo-economics.
- **Double Standards:** Judgments about democracy are inconsistent, as seen in the contrasting responses to protests in the US (crackdown on students' protest in perfect democracy) and India (Democracy is backsliding).
- **Shifting Identity:** Digitalization and globalization challenge traditional notions of national identity and authority.
- **Reason vs. Rationale:** Reason can be corrupted by biases like nationalism and religion, leading to self-serving justifications (rationale) instead of moral action.
- **Ethics vs. Rationale:** Ethics are fundamental, universal moral principles, while rationale prioritizes self-interest over morality.

⇒ **Dysfunctional Global Order:** The UN, intended to be an ethical framework, is hampered by self-serving power politics.

India's Rediscovered Strategic Culture

- ⇒ India is drawing on its historical strategic thinking for contemporary relevance.
- ⇒ Indian epics and texts like Arthashastra and Tirukkural emphasize ethics in statecraft and warfare, predating Kant.
- ⇒ India's cultural heritage promotes a global perspective focused on human well-being.
- ⇒ India's G20 presidency emphasized global unity ("One Earth, One Family, One Future") echoing the ancient ideal of Vasudhaiva Kutumbakam (world as one family).

Conclusion

⇒ Now is an important juncture in international affairs to amalgamate Kant's ideas with the teachings of our ancients, to provide a new moral compass for a better world.

CRIME IN PUNE: NAVIGATING TRAGEDY AND JUSTICE



Introduction:

⇒ The recent tragedy in Kalyani Nagar, Pune, where two lives were lost due to a car accident allegedly caused by a 17-year-old driver, has sparked a wave of outrage and calls for justice.

Balancing Justice:

- ⇒ While due process of law must be followed, it's imperative to avoid succumbing to mob justice.
- ⇒ The accused must be held accountable through legal channels without undue influence or bias.

Questions of Privilege and Justice Delayed:

- ⇒ Concerns have been raised regarding the privileged background of the suspect and potential delays and influences in the investigation process.
- ⇒ These issues must be addressed to ensure fairness and impartiality.

Administrative Response:

⇒ The administration's actions, including booking the father for negligence and sealing establishments

responsible for serving alcohol to the minor, are steps towards accountability.

A Path Forward:

- ⇒ Addressing the broader issue of underage drinking and driving requires a comprehensive approach.
- ⇒ Engaging stakeholders such as bar owners, young people, and parents in an open dialogue is essential to finding effective solutions.

Conclusion:

- ⇒ As Pune grapples with the aftermath of the tragic incident, it's crucial to not only seek justice for the victims but also to implement measures to prevent such incidents in the future.
- ⇒ This calls for greater accountability, transparency, and collaboration among all stakeholders involved.

HEALTH

FLIRT: NEW COVID-19 VARIANTS IN THE US



Introduction

- ⇒ Recent reports highlight a growing concern regarding the emergence and spread of new COVID-19 variants within the Omicron JN.1 lineage, collectively referred to as FLiRT, in the United States.
- ⇒ This development has prompted heightened attention and efforts to understand and mitigate the impact of these variants.

Variant Spread and Characteristics

- ⇒ FLiRT variants, particularly KP2 and KP 1.1, are exhibiting a concerning trend of rapid transmission across various regions in the US. Notably, the KP2 variant has overtaken the original JN.1 variant in terms of prevalence.
- ⇒ Despite similarities in symptoms with other Omicron infections and relatively low rates of hospitalization reported thus far, these variants possess distinct mutations that appear to enhance their contagiousness.
- ⇒ The increased transmissibility of FLiRT variants underscores the importance of vigilant monitoring and proactive measures to curb their spread.

Understanding Omicron JN.1 Lineage

- The Omicron JN.1 lineage represents a subset of the broader Omicron variant (B.1.1.529) of the SARS-CoV-2 virus.
- Identified by researchers in China, this lineage, denoted by the label 'JN.1', is characterized by a unique set of genetic mutations that differentiate it from the primary Omicron lineage.
- However, critical aspects such as the severity of illness, transmissibility, and potential resistance to existing vaccines associated with these variants remain subjects of ongoing investigation and research.
- The evolving nature of FLiRT variants underscores the need for continued surveillance and scientific inquiry to inform effective public health responses.

Insight from the Infectious Disease Society of America (IDSA)

- The Infectious Disease Society of America (IDSA), a prominent medical association representing healthcare professionals specializing in infectious diseases, offers valuable insights into the FLiRT variants.
- Notably, the IDSA elucidates the derivation of the term "FLiRT" from the scientific names of the mutations characterizing these variants.
- Furthermore, the organization underscores the significance of evidence-based approaches in formulating public health policies, conducting research, and developing guidelines to address infectious diseases such as COVID-19. By advocating for rigorous scientific inquiry and leveraging expertise in infectious diseases, the IDSA plays a pivotal role in shaping strategies to mitigate the impact of emerging variants and safeguard public health.

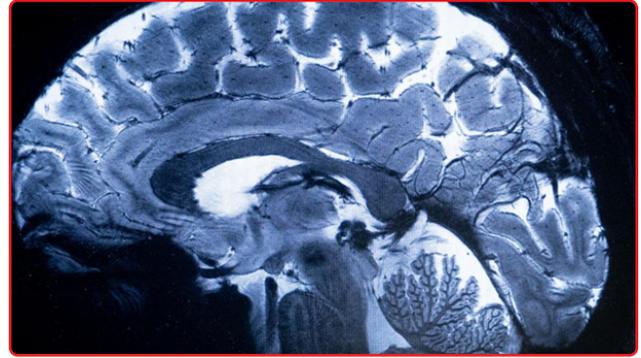
About the IDSA

- Established in 1963, the IDSA serves as a leading authority in the field of infectious diseases, providing a platform for research, education, and advocacy.
- Headquartered in Virginia, USA, the organization fosters collaboration among healthcare professionals, researchers, and policymakers to address the global challenges posed by infectious diseases.
- Through its efforts to promote antimicrobial stewardship, advance scientific knowledge, and ensure access to specialized care, the IDSA remains at the forefront of efforts to combat infectious diseases and protect public health worldwide.

UNDERSTANDING IMPLICIT BIASES

Context

- In a study published in May last year, psychologists explored how people subconsciously evaluate different racial groups using a psychological test called an implicit association test (IAT).



- Scientists found stark differences between participants' explicit statements and their implicit beliefs.
- While everyone said they believed in the equality of all races, they also harbored implicit biases in favor of socially advantaged groups.
- This bias was also universal, irrespective of the racial identity of the participants.
- The IAT is built on the premise that if two things – words, concepts, events, etc. – have co-occurred in our experience over and over again, we put those two things together very quickly.
- The test includes a series of quick-fire rounds to sort words related to concepts (e.g., "thin", "fat", "white", "black", etc.) and assessments ("good" or "bad") into categories.
- A participant's score is based on the time taken to sort words when concepts and assessments are combined.

The History and Neuroscience of Bias

- That all humans are equal is a scientific fact established by modern genetics.
- However, the history of humankind is replete with people from one cultural or social group treating those from others as if they are less than human – a phenomenon called pseudo-speciation.
- The basis of this deep-seated tendency in people continues to be the focus of intense research efforts in psychology and neuroscience.
- Many recent studies have found that our brains process information about in-groups (i.e. "us") and out-groups ("them") differently.
- Assessing the participant responses with IAT, the researchers found that directing participants' attention to different facets of their in-group identity was sufficient to change their intergroup bias.
- That is, the participants' preferences changed depending on whether their brains used age or race to classify others.

Neurobiological Insights

- Neuroimaging studies have corroborated such findings from psychology research, and have clarified that information-processing in the brain is

different depending on whether it pertains to “us” or to “them”.

- ⇒ Brain regions that activate in response to the direct experience of pain as well as empathy for the pain of others include parts of the anterior cingulate cortex and insula.
- ⇒ Bias doesn't exist at birth. It is a learned response built on cultural associations together with the brain's biology.
- ⇒ Yet preferential bias towards in-group members doesn't mean an individual will be hostile towards out-group members.
- ⇒ Factors that lead to hostility include the notion of associating an out-group with a threat. Uncertain circumstances – such as those we witnessed during the pandemic – can also heighten mistrust towards the outgroup.

The Role of the Amygdala

- ⇒ Neuroimaging studies that have explored the basis of intergroup threats have highlighted the role of a specific brain region called the amygdala.
- ⇒ An almond-shaped region situated deep in the brain, the amygdala is central to detecting threats and fear-based learning.
- ⇒ Imaging studies have shown the amygdala activates to a greater degree when the source of threat is from an out-group member.
- ⇒ The amygdala being activated by something perceived as a threat is an automatic part of information processing in the brain. But cortical activation implies more of a cognitive effort.

Conclusion: Awareness and Understanding

- ⇒ Whenever you hear social and/or cultural narratives presented as a “fact of life” – that, say, “they are bad people” – and find yourself getting sucked into it, remember that somewhere behind this statement is a misappropriated bit of brain biology.
- ⇒ Being aware of our own biology can make us more informed, especially when faced with narratives that arouse rather than inform.

NAVIGATING THE RARE RISKS OF ASTRAZENECA'S VACCINE: A COMPLEX ETHICAL TERRAIN

Introduction

- ⇒ The aftermath of the Covid-19 pandemic continues to reveal unforeseen challenges, with recent concerns emerging around rare adverse effects linked to the Oxford-AstraZeneca vaccine.
- ⇒ Termed Thrombosis with Thrombocytopenia Syndrome (TTS), this rare side effect has raised significant questions about vaccine safety and accountability.



- ⇒ This article examines the complexities surrounding TTS, its implications, and the diverging views of health agencies, amidst the backdrop of global vaccination efforts.

Understanding Thrombosis with Thrombocytopenia Syndrome (TTS)

- ⇒ TTS, also known as vaccine-induced prothrombotic immune thrombocytopenia (VIPIT), is a rare syndrome associated with adenoviral vector Covid-19 vaccines.
- ⇒ Characterized by thrombosis formation and low platelet count, TTS presents unique challenges due to its rare occurrence and variable severity.

Challenges in Vaccine Trials

- ⇒ The expedited development of Covid-19 vaccines, guided by adaptive and seamless trial designs, posed challenges in detecting rare side effects like TTS.
- ⇒ Traditional clinical trials may not be adequately powered to capture such rare events, highlighting the need for enhanced surveillance and monitoring mechanisms.

Assessing the Threat of TTS

- ⇒ TTS reporting rates vary globally, with heterogeneous fatality rates and susceptibility factors.
- ⇒ The decision to suspend AstraZeneca vaccine usage in several countries underscores the complexity of balancing vaccine benefits with potential risks.
- ⇒ Diverging views among health agencies further complicate risk assessment and management strategies.

Agency Perspectives on Vaccine Safety

- ⇒ Health agencies, including the European Medicines Agency (EMA) and the WHO's Global Advisory Committee on Vaccine Safety (GACVS), have provided contrasting assessments of AstraZeneca vaccine safety.
- ⇒ While acknowledging rare side effects, they emphasize the vaccine's overall benefit in combating Covid-19 and advocate for transparent risk communication.

Conclusion: Ethical Dilemmas and Vaccine Confidence

- As courts grapple with ethical dilemmas surrounding vaccine safety and accountability, trust in vaccine effectiveness and policymakers' motivations remains paramount.
- Balancing the imperative of public health protection with individual rights and safety requires nuanced deliberation and transparent communication.
- Amidst evolving scientific evidence and public perceptions, fostering vaccine confidence becomes imperative for navigating the complexities of global vaccination efforts.

HIGH ALERT ISSUED IN KERALA DUE TO WEST NILE VIRUS OUTBREAK



Why in News?

- Kerala is on high alert following the emergence of the mosquito-borne West Nile Virus (WNV) in the region.
- With twelve confirmed cases and four suspected cases reported in recent weeks, Health Minister Veena George and other officials have intensified surveillance measures and pledged prompt action to contain the spread of the disease and provide necessary treatment to affected individuals.

Transmission of WNV

- West Nile Virus (WNV) is primarily transmitted by the Culex mosquito and its progeny, serving as vectors for the virus.
- Transmission occurs when mosquitoes feed on infected birds and subsequently bite humans, leading to infection.
- Other modes of transmission include blood transfusions, maternal-fetal transmission, and laboratory exposure.
- However, the virus does not spread through direct contact with infected individuals or animals.

First Outbreak in India

- While the first documented case of WNV in India dates back to 1952 in Mumbai, sporadic outbreaks have occurred in southern and central regions since then.
- The virus remains a persistent public health concern, underscored by the complete genome sequence

of WNV identified during a severe encephalitis outbreak in Kerala in 2011.

Symptoms

- Mild Symptoms:** Initial symptoms may include fever, headache, and body aches, with some cases remaining asymptomatic.
- Severe Neurological Complications:** In severe instances, WNV can lead to encephalitis and meningitis, posing significant health risks.
- Incubation Period:** The virus typically manifests symptoms within three to fourteen days following exposure.

Preventive Measures

- Currently, there is no vaccine available for WNV prevention.
- To mitigate the risk of infection, individuals are advised to take precautionary measures such as using insect repellents, wearing protective clothing, and employing mosquito control methods indoors and outdoors.

About West Nile Virus

- West Nile Virus (WNV) is a single-stranded RNA virus belonging to the genus Flavivirus within the Flaviviridae family.
- Primarily transmitted through the bites of infected Culex mosquitoes, WNV was first identified in Uganda in 1937 and has since spread across continents, affecting humans, animals, and birds.
- While humans and animals can contract the virus, birds serve as the primary reservoir hosts for WNV.

ICMR ISSUES WARNING: PACKAGED FOOD LABELS MAY MISLEAD CONSUMERS



Context

- The Indian Council of Medical Research (ICMR), operating through its National Institute of Nutrition (NIN) in Hyderabad, has raised concerns over potentially misleading claims found on packaged food labels.
- In its dietary guidelines released in May 2024, the ICMR highlights the deceptive nature of labels designed to attract consumer attention, cautioning

that they may not accurately represent the healthiness of the products they adorn.

Misleading Claims:

The guidelines pinpoint several examples where food labeling can be deceptive:

- ⇒ **Sugar-Free Products:** Despite being commonly perceived as healthy alternatives, sugar-free products might contain high levels of fats, hidden sugars like maltitol and fructose, and refined cereals. This can lead to a higher caloric intake, contradicting the health-conscious intentions of consumers.
- ⇒ **Packed Fruit Juices:** Labels boasting of containing 'real fruit' or 'fruit juice' can be misleading if the actual fruit content is as low as 10%, with the rest comprising water, sugar, and additives. Consumers may be misled into believing they are consuming a nutritious fruit beverage when, in reality, they are ingesting mostly water and sugar.
- ⇒ **Whole Grain Misrepresentation:** Products labeled as 'made with whole grain' may still undergo heavy processing or contain other refined ingredients, despite the presence of whole grains. This label may not accurately reflect the product's nutritional value or the prominence of whole grains in its composition.
- ⇒ **Organic Labels:** To be labeled as 100% organic, products must be free from artificial preservatives, flavors, colors, pesticides, and chemical fertilizers. The presence of the 'Jaivik Bharat' logo, approved by the Food Safety and Standards Authority of India (FSSAI), is indicative of organic authenticity.

Label Reading and Nutritional Claims:

The guidelines stress the importance of thorough label reading, focusing on:

- ⇒ **Ingredients List:** Consumers are encouraged to scrutinize the ingredients list to verify the actual content against claims made on the packaging.
- ⇒ **Nutrition Information:** Checking serving sizes and nutritional facts such as calories, fats, sugars, and other nutrients based on the serving size mentioned aids in making informed dietary choices.
- ⇒ **Certifications and Logos:** Understanding the significance of certifications and logos, such as the 'Jaivik Bharat' logo, helps consumers discern the authenticity of claims made on the packaging.
- ⇒ **Expiry Dates:** Noting manufacture and use-by dates ensures product freshness and safety, further contributing to informed decision-making.

Consumer Advisory:

- ⇒ Despite stringent regulations by the FSSAI, the risk of misinterpretation remains. Consumers are advised to critically assess food labels to make informed dietary choices.
- ⇒ Awareness of the distinction between 'nutrition facts' and 'nutrition claims' guides healthier

decisions, alongside understanding serving sizes and the actual amount per serving detailed on the label to manage dietary needs accurately.

Notes on ICMR and FSSAI:

- ⇒ The ICMR, established in 1911, is involved in coordinating and promoting biomedical research in India.
- ⇒ The FSSAI, a statutory body established in 2006, is responsible for regulating and supervising food safety in India, aiming to protect and promote public health.
- ⇒ Both organizations play crucial roles in ensuring the safety and well-being of consumers through research, regulation, and advisory measures.

Conclusion

- ⇒ In conclusion, the ICMR's warning underscores the importance of consumer vigilance when navigating the complexities of packaged food labels, ultimately empowering individuals to make informed and health-conscious dietary choices.

THE X FACTOR: UNRAVELING THE ROLE OF THE X CHROMOSOME IN HEALTH AND DISEASE



Introduction:

- ⇒ In mammals, the X chromosome stands as a cornerstone of genetic diversity, particularly notable for its dual significance in sex determination and its intricate involvement in various biological functions and disease susceptibilities.
- ⇒ Recent genomic studies have shed light on the multifaceted roles of the X chromosome, extending beyond sex determination to encompass a myriad of genetic diseases and autoimmune conditions.

The X Chromosome Landscape:

- ⇒ With approximately 800 genes encoding proteins, the human X chromosome harbors a rich genetic repertoire crucial for diverse physiological processes.

- ⇒ The spectrum of diseases influenced by the X chromosome spans X-linked genetic disorders, diseases modulated by X chromosome inactivation (XCI) escape, and conditions associated with X-chromosome aneuploidy.
- ⇒ Notably, over 500 X-linked genetic diseases predominantly afflict males, underscoring the X chromosome's clinical significance.

X Chromosome Inactivation: Balancing Act of Gene Expression:

- ⇒ The process of X chromosome inactivation (XCI), elucidated in 1961, serves as nature's mechanism to maintain gene dosage balance in females.
- ⇒ Epigenetic modifications silence one of the X chromosomes to prevent overexpression of X-linked genes, a process governed by non-protein-coding RNAs like Xist and Tsix.
- ⇒ However, incomplete inactivation or skewed XCI can disrupt gene expression patterns, contributing to various disorders, including autoimmune diseases and certain cancers.

Autoimmune Diseases: Unveiling the XCI-Autoimmunity Nexus:

- ⇒ Mounting evidence implicates aberrant XCI in the pathogenesis of autoimmune diseases, with female predominance observed in conditions like systemic lupus erythematosus and rheumatoid arthritis.
- ⇒ Perturbation of Xist expression in female mice led to reactivation of previously silenced genes on the inactive X chromosome, particularly those involved in immune signaling pathways, culminating in lupus-like inflammatory manifestations.
- ⇒ These findings underscore the molecular link between altered XCI and autoimmune pathogenesis, hinting at potential therapeutic targets for future drug development.

Alzheimer's Disease: X Chromosome's Implication in Neurodegeneration:

- ⇒ Alzheimer's disease, characterized by a sex bias with higher prevalence in females, is intricately linked to X chromosome genetics.
- ⇒ Studies suggest that genes like ubiquitin-specific peptidase 11 (USP11), escaping XCI, may contribute to tau protein accumulation in the brain, implicating the X chromosome in neurodegenerative processes.
- ⇒ Understanding the molecular underpinnings of X-linked genes in Alzheimer's disease may offer insights into sex-specific disease mechanisms and therapeutic avenues.

Exploring Evolutionary and Therapeutic Implications:

- ⇒ As the Y chromosome undergoes evolutionary reduction, the X chromosome emerges as a pivotal player in human health and disease.

- ⇒ Evolutionary genomics unravel the intricate dynamics between genetic inheritance, epigenetic regulation, and disease manifestation.
- ⇒ Harnessing this knowledge holds promise for the development of novel drugs and therapeutic interventions targeting X-linked disorders and autoimmune conditions, paving the way for personalized medicine approaches.

Conclusion:

- ⇒ The X chromosome, beyond its role in sex determination, orchestrates a complex interplay of genetic and epigenetic factors underlying diverse diseases, from autoimmune conditions to neurodegenerative disorders.
- ⇒ Unraveling the intricacies of X chromosome biology offers a tantalizing avenue for deciphering disease mechanisms and developing targeted therapies, heralding a new era in precision medicine and personalized healthcare.

HEADING: WHO NEARS DEAL ON NEW PANDEMIC RESPONSE RULES



Introduction:

- ⇒ After two years of intensive deliberations, the World Health Organization (WHO) is on the brink of finalizing a historic agreement aimed at fortifying the global response to pandemics.
- ⇒ This agreement is a culmination of efforts by representatives from the 194 member states who have convened in Geneva to address the critical need for enhanced international coordination in the face of health crises.

The Pandemic Treaty:

- ⇒ Central to these discussions is the formulation of a pandemic treaty designed to rectify the deficiencies of the existing International Health Regulations (2005), which were exposed during the COVID-19 pandemic.
- ⇒ The proposed treaty places a strong emphasis on ensuring equitable access to vital medical resources, particularly vaccines, by allocating approximately 20% of these resources to be distributed to low-income countries during times of health emergencies.

- This provision underscores the imperative of global solidarity and cooperation in mitigating the impact of pandemics on vulnerable populations worldwide.

Revamping International Health Regulations (IHR):

- In addition to addressing resource allocation, negotiations also entail an overhaul of the International Health Regulations (IHR), with a focus on enhancing the alert system to enable swifter and more comprehensive responses to emerging health threats.
- This includes the introduction of an "early action alert" mechanism, complementing the existing "public health emergency of international concern" (PHEIC) designation.
- These reforms aim to bolster the capacity of the international community to detect and respond to health emergencies promptly, thereby minimizing their global impact.

International Disagreements and Negotiations:

- However, the path to reaching consensus has been fraught with challenges, as divergent interests and priorities among developed and developing countries have led to significant disagreements.
- Key points of contention include the allocation of resources and the distribution of financial responsibilities.
- These differences have necessitated extensive negotiations and last-minute discussions to reconcile conflicting positions.
- Moreover, political pressures, particularly from right-leaning groups advocating for national security interests, have further complicated the negotiation process.

Conclusion:

- Despite the formidable obstacles encountered during negotiations, the impending agreement on new pandemic response rules represents a pivotal milestone in global health governance.
- By learning from the lessons of the COVID-19 pandemic, the international community is taking proactive measures to strengthen global health security and resilience.
- This underscores the importance of collaborative efforts and solidarity among nations in addressing the complex challenges posed by future health emergencies, thereby safeguarding the health and well-being of populations worldwide.

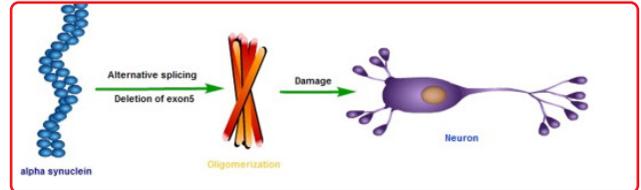
UNDERSTANDING THE ROLE OF SNCA PROTEIN IN PARKINSON'S DISEASE

Context

- The SNCA protein, known for its association with age-related neurodegenerative diseases, particularly

Parkinson's disease, remains enigmatic in its cellular functions.

- While its presence in healthy cells is acknowledged, its precise role remains elusive. However, its involvement in the formation of Lewy bodies, aggregates of proteins found in the brains of Parkinson's patients, highlights its significance in disease pathology.



Two Distinct SNCA Populations: Implications for Disease Management

- Recent studies have identified two distinct populations of SNCA aggregates within cells: one that compromises cellular structural integrity and another that aids in protein degradation.
- Striking a balance between these populations emerges as a critical factor in managing Parkinson's disease. While one population is associated with diseased states, the other is crucial for maintaining cellular health.

Experimental Insights: Lewy Bodies and Aggresomes

- In experimental settings, researchers observed the formation of Lewy body-like structures and aggresomes in neurons cultivated outside the body.
- These structures, resembling Lewy bodies, were found to grow slowly, primarily due to the presence of aggresomes that sequester misfolded SNCA proteins.
- However, repeated seeding of neurons with misfolded SNCA accelerated the formation of Lewy body-like structures, leading to cellular damage, particularly at the periphery of nuclei.

Therapeutic Avenues: Targeting SNCA Aggregates

- Reducing the prevalence of SNCA aggregates in neurons emerges as a promising therapeutic approach for Parkinson's disease.
- Strategies include reducing SNCA expression, destroying SNCA proteins, or employing gene-silencing tools like CRISPR-Cas9.
- However, challenges such as crossing the blood-brain barrier remain significant hurdles.

Balancing SNCA Populations: A Potential Solution

- A novel approach proposed by researchers involves balancing SNCA populations between aggresomes and Lewy bodies.
- By promoting the sequestration of SNCA into aggresomes, the formation of large Lewy bodies could be mitigated.

- ⇒ However, the practical implementation of this strategy requires further investigation.

Conclusion: Transformative Potential

- ⇒ Despite the challenges, advancements in understanding SNCA dynamics offer promising avenues for transforming Parkinson's disease treatment.
- ⇒ Whether through reducing SNCA expression or modulating its aggregation, targeting SNCA aggregates represents a paradigm shift in Parkinson's therapeutics, with the potential to revolutionize current treatment modalities.

UNDERSTANDING THE WHO REPORT ON SALT AND HYPERTENSION



Context

- ⇒ In its latest report titled "Action on Salt and Hypertension," the World Health Organization (WHO) sheds light on the alarming health risks associated with excessive salt consumption.
- ⇒ This comprehensive study, now in its second edition, delves into salt benchmarks across various dietary categories, revealing a significant public health concern.

Global Health Implications

- ⇒ The WHO report underscores the global ramifications of high sodium intake, attributing almost two million out of eight million annual deaths to poor dietary choices, notably excessive salt consumption.
- ⇒ Sodium, primarily sourced from salt, plays a crucial role in maintaining plasma volume and cellular function.
- ⇒ However, an overabundance of sodium in the diet is linked to a myriad of serious health complications, including but not limited to heart disease, strokes, stomach cancer, obesity, liver disease, and chronic kidney disease.

Mechanism of Elevated Blood Pressure

- ⇒ One of the key insights provided by the report is the mechanism through which excess sodium raises blood pressure.
- ⇒ Sodium's propensity to retain water leads to fluid accumulation within the body, resulting in increased blood volume and heightened pressure on the cardiovascular system.
- ⇒ Prolonged high blood pressure can inflict severe damage on the heart and blood vessels, escalating the risk of heart attack, heart failure, and kidney disorders.

WHO's Recommendations

- ⇒ In light of these findings, the WHO advocates for a daily salt intake of less than 5 grams, equivalent to less than 2 grams of sodium, to mitigate associated health risks.
- ⇒ By adhering to this guideline, individuals can curb their sodium consumption and subsequently reduce the likelihood of developing detrimental health conditions.
- ⇒ It is emphasized that while sodium is an essential nutrient for bodily functions, moderation is imperative to safeguard against adverse health outcomes.

Conclusion

- ⇒ The WHO report serves as a clarion call for concerted efforts to address the pervasive issue of excessive salt consumption and its detrimental impact on global health.
- ⇒ By heeding the WHO's recommendations and implementing strategies to monitor and regulate sodium intake, individuals and communities can take proactive steps towards fostering healthier populations worldwide.

ART & CULTURE

GOOGLE ARTS & CULTURE'S "MILLETS: SEEDS OF CHANGE" EXHIBITION: A DEEP DIVE



Introduction

- ⇒ In a groundbreaking collaboration with India's Ministry of Agriculture & Farmers Welfare, Google

Arts & Culture unveils an immersive digital exhibition titled "Millets: Seeds of Change," poised to redefine our understanding of these ancient grains.

- This exhibition stands as a testament to the enduring legacy and contemporary relevance of millets, offering a comprehensive exploration of their journey from humble staples to nutritional powerhouses.

Exploring Millets Through Time

- "Millets: Seeds of Change" serves as a digital time capsule, transporting visitors through the annals of history to uncover the evolution of millets.
- From their origins as essential dietary components in ancient civilizations to their current status as celebrated superfoods, the exhibition meticulously traces the trajectory of millets, highlighting their cultural significance and agricultural prowess.

Diverse Varieties and Culinary Versatility

- One of the exhibition's focal points is its spotlight on the diverse varieties of millets and their remarkable culinary versatility. Through vivid imagery, informative narratives, and expert insights, visitors gain a deeper appreciation for the myriad uses of millets in cuisines across the globe.
- Renowned chefs, including the esteemed Chef Thomas Zacharias, contribute their expertise by sharing innovative millet recipes, igniting a culinary revolution centered around these nutritious grains.

Cultural Preservation and Global Engagement

- At the heart of this collaborative endeavor lies a shared commitment to leveraging technology for cultural preservation and global outreach.
- Amit Sood, Director of Google Arts & Culture, and Shri Manoj Ahuja, Secretary of India's Department of Agriculture and Farmers Welfare, champion the exhibition's mission to not only celebrate millets but also to underscore India's leadership in promoting their cultivation and consumption.
- Through the exhibition's digital platform, audiences worldwide are invited to engage with and contribute to the ongoing dialogue surrounding millets and their multifaceted significance.

Interactive Learning and Engagement

- "Millets: Seeds of Change" transcends traditional exhibition formats by incorporating interactive elements designed to enrich visitors' experiences.
- From captivating quizzes to thought-provoking crosswords, these interactive features invite participants to delve deeper into the world of millets, fostering a dynamic and immersive learning environment.

Accessible Across Platforms

- Accessible via the Google Arts & Culture website and app, available on both iOS and Android platforms, the exhibition ensures widespread accessibility and engagement.

- Whether exploring from the comfort of home or on the go, individuals of all backgrounds and interests can embark on a transformative journey through the captivating world of millets.

Conclusion

- In essence, "Millets: Seeds of Change" represents a groundbreaking fusion of art, culture, agriculture, and technology, poised to spark a global renaissance in appreciation for these resilient grains and their transformative potential.

PRESERVING THE LEGACY: UNDERSTANDING THE VIRUPAKSHA TEMPLE OF HAMPI



Context

- The recent collapse of a section of pillars at Hampi's Virupaksha Temple following heavy rains has underscored the need for safeguarding India's architectural treasures.
- Let's delve into the rich history and significance of this iconic temple.

A Glimpse into History

Historic Roots:

- The Virupaksha Temple, nestled in the heart of Hampi, Karnataka, is a testament to India's ancient cultural heritage.
- Its origins can be traced back to the 7th century CE, with some historians suggesting an even earlier existence predating the Vijayanagara Empire.

Vijayanagara Splendor:

- Flourishing during the 14th to 16th centuries under the patronage of the Vijayanagara rulers, the temple underwent significant expansions, evolving into a vibrant hub of religious and cultural activities.
- The empire, led by illustrious rulers like Harihara I, established Hampi as a beacon of architectural brilliance and spiritual fervor.

Architectural Grandeur

Dravidian Magnificence:

- The Virupaksha Temple, like other architectural marvels of the Vijayanagara Empire, epitomizes the grandeur of Dravidian-style architecture.

- Its towering gopurams, intricately carved pillars, and sacred shrines bear witness to the empire's artistic prowess and devotion to craftsmanship.

Exquisite Details:

- Within the temple complex, the Vitthala Temple stands out as a masterpiece of artistry and engineering.
- Adorned with ornate structures, including a grand bazaar street and a meticulously carved mandapa, it showcases the zenith of Vijayanagara temple architecture.

Spiritual Significance

Divine Dedication:

- The Virupaksha Temple is a venerable abode dedicated to Lord Virupaksha, a revered form of Lord Shiva.
- Its sanctity is further enriched by its association with Pampadevi, the local goddess intertwined with the mythos of the Tungabhadra River.

Enduring Devotion:

- Despite the ravages of time and the city's destruction in 1565, worship at the Virupaksha Temple has persisted steadfastly over the centuries.
- Its sacred precincts continue to resonate with the prayers and rituals of devotees, serving as a timeless beacon of spiritual solace.

Safeguarding Our Heritage

- The recent incident at Hampi's Virupaksha Temple serves as a poignant reminder of the imperative to protect and preserve our architectural heritage.
- As custodians of India's cultural legacy, it is incumbent upon us to prioritize measures for conservation, restoration, and disaster resilience, ensuring that future generations can continue to marvel at the splendor of our past.

Conclusion

- By fostering a culture of stewardship, embracing technological innovations, and fostering partnerships between government agencies, heritage experts, and local communities, we can forge a path towards safeguarding our architectural treasures for posterity.
- Let us endeavor to uphold the legacy of the Virupaksha Temple and other cultural landmarks, cherishing them as invaluable embodiments of our collective identity and heritage.

SPORTS

YAI SENIOR NATIONAL CHAMPIONSHIP 2024: A RECAP OF THE EXCITING CONCLUSION

Context

- After a week filled with intense competition, the Yachting Association of India (YAI) Senior National

Championship 2024 reached its climax at the Indian Naval Watermanship Training Centre (INWTC) in Mumbai.

- From 12th to 18th May, sailors battled challenging winds of up to 20 knots, adding an extra dimension of excitement to the event.



A Showcase of Excellence

- Organized jointly by the Yachting Association of India (YAI) and the Indian Navy Sailing Association (INSA), the championship featured all eight Olympic classes of boats.
- From iQFoil to Formula Kite, the event showcased the best of sailing talent in the country.

Fierce Competition

- With 82 participants hailing from 10 sailing clubs nationwide, competition was fierce.
- Over the course of six days, sailors contested in a total of 94 races, including 4 medal races, to vie for the prestigious title of National Champion.

Fairness Ensured

- A team of esteemed race officials, including World Sailing International Race Officers and International Judges from Australia, Singapore, and South Korea, ensured fairness and upheld the highest standards throughout the championship.

Celebrating Excellence

- The closing ceremony, held on 18th May at INWTC (Mumbai), was a celebration of excellence.
- Vice Admiral Sanjay J Singh, AVSM, NM, Flag Officer Commanding in Chief, WNC, honored the winners and encouraged future sailors to strive for greatness.

Medal Winners

iQ Foil (Men)

- Gold: Sep Saurabh Kumar from AYN
- Silver: Capt Aditya Sanghwan from AYN
- Bronze: NS Rawat, LAM from INWTC(Goa)

iQ Foil (Women)

- Gold: Ms Vidhyanshi Mishra from NSS Bhopal

Formula Kite (Men)

- Gold: Gnr Hridin from AYN
- Silver: Spr Ashish S Roy from AYN

NACRA 17 (Mixed)

- Gold: Spr S Doipode and Rect/Hav Ramya Sarvanan from AYN

49erFX (Women)

- Gold: Harshita Tomar, CPO(PT) & Ms Sheetal Verma from INWTC(Mbi)

49er (Men)

- Gold: Hav Prince Nobel & Spr Manu Francis from AYN

ILCA 7 (Men)

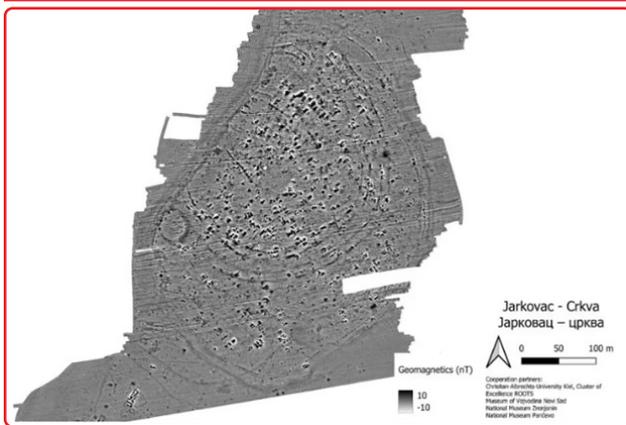
- Gold: Hav Mohit Saini from AYN

ILCA 6 (Women)

- Gold: Ritika Dangri, CPO(PT) from INWTC(Mbi)

Dominance of Combined Forces

- The combined teams from the Army and Navy secured the largest medal haul, reflecting their dominance and prowess in the competition.

MISCELLANEOUS**ARCHAEOLOGISTS UNCOVER 7000-YEAR-OLD PREHISTORIC SETTLEMENT IN SERBIA****Context**

- Archaeologists have recently discovered a 7000-year-old pre-historic settlement near the Tamiš River in northeastern Serbia.
- The settlement is believed to date back to the late Neolithic period and spans roughly 11-13 hectares, surrounded by four to six ditches.
- The researchers used geophysical methods to map the extent of the settlement, revealing artifacts associated with the Vinča culture, known for establishing large settlements in southeastern-central Europe.

The Discovery

- The discovery is significant as few larger Late Neolithic settlements have been identified in the Serbian Banat region.
- The settlement near the village of Jarkovac exhibits influences from the regional Banat prehistoric

culture, providing insight into prehistoric societies in the region.

- Ongoing analyses of the findings are expected to shed further light on early human history and the dissemination of knowledge and technologies in Southeast Europe.

Insight & Research

- The research team, led by Martin Furholt from the Institute of Prehistoric and Protohistoric Archaeology at Kiel University in Germany, hopes to gain valuable information about the emergence of social inequalities and early technologies in Europe through this discovery.
- Further research is underway to uncover more about the region's prehistoric past.

Serbia

- Serbia is a country located in Southeast Europe, officially known as the Republic of Serbia.
- It shares borders with Hungary, Romania, Bulgaria, North Macedonia, Croatia, and Bosnia and Herzegovina.
- The capital city is Belgrade. Serbia has a population of over 7 million people and is known for its cultural heritage, particularly in music, literature, and art.
- The official language is Serbian and the currency is the Serbian dinar. The country is a member of the United Nations, World Trade Organization, and Council of Europe.

Vinča culture

- The Vinča culture was a prehistoric civilization that flourished in the Southeastern Europe region, particularly in what is now modern-day Serbia, between 5700 and 4500 BC.
- Known for their advanced agricultural practices and unique pottery styles, the Vinča culture is considered one of the earliest European civilizations.
- They lived in large settlements, practiced farming and animal husbandry, and developed a form of proto-writing.
- The culture declined around 4500 BC for reasons that are still not fully understood. Their artifacts have been found at archaeological sites throughout the Balkans.

Banat culture

- Banat culture refers to the cultural heritage of the Banat region, which spans across three countries: Romania, Serbia, and Hungary.
- This diverse culture is a unique blend of Romanian, Serbian, Hungarian, and German influences, resulting from centuries of cohabitation and cultural exchange.
- Traditional Banat music, dance, cuisine, and crafts are important aspects of this culture.

- The region's rich history, including periods of Austrian, Ottoman, and Hungarian rule, has further shaped its identity.
- Banat culture is known for its hospitality, traditional festivals, and strong sense of community.

UNVEILING THE LEGACY OF HICKY'S BENGAL GAZETTE: INDIA'S PIONEER NEWSPAPER



Introduction: Celebrating Press Freedom

- As the world commemorates Press Freedom Day, it is imperative to delve into the remarkable history of journalism in India, anchored by the groundbreaking efforts of James Augustus Hicky and his seminal newspaper, Hicky's Bengal Gazette.

Genesis of Hicky's Bengal Gazette

- Established in 1780 in Kolkata, Hicky's Bengal Gazette stands as a testament to the dawn of journalism in India, heralding a new era of media discourse and accountability.
- Amidst the backdrop of colonial rule, Hicky ventured to create a platform for free expression and public scrutiny.

Courageous Journalism in Colonial India

- Hicky's Bengal Gazette quickly emerged as a fearless advocate for transparency and justice, fearlessly confronting government corruption and societal injustices.
- Through its incisive reporting and unwavering commitment to truth, the newspaper became a catalyst for social awareness and political reform.

Confronting Government Opposition

- The bold stance of Hicky's Bengal Gazette against the actions of Governor General Warren Hastings and other authorities garnered widespread attention, making it a thorn in the side of colonial governance.
- Despite facing legal persecution and relentless pressure, Hicky remained steadfast in his pursuit of truth and accountability.

The Demise and Legacy

- Despite its relatively short existence, Hicky's Bengal Gazette left an indelible mark on the Indian media landscape.

- Its closure in 1782 due to legal battles and governmental interference did not diminish its significance.
- Instead, it served as a catalyst for future generations of journalists, inspiring them to uphold the principles of press freedom and integrity.

Inspiring Future Generations

- The enduring legacy of Hicky's Bengal Gazette lies in its unwavering commitment to journalistic ethics and the pursuit of truth.
- Its fearless reporting continues to inspire journalists and activists to challenge authority, hold power to account, and champion the ideals of democracy and freedom of speech.

Conclusion: Honoring a Pioneer

- As we reflect on the legacy of Hicky's Bengal Gazette, we pay tribute to James Augustus Hicky and the countless journalists who have followed in his footsteps.
- Their courage, integrity, and unwavering commitment to truth serve as guiding beacons in our ongoing quest for a free, fair, and democratic society.

EFFORTS TO PRESERVE THE MANIPURI PONY: A HISTORIC INITIATIVE



Context

- The Government of Manipur, in collaboration with various organizations and associations, has initiated proactive measures to safeguard the Manipuri Pony, also known as Meitei Sagol, from facing extinction.
- Recognized as one of the seven indigenous equine breeds in India, the Manipuri Pony holds significant cultural and historical importance, being the original polo pony that gave rise to modern polo.

Joint Resolution for Conservation

- In a joint meeting convened by key stakeholders including the Manipur Horse Riding and Polo Association, Manipur Equestrian Association, Manipuri Pony Society, and state veterinary and animal husbandry department officials, several crucial resolutions were passed.
- These include immediate measures to gather the ponies, delineation of temporary habitats,

establishment of a task force, budget allocation for pony management, and surveying of grazing grounds and permanent habitats.

Manipur Pony Conservation Policy

- The Manipuri Pony Conservation and Development Policy (MPCDP), formulated in 2016, underscores the urgent need to preserve this prized breed.
- Rapid urbanization, shrinking wetlands, restricted polo usage, and uncontrolled diseases have contributed to a drastic decline in the pony population, prompting the Manipur government to declare it as an Endangered Breed in 2013.

Cultural Significance and Unique Attributes

- Despite its diminutive size, the Manipuri Pony possesses remarkable stamina, agility, intelligence, and adaptability to harsh environmental conditions.
- Its role in traditional events like Lai haraoba, as well as sports such as polo and horseracing, underscores its integral place in Manipuri culture.
- Moreover, the breed's historical significance as mounts for the formidable cavalry of the Manipur Kingdom during the 17th century further amplifies its cultural importance.

Government's Commitment to Preservation

- Chief Minister N Biren Singh reaffirmed the government's dedication to protecting the Manipuri Pony by allocating 30 acres of grassy fields at Lamphelpat, Imphal West, as a new habitat for the ponies.
- Emphasizing the need for mass support in this endeavor, Singh lauded the efforts of the Manipur Horse Riding and Polo Association in spearheading the conservation initiative.

Conclusion

- In conclusion, the concerted efforts undertaken by the Manipur government and various stakeholders reflect a collective commitment to safeguarding the legacy of the Manipuri Pony, ensuring its enduring presence in the region's cultural tapestry.

NEWLY UNEARTHED NILE RIVER BRANCH REVEALS INGENUOUS ENGINEERING OF ANCIENT EGYPTIANS

Context

- In a groundbreaking discovery, researchers have unearthed evidence of a previously unknown branch of the Nile River, shedding light on the remarkable engineering prowess of the ancient Egyptians.
- The newfound river segment, spanning approximately 64 kilometers, meandered near the iconic Giza pyramid complex and over 30 other pyramid sites, unveiling a crucial piece of the puzzle behind the construction of these ancient wonders.



Ahramat

- Led by Eman Ghoneim from the University of North Carolina Wilmington, an international team utilized state-of-the-art radar satellite imaging technology to identify and map the buried watercourse.
- Named "Ahramat," meaning "pyramids" in Arabic, this hidden river promises to revolutionize our understanding of how the ancient Egyptians undertook their monumental construction projects.

Unraveling the Mysteries of Ancient Engineering

- The proximity of the river branch to the pyramid sites suggests that it played a pivotal role in the transportation of colossal stone blocks used in the construction of these architectural marvels.
- While the notion of utilizing waterways for logistical purposes has long been speculated, the concrete evidence provided by this discovery reaffirms the ingenuity and meticulous planning of the ancient Egyptians.

Implications for Historical Understanding

- This finding not only underscores the sophistication of ancient Egyptian engineering but also prompts a reassessment of established narratives surrounding the construction of the pyramids.
- By elucidating the presence of a nearby waterway, researchers can now envisage a more comprehensive picture of the scale and intricacy involved in these monumental undertakings.

A Glimpse into the Great Pyramid of Giza

- Constructed during the reign of Pharaoh Khufu between 2580 and 2560 B.C., the Great Pyramid of Giza stands as a testament to ancient architectural prowess.
- Rising to a height of 146.6 meters (481 feet), it held the title of the world's tallest man-made structure for over 3,800 years.
- Comprising approximately 2.3 million limestone and granite blocks, each weighing around 2.5 tons, the pyramid exemplifies unparalleled craftsmanship and organizational skill. Its impeccable alignment with true north and stable internal temperature further accentuate the mastery of ancient Egyptian builders.

Reimagining Ancient History

- As we continue to unravel the mysteries of the past, discoveries like the unearthed Nile River branch serve as poignant reminders of the enduring legacy of ancient civilizations.
- Through a combination of innovative technology and scholarly inquiry, we inch closer to comprehending the awe-inspiring achievements of our ancestors and the profound impact they have left on the tapestry of human history.

OLDEST HUMAN VIRUSES UNEARTHED IN 50,000-YEAR-OLD NEANDERTHAL BONES



Introduction

- In a groundbreaking discovery shedding light on the mysterious demise of Neanderthals, molecular scientist Marcelo Briones and his team have uncovered viral DNA fragments in ancient Neanderthal bones dating back 50,000 years.
- This revelation offers unprecedented insights into the potential role of ancient viruses in the extinction of our closest evolutionary relatives.

Background and Previous Theories

- Neanderthals once roamed Eurasia but vanished abruptly around 40,000 years ago.
- The reasons behind their extinction have long been debated among scientists, with theories ranging from environmental changes and competition with modern humans to the possibility of pandemics.

New Evidence of Ancient Viruses

- The latest study, focusing on Neanderthal remains from Russia's Chagyrskaya cave, has identified viral DNA resembling adenovirus, herpesvirus, and papillomavirus.
- These findings suggest that Neanderthals may have suffered from diseases akin to those afflicting modern humans.

Methodology and Challenges

- Extracting and sequencing DNA from ancient remains present formidable challenges due to degradation over time.

- Despite these obstacles, Briones' team managed to detect viral genomes hinting at the potential presence of these pathogens in Neanderthal populations.

Insights into Neanderthal Extinction

Timeline and Interbreeding

- Neanderthals vanished approximately 40,000 years ago, with the last confirmed evidence of their existence found in Gibraltar.
- Genetic studies indicate interbreeding between Neanderthals and Homo sapiens, with up to 2% of modern Eurasian DNA traced back to Neanderthal ancestry.

Possible Extinction Factors

- Theories surrounding Neanderthal extinction include climate change, dietary constraints, and competition with modern humans.
- The rapid disappearance of Neanderthal tool culture, known as Mousterian, aligns with their extinction timeline.

Vulnerabilities and Adaptability

- Neanderthals, characterized by robust physiques, likely required more energy, rendering them vulnerable during resource scarcity.
- Their lower birth rates and smaller communities may have hindered their ability to adapt swiftly to changing environments.

Advancements in Ancient DNA Analysis

- Human understanding of evolution has been revolutionized by the revelation of interbreeding between Homo sapiens and Neanderthals approximately 50,000 years ago.
- Techniques like shotgun sequencing enable the recovery of DNA from severely degraded samples, facilitating the study of ancient plagues by identifying pathogens in millennia-old remains.

Conclusion

- The discovery of ancient viral DNA in Neanderthal bones opens up new avenues for understanding their extinction.
- By unraveling the genetic mysteries of our evolutionary past, scientists continue to piece together the intricate tapestry of human history and the forces that shaped it.

UNDERSTANDING INDUSTRIAL SAFETY: AN ELABORATIVE ANALYSIS

Introduction

- The recent tragic incident of a chemical factory blaze in Thane, Maharashtra, which claimed multiple lives and injured many, has once again highlighted the pressing issue of industrial safety in India.
- This article aims to delve into the background, key takeaways, and changes in the regulatory environment concerning industrial safety in the country.



Background

- The Thane incident underscores the recurring nature of industrial accidents and the imperative need to address regulatory and knowledge gaps.
- Despite India's significant presence in chemical manufacturing and related industries, the absence of exclusive regulations for the sector and overlapping jurisdictional issues have hampered effective safety measures.

Key Takeaways

Industrial Importance

- India stands as one of the leading chemical manufacturing nations globally, with various industries such as pharmaceuticals, pesticides, fertilizers, paints, and petrochemicals contributing substantially to the economy and employment.
- However, the sector's growth has been marred by frequent accidents, as evidenced by the National Disaster Management Authority's (NDMA) data on chemical-related incidents over the past decade.

Regulatory Deficiencies

- While India boasts numerous Acts and rules governing different facets of the chemical industry, the lack of dedicated legislation for the sector and the complexities arising from overlapping jurisdiction have posed challenges in ensuring robust safety protocols.
- Tragic events like the Bhopal Gas Tragedy in 1984 and subsequent accidents underscore the persistent knowledge deficit in industrial safety, which is a critical concern for a rapidly industrializing nation.

Changes in Regulatory Environment

Impact of Regulatory Reforms

- In recent years, there have been significant regulatory reforms aimed at fostering ease of doing business in India.
- However, some of these changes, particularly in industrial safety laws such as The Boilers Act, 1923, and Indian Boilers Regulation 1950, have raised concerns about their contribution to the escalating number of accidents.

Dilution of Safety Standards

- The amendments to laws like the Boilers Act and the Factories Act have shifted the onus of safety compliance from government inspectors to factory owners/managers.
- While the intent behind such reforms may have been to streamline regulatory processes, they have inadvertently compromised the rigor of safety inspections and enforcement.

Conclusion

- The Thane tragedy serves as a poignant reminder of the urgent need for a comprehensive overhaul of India's industrial safety framework.
- Addressing regulatory deficiencies, enhancing enforcement mechanisms, and promoting a culture of safety consciousness are indispensable steps towards preventing future mishaps and safeguarding the lives and well-being of workers in industrial settings.

WHY HAVE BIKANER AND BARMER IN RAJASTHAN REPORTED LAND SINKING IN THE LAST MONTH?



Context

- In the last month, two incidents of land subsidence took place in Rajasthan, alarming both geologists and the general public.
- Both incidents took place in desert districts, raising suspicions of a possible connection between them.

Occurred Incidents

- On April 16, 2024, one and a half bigha of land collapsed around 3:30 am in Sahajrasar village of Lunkaransar tehsil of Bikaner district.
- At the time, a train full of passengers was passing by, narrowly escaping the sinking ground with the assistance of a tractor.
- The subsidence formed a pit about 70 feet deep, which, according to villagers, has since expanded to about 80-90 feet.
- The second incident occurred on May 6, 2024, in Nagana village of Barmer district, where two parallel cracks appeared in the ground over an area of about one and a half kilometres.

⇒ A geological team has submitted its preliminary report to the administration on these incidents occurring in the two districts of the Thar Desert.

Responsible Factors

- ⇒ The preliminary reports suggest that water is a common factor in both districts.
- ⇒ GSI attributed excessive groundwater exploitation and reduced rainfall as the primary reasons for the pit in Sahajrasar. GSI officials visited Bikaner and prepared the report, but they declined to comment officially, stating the preliminary report had been submitted to the administration.
- ⇒ A detailed report is forthcoming, based on satellite imagery, water data, and other technical information.

Analysis of Different Aspects

- ⇒ Analysis of groundwater, rainfall and other relevant data along with geological field observations showed that the area is experiencing a high degree of groundwater depletion over the years.
- ⇒ It may lead to drying up the water bearing aquifer rocks / sediments at the contact zone of the sub-surface hard rocks and aeolian deposits which may induce compaction of dried up pore spaces / voids, consequently reduction of volume of sub-surface strata and resultant loose sand bearing land subsidence.
- ⇒ According to a groundwater status report by Bikaner district, the area primarily consists of light-textured, weakly structured sand and sandy loam soil.
- ⇒ The preliminary GSI report also mentions reduced rainfall in the region.

⇒ However, data from the state government's water resources department's annual monsoon report suggests an increase in average rainfall over the past 30 years.

⇒ Despite the increase in average rainfall, there is a water shortage in the area, indicating that rainwater is not penetrating the ground effectively.

Water as the main cause

- ⇒ The area's only permanent pond remains due to historical deepening during famine relief efforts, indicating water recharge into the ground.
- ⇒ The sinking land in Sahajrasar has historical precedence, with elders recounting a crater formed by a lightning strike many years ago.
- ⇒ Over time, the pit filled, leaving a void that impacts the road's construction and maintenance.
- ⇒ According to a Barmer's GSI officer, preliminary investigations suggest water as the cause.
- ⇒ He explained that abundant multani mitti (Fuller's earth) in the soil dissolved floodwater in 2005, creating a cave-like space underground.
- ⇒ Subsequent water shifts created a vacuum, resulting in the emergence of cracks as the soil burst due to decreasing groundwater levels.
- ⇒ GSI is monitoring the situation, with plans for geophysical surveys if cracks escalate.

Conclusion

- ⇒ Local residents alleges groundwater overexploitation by Mangla, the crude oil company.
- ⇒ While not highlighted in the preliminary report, investigations will consider this aspect if cracks worsen.

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